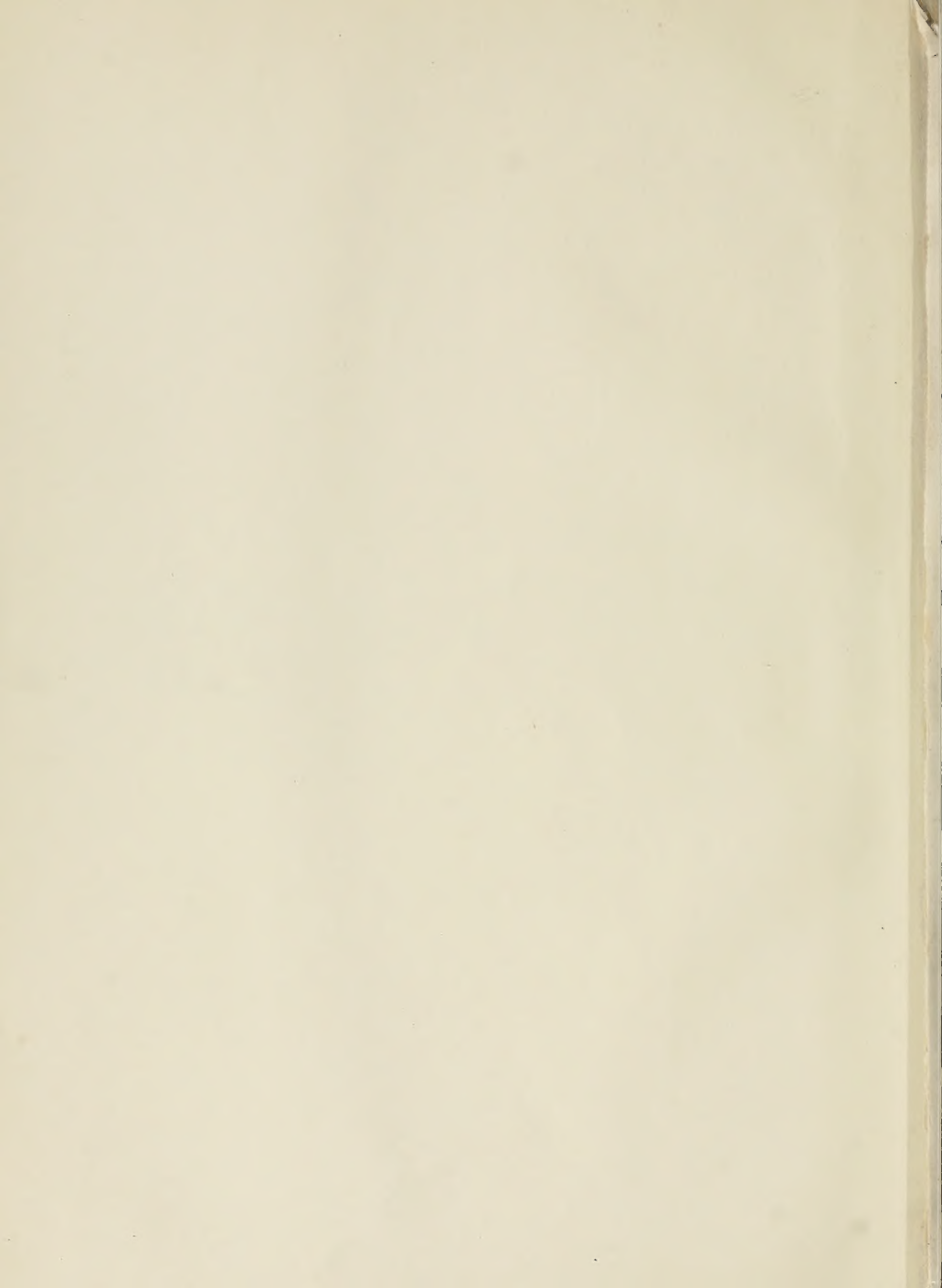


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NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
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AND THE  
MEDICAL NEWS

*A WEEKLY REVIEW OF MEDICINE*

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## Original Communications

### DEVICE FOR X RAY LOCATION OF BULLETS AND OTHER FOREIGN BODIES IN WOUNDS.

By SINCLAIR TOUSEY, A. M., M. D.,  
New York.

Our entry into the European war and my desire to be of the greatest possible service to my country caused me to undertake special studies in this subject, and I have placed my device freely at the service of both government and the medical profession. Consider the published experience of Guilleminot, a distinguished expert, who searched for a foreign body in a patient's hand or wrist under direct fluoroscopic observation for forty-five minutes, inflicting burns upon the patient and himself which required many months to heal. This and other cases demonstrate the danger of removal under the fluoroscope as a routine measure. Localization by means of radiography presents no difficulty in the case of a finger. Here there are distinct bony landmarks recognizable from the surface, and it is easy to take two pictures in planes at a right angle to each other. And if we employ a ray vertical to the plate at its centre, no correction is required for the slight lateral displacement of the shadow if the foreign body is not exactly at the spot where the ray is normal.

In many other situations two pictures at a right angle are either impracticable or are totally inadequate, owing to the thickness of the part, the absence of very accurate bony landmarks recognizable from the surface, and often the great distance of the foreign body from the surface. In these cases, radiographic localization resembles a problem in surveying, like the exact localization of a point upon an island by observation from the mainland. The exact depth at which the foreign body is located is the difficult problem.

Previous to my recent device, fifty-seven methods of radiographic localization had been published, including one of my own. Many of these were called forth by experience in the European war, and all these methods have the patient in an appropriate position in contact with the photographic plate, while a metallic marker often fastened to the surface of the body shows in the picture, and so does the foreign body. Without changing the position of the body relative to the plate, or to a second plate substituted for it, but with a measured displacement of the x ray tube, a second picture is made. The

two positions of the image of the foreign body afford a means of determining the direction and distance of the foreign body from the spot where the metallic marker is fastened to the surface. The methods previously in use fall into two groups: the MacKenzie Davidson and another to which no distinctive name is attached, though I have published a description of it (1).

The MacKenzie Davidson localizer lays the finished picture upon a table, and above it are fastened two points in the positions occupied by the anticathode of the x ray tube during the two exposures. From these two points threads are stretched to the two images of the foreign body, and the place of intersection of these two threads is the place at which it was located when the pictures were made.

The other type of radiographic localization has the x ray tube at a measured distance from the photographic plate and, for the second exposure, displaces the tube a measured distance laterally. The displacement of the image of the foreign body is measured. And from these factors a mathematical calculation enables one to determine the distance from the plate to it at the time the pictures were made.

My new device is a modification of the latter type.

*Apparatus required.*—A piece of galvanized iron netting measuring eight by ten inches, and having meshes or openings one eighth inch square, and the wire being of such a thickness itself that there are seven meshes to the linear inch. A single distinctive lead marker like the letter T. A set of lead numbers. Facilities for moving the x ray tube laterally a measured distance after the first exposure. A stereoscopic or tunneled plate holder for the very common cases in which two exposures are better made upon separate plates.

*Manipulation:* The distinctive lead marker is fastened to the skin where it will be in contact with, or near the middle of the wire netting while the pictures are made. The position of this marker is recorded upon the skin with an indelible pencil. The plate holder is laid upon the table, and the wire netting covers it, patient lying upon that. The lead serial number is invariably placed over the lower external corner of the plate. And the same number had better be marked upon the skin with an indelible pencil. Lead markers R and L (right and left) will be of occasional service. For the thigh



or any part of the head or trunk the anticathode is at a distance of twenty one inches from the plate, and is displaced laterally three inches after the first exposure. For the forearm or leg the distance from the anticathode is fourteen inches and the displacement two inches. The number of subdivisions, one seventh inch each, that the image of the foreign body is displaced represents a definite distance from the foreign body to the netting when the exposures were made. The table herewith should be referred to for exact localization.

#### ROENTGEN LOCALIZATION OF FOREIGN BODIES.

Over the plate is galvanized iron netting, one eighth inch mesh. This, including the thickness of the wires, runs seven meshes to the linear inch.

In the case illustrated, the base of the foreign body is two meshes internal to the wire passing through the lower part of the letter T, and in the other picture it is five meshes external to the same wire. The image has been displaced seven meshes by a tube displacement of three inches at a distance of twenty-one inches. Reference to the table shows that the foreign body was at a distance of 5.3 inches from the wire netting at the time of the two exposures. I advise reference to the printed table rather than extemporaneous calculation, but this particular case will serve to show the manner in which I have calculated the table.

If this distance is considerable, we must bear in mind the fact that the foreign body is located in a direction from one image to the corresponding position of the anticathode, not always in a vertical direction from its image on the plate. Each of the two exposures should be of the same intensity and duration as for a single picture, whether the exposures are made upon the same or separate plates. Five and one half inch spark gap gives the most suitable picture. Development should be continued until the wire netting shows clearly in the lightest part of the plate. An intensifying screen had better be used for cases where a

Anticathode distance 21 inches,  
tube displacement 3 inches  
Image displaced 1 7 inch meshes  
Actual distance  
foreign body to  
plate, inches

1	0.9
2	1.8
3	2.6
4	3.2
5	3.7
6	4.0
7	5.3
8	5.7
9	6.3
10	6.8
11	7.3
12	7.7
13	8.3
14	8.7
15	8.9
16	9.1
17	9.3
18	9.5
19	10.0
20	10.3
21	10.5

Anticathode distance 14 inches,  
tube displacement 2 inches  
Image displaced 1 7 inch meshes  
Indicates foreign  
body distance  
from plate, inches

1	0.9
2	1.8
3	2.5
4	3.1
5	3.7
6	4.2
7	4.7
8	5.1
9	5.5
10	5.8
11	6.1
12	6.5
13	6.7
14	7.0

#### CALCULATION OF DISTANCE FROM FOREIGN BODY TO WIRE NETTING.

Known factors

BD+DF=21 inches

AC=3 inches

AB=1 1/2 inches

EG=1 inch (7 meshes of 1/7

inch each)

FG=1/2 inch (in this particular

case)

ABD is a triangle whose angles

are equal to those of the tri-

angle DFG.

Therefore:

AB : FG :: BD : DF

1 1/2 : 1/2 :: BD : DF

Hence:

DF is 1/2 as long as BD

DF is 1/2 of BD+DF

DF is 1/2 of 21=5.25 inches.

As the table is not carried be-

yond the first decimal place this

is given as 5.3 inches.

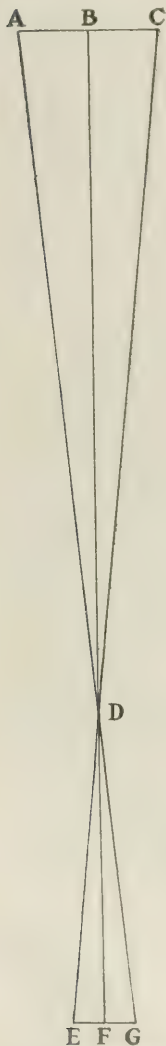


FIG. 1.—A, first position of anticathode; G, first radiographic image of foreign body; D, C, second position of the anticathode; E, second radiographic image of foreign body.

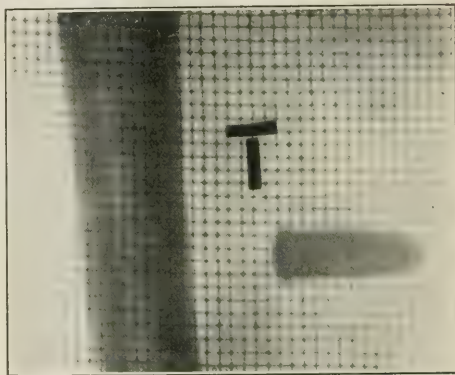


FIG. 2.—Position of the image of the foreign body in the first radiograph.

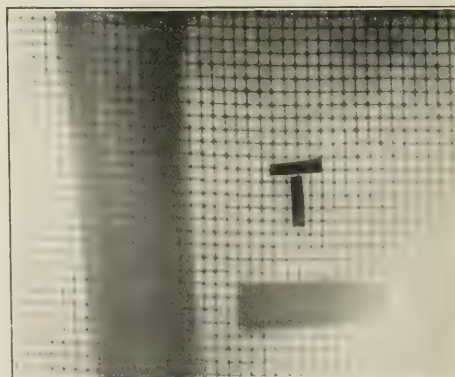


FIG. 3.—Changed position of the image of the foreign body in the second radiograph. The wire net and the lead marker, T, are fixed landmarks.

twenty-one inch tube distance is desirable. The cases where a single plate is unsuitable are the numerous ones in which the shadow of the foreign body might chance to lie in the shadow of a bone, and might, therefore, not be clearly visible.

When two plates are used some device like a stereoscopic or tunneled plate holder is required if the patient lies upon the plate. I use simply a board one half inch thick, with a space underneath for the plate in its cassette, usually with an intensifying screen. The plate must be removed without moving the patient, or the lead marker, or the wire netting. The second plate need not be in identically the same position as the first, since the wire netting is the final guide, not the plate. The comparison of the two plates is by noting the difference in longitude of the two images as compared with that of the lead marker; not at all by superposition of the two plates so as to form a transparency of double thickness.

When two plates are used with the x ray tube below and the plate laid on the patient, the process is greatly simplified. One has merely to be sure that the patient does not move, that the lead marker remains in place, and that the wire net is flat against the plate, not curved to fit the body surface, and has its lines parallel with those in the first picture.

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## UNUSUAL HYPERPYREXIA IN PNEUMONIA: RECOVERY.\*

By J. P. CROZER GRIFFITH, M. D.,  
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Professor of Pediatrics in the University of Pennsylvania.

In reporting these two cases which occurred in children of two and a half and five and a quarter years, I would first point out that terminal hyperpyrexia is unfortunately not at all an infrequent ending of various affections. It may take place in any of the infectious diseases, and is, of course, a well known incident in thermic fever. I have known it to reach  $110^{\circ}$  F. in children during excessively hot weather, the symptoms being digestive, but only slightly marked, and the fatal termination being attributable to the direct influence of the heat. It is true that sometimes children bear hyperpyrexia, if not excessive, surprisingly well. I recall one instance of typhoid fever, with a several days temperature continuously not lower than  $105^{\circ}$  and  $106^{\circ}$ , and on several occasions  $107^{\circ}$  F., yet with no unfavorable symptoms whatever, the little girl of ten years lying comfortable and smiling in her bed. Temperature above this degree, with subsequent recovery is, however, in my experience very uncommon, and my two cases with their temperature charts may not be without interest.

The first one, seen in consultation with Doctor Myer Solis-Cohen, was observed in a girl baby of two and a half years. The course in most respects was that of a typical bronchopneumonia, with increasing and finally rather extensive consolidation

involving parts of both lungs in scattered areas. The total duration was about two weeks. Throughout the attack there was considerable cyanosis, at times restlessness, and occasionally profuse sweating. Although the patient was evidently severely ill, the heart sounds throughout remained fairly good, the patient never appeared to be in any immediate danger, and a guardedly favorable prognosis was given at all times. The most interesting feature was the continued tendency to high fever, with a daily maximum of  $104^{\circ}$  to  $107^{\circ}$ , and on one occasion  $108^{\circ}$  F., with rapid drops to  $100^{\circ}$  or  $101^{\circ}$ , as shown in the first chart.

The second case, seen in consultation with Doctor E. J. Lupin, was even more interesting. It well illustrates the danger of giving a favorable progn-

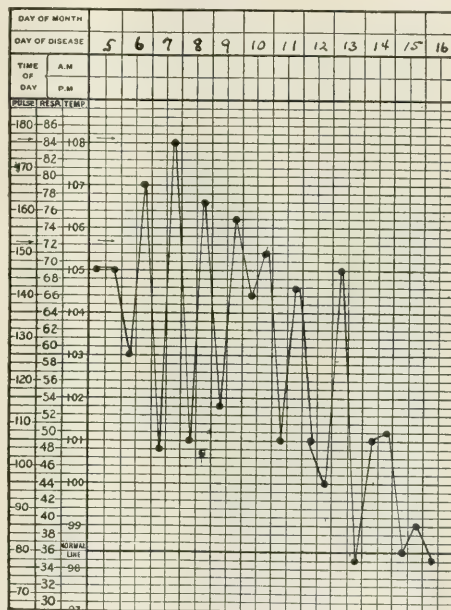


CHART I.—Hyperpyrexia in child of two and a half years.

sis for any individual case, basing this upon the general experience with the disease; and, on the other hand, of prognosticating unfavorably even in the presence of most alarming symptoms. The case was at first an ordinary typical one of croupous pneumonia in a boy of  $5\frac{1}{4}$  years. Realizing that the disease at this age nearly always terminates in recovery, the parents were told that it was progressing in an entirely normal manner, and that there was no cause for anxiety. The temperature had been not unduly elevated, the mind entirely clear, the cardiac strength excellent. This favorable condition continued until the seventh day of the attack, when an unusual degree of drowsiness developed, and the temperature became higher. On the tenth day, instead of the convalescence which we had fully expected even earlier, the temperature began to rise, the pulse grew very weak, and the child appeared to

\*Read by title before the American Pediatric Society, May, 1918.





years' standing. Iridectomy was performed on account of secondary glaucoma. Examination before treatment revealed vision = counting fingers at six inches. Numerous deposits were present on Descemet's membrane and the lens showed distinct conglomerate opacification in the centre of the pupillary space. The fundus reflex was visible only in the periphery. Four days after beginning of treatment the vision = counting fingers at eight inches. The fundus reflex could be recognized over a larger area. Three radial striations were now evident and two small globules were visible in the centre of the pupillary space. Seven days after beginning of the treatment vision = counts fingers at three feet. Deposits on Descemet's membrane were fewer in number and their size was reduced. Fundus reflex is now more evident than at previous examinations. Striations and globules were about the same.

CASE III.—Mr. J. V., forty-one years old. Subcapsular or senile cataract of the right eye. Left eye normal. Examination before treatment gave the following results: vision = motion fingers at three feet. Oblique illumination showed a diffuse grayish mass in pupillary area. No fundus reflex could be obtained. Five days after beginning of treatment vision-motion fingers at ten feet. Direct examination revealed a grayish white conglomerate mass in the pupillary space, while in the periphery a large reddish fundus reflex is clearly visible. Seven days after beginning of treatment vision = motion fingers at eighteen feet, counts fingers at four feet. Oblique illumination showed a grayish area covering the pupillary space with a few white linear striations scattered in the centre, also smaller grayish white dots nearer the periphery. Direct ophthalmoscope examination showed a much larger diffuse reddish fundus reflex with distinct sector-like striations radiating from the periphery of the lens.

The improvement of vision noted in these cases was accompanied by an increased visibility of the fundus reflex which could only be due to a decrease in the lenticular opacity. A similar phenomenon was never reported to have occurred spontaneously or to have been caused by any other agent.

The writers have undertaken a broad study of the subject on animals and on clinical material and expect to present an extensive report at a future date. It is premature to say whether the action of radium on cataract will have a permanent or any therapeutic value, but the effect it produced on the cases reported is of sufficient interest to warrant the present communication.

As for the technic of radium therapy employed in these cases a detailed report will appear in the next paper, but the basic principle may be given briefly. The writers found no mention in the literature of radium treatment of cataracts, but Flemming reported in 1911 a case of a malignant tumor of the orbit which was treated with comparatively small doses of radium. It was diminished to such an extent that the cornea became visible and then a senile cataract was found which was not influenced by the radium nor was the perception of light impaired. On the basis of this case it was decided that for the treatment of cataract as large quantities of radium should be employed as in the modern treatment of cancer with strong filtration so as not to injure the normal structures of the eye.

**A New Bacillus.**—Dr. H. Tissier has isolated a new bacillus from the must of beer and has found the same in war wounds and the intestinal flora. It is a mobile, spore giving bacillus, ovoid in shape, swelling slightly in the centre.

## A CASE OF DYSPITUITARISM.\*

By H. CLIMENKO, M. D.,

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Attending Neurologist, Montefiore Hospital; Chief of  
Neurological Clinic, Mt. Sinai Hospital.

This case is presented because of its multiplicity of symptoms; the noncorrelation of these to any single anatomical focus; and to emphasise again that, when the metabolism of the endocrine confederacy is disturbed, no single gland can be held responsible as sole cause of the clinical picture; that at least some psychotic symptoms may be the result of the metabolic disturbance; and, in some of the well advanced cases of endocrine disturbance, opotherapy is of no avail.

CASE.—The patient, R. W., aged twenty-two, a clerk, was born in Russia of Jewish parents. Family history was not obtainable. She came to the United States when seven and attended school until fourteen, showing average intelligence. She gave a history of having suffered from diphtheria, scarlet fever, whooping cough, and typhus. Menses began at the age of eleven, and during the first year she menstruated three times, after which, until eighteen, she menstruated regularly every thirty days with a duration of three days and a heavy flow. With the onset of men-  
struation the patient began to gain weight rapidly and at fourteen she weighed 225 pounds. At this age she had a tapeworm; her appetite was increased, and she had other associated symptoms. She was working as an errand girl in an office. Between the ages of fourteen and nineteen she lost fifty pounds. At the age of nineteen she claims she lost the tapeworm. At this time she began to suffer from headache located in the right temporal region. It became general, at times interfered with sleep. It still persists with some severity and in the same location. At the onset of the headaches the menses ceased for seven months and then returned in periods, regular, but scanty in quantity in contrast to the previous record. At present menstruation continues with some regularity. With the second establishment of the menses she began to lose weight, and today weighs, stripped, 145 pounds. At the age of twenty-one she was taken to Mt. Sinai Hospital, where she developed marked psychotic restlessness with suicidal impulses. She complained of general weakness and vague pains all over the body and pain in precordium. Her head is dolichocephalic in type. McEwen sign is negative, but even slight percussion causes pain all over her scalp. There is bilateral nystagmus and nasal edges of both optic nerves are hazy. There is a yellowish deposit in both maculae. Field vision is not contracted in either eye. All the other cranial nerves are intact. The nose is depressed and the tongue bulky. Papillae prominent. Pulse is 108 and regular. Systolic blood pressure is 100, diastolic 60. Both malar bones zygomae are protruded. There is pharyngeal innervation and intact reflex; chin reflex is present. There is hirsuties on the lateral side of the face. Panniculus adiposus is increased, but there are



FIG.—Patient showing marked dyspituitarism.

\*Read before a joint meeting of the New York Neurological Society and the Neurological Section of the Academy of Medicine, January 8, 1918.



no local accumulations of fat. The buttocks are of the male type. The growth of hair in the axillæ is increased; the pubic hair is of the female type, with a tendency to resemble the male, and there is a profuse growth of hair on the legs. Striæ are seen over the abdomen, probably due to loss of former adipose tissue. The palms are broad, fingers short with a tendency to taper. All the teeth in upper jaw are missing. The mammae are large and pendulous, reaching to about an inch from the umbilical line. Height is fifty-five inches and the circumference of the head through the occipital protuberance twenty and one half inches. Other measurements are as follows: From acromion to tip of olecranon, twelve inches; from there to styloid process of ulna, nine; from sternal notch to symphysis, thirteen; from anterior superior spine to internal malleolus, twenty-nine on both sides; from heel to great toe, eight; from one anterior superior spine to the other across abdomen, twelve and a half; bitrochanteric across buttocks, eighteen. Perspiration of feet profuse and offensive. Pupils react to light and accommodation and consensually. A marked tendency to hippus is noticed. The abdominal reflexes are lively, knee and ankle jerks normal. No Babinski. The general sensibility is increased so that light pressure gives pain, reminding one of Dercum's disease. The general sensibility is intact. The deep muscular sense, joint sense, postural and space senses are intact. Hypotonus is noticed at knees and elbows. There is no past pointing of any extremity. Bárány test is negative. All laboratory tests for blood, serum, cerebrospinal fluid, and urine are negative with the exception of a marked polyuria, the patient passing at a time three to four thousand cubic centimetres in twenty-four hours. The specific gravity of this urine averages 1015. There is also a marked sugar tolerance, so that 300 grams of glucose on a fasting stomach give no evidence of sugar in the urine. The x ray report showed an increased intracranial pressure without any changes at the sella turcica. Organotherapy in all forms and combinations and doses was tried in the treatment of this patient, but without any notable effect.

Analyzing this case, we see that we are dealing primarily with a marked pituitary disturbance which would best be called dyspituitarism, for the patient shows signs of both hyperactivity and hypoactivity of this gland. It is especially worth while noticing the fact that with the establishment of the menses, contrary to the usual rule, the patient began to gain rapidly and tremendously in weight so that in a short while she weighed, as seen above 225 pounds. This may be explained by a lack of activity of the thyroid gland. It is, however, well known that the thyroid increases in its activity at the beginning of menstruation. It may also be argued that the rapid increase of adipose may be due to an inactivity of the pituitary, but here, too, the menses would ordinarily be scanty instead of profuse as they were so that this case does not fit in well with all known theories of endocrinology in the correlation of glandular activity.

It is also worth noticing that with all that increase in weight the patient was rather bright mentally; she was able to keep up in her class at school and, later, held a rather responsible position. At nineteen another change took place; menstruation ceased completely and she developed symptoms that undoubtedly pointed to pituitary involvement; again, with the reestablishment of menstruation, which was this time scanty, she lost weight rapidly and massively, an indication probably of thyroidal hyperactivity; but this time her psyche also changed and instead of being a useful member of society she became morose, hypochondriacal and even suicidal, and is still this way after four years, with perhaps

slight improvement as far as her suicidal impulses are concerned.

Of course, one may argue that the nystagmus, the headaches and the increased intracranial pressure, together with such changes in the eye grounds, might be due to a frontal neoplasm, but this theory must be dispensed with, since for the last four years the optic nerves not only have not increased in their pathological changes, but on the contrary seem to have cleared up and her headaches today are not as severe as they were three years ago. Her psyche, too, is somewhat improved. Besides the pituitary, thyroid and ovarian glands, the adrenals seem to be involved; her rapid pulse, as well as the marked disproportion between the systolic and diastolic blood pressure, can be explained only by unbalanced adrenal efficiency.

252 EAST BROADWAY.

## A PLASTER OF PARIS BANDAGE ROLLER.

BY WILLIAM H. BENNETT, M. D.,

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Every one who has practised the making of plaster of Paris bandages by rubbing the plaster in by hand, and rolling a few inches and then rubbing more and rolling again, will appreciate the value of a simple machine that will fill and roll them almost as rapidly as a pain bandage can be rolled. At the Children's Seashore House, Atlantic City, about a thousand plaster of Paris bandages are made and used annually. During the past six months all used have been satisfactorily made with one of the machines described.

The machine may be of any convenient size, made to roll one or more bandages at a time, or a long roll to be afterward cut into smaller bandages. It can be used either by hand or by power. The following is a desirable model to roll one or two bandages at a time by hand and is typical for all others. It consists of a tray of wood eighteen inches long, twelve inches wide, and two inches deep. At a distance of ten and one-half inches from the front end is fastened on each side a perpendicular block three and one-half inches wide by five inches high. In the centre of each block is a vertical slot two and one-half inches deep, and in these lie an axle with a crank at one end. The axle is square except where it rests in the slots where it is rounded. At the farther end of the tray there is on each side an upright eight inches high and one inch wide, and extending across from these two uprights there is a bar. The upright and the block with the slot can be made stronger if on each side of the tray the two are made out of one piece. A short distance in front of the table there is a block extending from side to side of the tray. This block is one inch wide on the top, one inch deep in the front, and one and one-half inches deep at the back. The bottom is therefore bevelled at an angle of about 35°. This block is made partially revolvable by means of eccentric trunions extending into the sides of the tray. The trunions of this block are so placed that the bottom of it is always raised

above the floor of the tray at least one-eighth of an inch, and by revolving forward, the distance can be increased for convenience in inserting bandages. The back of it is so blocked by a strip of wood that it cannot be revolved backward, but can be forward. Extending from the front edge of the tray and secured there by being wrapped around a tightly fitting strip of wood is a piece of muslin the width of the tray, which extends from the front underneath the bevelled block and underneath the bandage, up over the crosspiece on the uprights at the back, and falls to the level of the bottom of the tray. The distal end of this muslin holds in a hem a piece of pipe or other weight so that it is always kept taut, and always hugs the bandage, increasing in size as it is rolled. The front edge of the tray is pierced with holes into which can be placed pegs or screw eyes which act as guides for the crinoline as it is fed to the axle. To operate the machine the crinoline should be torn in strips the proper width and length and rolled. These rolls can be placed for convenience in a box with compartments and held on the lap of the operator. The free ends

can be lifted out, and the bandages easily removed in the usual way. A readily removable pin passed through the axle support above the axle prevents the axle from rising out of place while it is turning. The machine should be run evenly and without any jarring which might shake the plaster out of the crinoline while the bandage is forming. The plaster should be well heaped up in the tray in front of the bevelled strip, and there should always be a surplus between the top of the forming bandage and the muslin. To avoid tearing of the crinoline the plaster should be freed from lumps and splinters by sifting.

The machine is dedicated to the Red Cross Society, and the inventor freely offers all rights in it to that society.

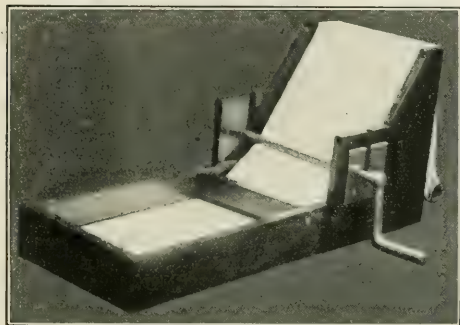
### MECHANICAL COMMUNITION OF FOOD IN THERAPEUSIS OF ACUTE ALI- MENTARY DISTURBANCES OF INFANCY AND CHILDHOOD.

#### *Preliminary Report.*

By HARRY LOWENBURG, A. M., M. D.,

Philadelphia,

Pediatricist to the Mount Sinai Hospital and to the Jewish Hospital, Philadelphia, etc., etc.



A plaster of Paris bandage roller.

are fed between the screw eye guides, underneath the bevelled block, and around the axle. The tray is heaped with plaster of Paris on top of the crinoline. As the crank is turned and the axle engages the end of the crinoline, some of the pile of plaster in the tray is drawn on the top of the crinoline under the bevelled edge of the strip, and by it pressed into the meshes of the crinoline, while portions of it carried up by the forming bandage fall over the top into the muslin which at all times closely hugs the forming roll of bandage. This excess plaster further fills the meshes of the crinoline from the under side, while the muslin, always in contact with the under side of the bandage, prevents any leakage from the crinoline of the plaster which has been pressed into it by the bevelled strip.

With a one or two bandage roller one nurse can make a small bucketful of bandages evenly rolled in an hour, each holding as much plaster as if made by an expert in the old fashioned, laborious way. A crippled girl of sixteen who formerly made many bandages for the institution at the rate of one in fifteen minutes, now makes them on a one bandage machine in less than two minutes. By means of the slot the axle with the bandages on it

It is scarcely ever possible to hazard an opinion with any certainty that a particular result was directly dependent upon a definite therapeutic maneuver. The difficulty increases when recorded observations are purely clinical and lack laboratory confirmation. The trend of modern medical thought is toward chemical and biochemical investigation and the value of clinical data is naturally discounted unless the latter can bear the searching scrutiny of the cold eye of the laboratory. And this is as it should be. It does not follow however that clinical conclusions should be discredited or discarded while they await laboratory proof. It is also true that, when with almost unfailing regularity, certain definite results follow certain definite procedures, one may be forced to conclude that dependence of the former upon the latter is real and not chimerical. Such has been my experience with the treatment of acute alimentary disturbances in infants and in older children with reference to which I have evolved a method of procedure which has at least apparently been responsible for consistently splendid results.

Diarrhea, or an acute alimentary disturbance, may be defined as a condition wherein there is present, as the result of stimulation of the muscular fibres of the gut, either direct or indirect and of the muciferous glands of the lining membrane, an increase in the peristalsis and of the fluid contents of the intestinal tube. The local effects consist mainly in an increase in the number of bowel movements and of a change in their character. These various local effects, depending of course as to their intensity upon the nature of the irritant and the duration of its action, occur directly as the result of the irritation, whatever its nature. They are identical to the effects which ensue when the Schneiderian membrane is irritated by snuff or by irritating vapor. Congestion is followed by an increase in the nasal



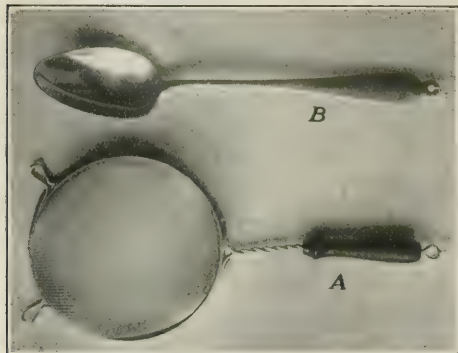
secretions. The "nose runs." So too one may say, "the bowel runs." The secondary, systemic or remote effects depend upon the degree to which the "bowel runs," in other words, upon the number and nature of the discharges and the duration of the condition. The greater the number of discharges the more rapid and severe are the systemic features which may be described as slow or rapid systemic dehydration and demineralization entailing more or less rapid loss in weight, more or less diminished kidney and skin function, more or less debility, irritability and, in severe cases, tetany, convulsions, depression, coma, shock, etc. Systemic toxemia, glycosuria, albuminuria, rapid, feeble pulse and high temperature vary as to their presence and intensity as the nature of the changed intestinal contents and as the degree and rapidity of its absorption into the circulation.

The irritant which causes the diarrhea may include various agencies, some of which act locally and others both locally and systemically. Most commonly these are found to be the various food elements themselves or foreign agents attached thereto, notably bacteria, which act most often, not

restoration of that function to normal, yet that treatment which recognizes the individual merely as a gastrointestinal tube and is directed only toward the treatment of the local condition must fail. If the physical character of the food can be so changed that it will be acceptable to the intestinal glands with very little effort, and, on account of this change, to the absorptive apparatus, and if, meanwhile, the cause of the diarrhea be removed, not only will the latter disappear but the nutritional balance will be conserved.

A common error, which leads to disastrous results or at least to frequent relapses is that a return to milk or to milk preparations is made too soon. All authorities seem to agree that the cause for the acute alimentary disturbance resides somewhere in cow's milk. In spite of this, based perhaps upon the trite expression, with reference to the perfection of milk as a food, no time is lost to attempt as early a return as possible to some form of milk. It is at this juncture that the fatal error is often made, largely on account of our inability to successfully change the physical character of this food and also on account of the inexperience of the individual physician. With reference to the former it may be stated that the protein of the milk is its only ingredient whose physical nature is readily susceptible to change. Therapeutic use of this fact has been made in the employment of buttermilk and of Finkelshtein's Eiweismilch. Reference will again be made to this fact. The fats and sugars, while reducible in quantity cannot be successfully, at least from the standpoint of clinical therapeutics, changed or entirely eliminated. Another fact of practical importance is that chemically the various individual food elements are identical wherever they are found. Physically, however, they are decidedly different. The curd of cow's milk is identical chemically, as far as we know, with that of mother's milk and that of the milk of goats and of asses. The same is true of the fats. Physically they are different. It is the writer's opinion that a failure to grasp this fundamental fact has led to such wide divergence of opinion between the American and the German School of Pediatrics with reference to the etiologic influence of cow curd upon the alimentary disturbances of infancy and consequently to much confusion in reference to therapeutics. One may feed incalculable quantities of cow's curd as found in buttermilk or in eiweismilch without causing irritation, in fact allaying it and yet one may inaugurate considerable disturbance by feeding a comparatively insignificant quantity of mechanically or chemically unchanged curd. Therefore when one speaks of the etiologic influence of curd upon the diarrheas of infancy it becomes necessary to designate the physical state in which it is fed.

Likewise cellulose, a hydrocarbon, as it exists in wood is not identical physically with the same substance found in the delicate fibre of the orange or in apples, peaches, plums, potatoes, etc., and its caloric yield and food value are just as great. It is its physical nature which makes it unacceptable, as wood, to the digestive apparatus of man. One could readily conceive however of this substance being so changed, physically, by mechanical and



A, fine double meshed strainer through which food is pushed several times to insure its fine comminution by spoon.

directly upon the intestinal mucosa itself, but upon the food substances. These are thereby so changed in character that they assume the rôle of foreign irritating substances. Thus, a particular infant may be perfectly capable of digesting and assimilating a certain combination of fat, protein, sugar, and salts until the physical nature of any one or all of these various ingredients becomes changed through some external agency or the tolerance of the individual becomes depressed through some extracorporeal influence, summer heat, for instance. It appears useless, therefore, in the main to discuss etiologic relationship of fat, protein, or sugar to acute alimentary disturbances in so far as any one of them may be regarded as the primal cause. Depending upon the action of the individual to them, any one of them or all of them may be, as a consequence of a change, in their physical makeup, or as just stated, in the individual's tolerance.

If therefore we agree that diarrhea results from the disturbed function of the intestine, it follows that treatment should have for its object the speedy



chemical processes as to make it easily digestible and highly nutritious. So examples could be multiplied innumerable. These however sufficiently illustrate the fact that the digestibility and absorptivity of any substance depends finally upon its physical makeup. Chapin, although his references are largely directed toward the influence of the curds of the milks of various species upon the future development of their respective digestive apparatuses, has for years contended that the physical nature of the food is of great importance. Thus he sees a reason why the milk of one species clots in thick tough masses, another in gelatinous form and still another in fine feathery flocculi. If this be true in a developed mental sense, there is no reason why its influence should not logically determine digestive, absorptive and consequently nutritional problems. This can be proven clinically. It further follows that if the system requires fat, protein, sugar, and salts it matters not from whence their source. This has not been sufficiently appreciated in reference to the feeding of infants in health and particularly in reference to the treatment of the acute and subacute alimentary disturbances.

I would not lightly dismiss the importance of food chemistry. Without chemical interchange it is recognized that life itself could not continue. It is intended, however, to emphasize the fact that with reference to digestion the real purpose of chemical interchange is to so alter the physical nature of food that it ultimately will become suitable for absorption and assimilation. We have a simple but forceful example of this in the first processes of the digestion of protein. Coagulated protein (by heat or by ferment) is insoluble, nonabsorbable, nonassimilable, etc. The chemical changes which ensue as the result of the chemical activity of pepsin and of trypsin transform it into soluble, absorbable peptone. By further chemical processes it is found in the blood as a part of the soluble proteins of the complex substance. Such examples may be innumerable multiplied and in reference to the fats and carbohydrates as well, all illustrating that the ultimate purpose of food chemistry is to alter the physical state of the aliment.

It also appears that much may be gained in the conservation of infant energy and nutrition, in fact in infant life itself, if extra corporeal changes may be accomplished in the physical nature of the various food elements which will render these more acceptable to the organism, less irritating and at the same time not diminish their nutritional value, in fact, increase it. This finds practical demonstration in the mechanical comminution of food. The idea is not new. Its method of accomplishment for practical purposes will be found to be more than simple. It permits us to feed to sucklings even substances which in their unchanged state are correctly regarded as noxious. This in itself provides us with a sense of security in handling the acute alimentary disturbances of these patients in whom, up to now, we have believed that a maintenance of nutritional balance is absolutely dependent upon some form of milk feeding. If it can be proven that this is not so, we are at once made independent of milk and its derivatives. This is another of the important logical deductions to which reference was made and it pro-

vides almost limitless possibilities in managing the various gastrointestinal and nutritional abnormalities of the young.

*Treatment.*—I divide the treatment of diarrhea into that for older children, *i. e.*, those who have teeth, or are a year or more old, and, second, that for sucklings, (a) artificially fed babies, (b) breast fed.

The quickest and best results by the method to be described are obtained in the first class, although the fact that the infant is an artificially fed suckling by no means precludes its use. My experience, however, with this type of patient, though encouraging, has not been as extensive, since there are other means at hand which are of service as well, and to which reference will be made.

*Children with teeth; a year or more old.*—A hunger period, or starvation of twenty-four to thirty-six hours, is indicated. This removes the cause of the diarrhea, *viz.*, the milk. Depending upon the infant being very toxic, castor oil is or is not administered. It is usually not needed, as, during the hunger period, the bowel will empty itself on account of its irritating contents. If high fever, drowsiness, and other evidence of toxicity indicate the employment of castor oil, a large dose is necessary. Never less than one half of one ounce should be given if the temperature persists, and a second dose may become necessary. If the child struggles much, or vomits, the oil may be injected by means of a large ear syringe through a small catheter passed into the stomach through the nose. During the hunger period the child receives nothing by mouth save saccharated tea (one grain of saccharine to the quart of tea). This is freely administered at room temperature, irrespective of the presence or absence of vomiting. It is usually acceptable, well retained, and thus supplies fluid, and is very slightly astringent. At the end of twenty-four hours, usually the characteristic "tea stool"—a small, dark brown, greenish mucous deposit—is obtained. From this point the character of the stools is practically ignored. This is an important clinical fact, for my experience teaches me that the physician frequently becomes vacillating and uncertain when the desire to see normal stools becomes uppermost in his mind. His zeal impairs his good judgment, and is responsible for too frequent, and usually erroneous, changes in the food. Should vomiting be troublesome, a single lavage with warm bicarbonate soda solution (dram one to the pint) may suffice, or one twentieth of a grain of calomel well triturated with a few grains of milk sugar should be placed dry on the tongue every fifteen minutes for about ten doses. During this time absolutely nothing, not even water, is given by mouth. The last dose is followed by a half ounce of castor oil, as above stated. Those cases which vomit considerably are the very toxic ones. After the oil has acted, tea feeding is inaugurated. Counter irritation with mustard over the epigastrium is often very serviceable. I believe tea to be of greater service and less irritating than dilute cereal or albumen water, during this period of treatment. Otherwise medicinal treatment is not prosecuted except in those cases wherein the intestinal discharges are highly acid. The following is antacid and astrin-

gent, and is of much assistance, besides being scientifically correct.

Ex. tincture kino, ..... ℥ x-15;

Mist cretae, ..... dram i.

Freshly made, without sugar. Four times daily, before food.

The most important part of treatment, viz., the dietetic, is now inaugurated at the end of the hunger period. Four meals are given daily, as follows, the hours indicated being subject to change according to the routine of the household. The preparation of the various ingredients will be discussed following the elaboration of the diet.

6 a. m.: Fat free broth (about six to eight ounces).

10 a. m.: (a) Fat free broth (six to eight ounces) plus sieved rice or farina, or cream of wheat (about two tablespoonfuls), or (b) fat free broth plus a two minute egg rubbed into a paste with pulverized bread crumbs made from stale bread dried out in an oven.

2 p. m.: Fat free broth (five to six ounces) plus one half of a large, or one whole small, mashed, sieved, baked potato, plus two teaspoonfuls of one or two different kinds of mashed, sieved greens (lima beans, celery root, squash, spinach, boiled lettuce, carrots, beets, etc.) plus one teaspoonful of finely cut and sieved rare roast beef, lamb chop, chicken or fish, plus dried out bread.

6 p. m.: Fat free broth (six to eight ounces), plain or with two tablespoonfuls of mashed, sieved cereal.

Between 6 p. m. and 6 a. m. nothing is fed unless it is urgently demanded, or needed to conserve strength. Then fat free broth or weak tea may be employed. Weak tea may always be given between feeds as a drink.

This diet may or may not show an immediate effect upon the stools. As a rule it does, the bowels becoming constipated. Not all children, especially those who are still on the bottle, take to it kindly, for the reason that the feeding of new substances to children in a new way is largely a matter of establishing a new habit, and a matter, therefore, of educating the individual. Force should never be employed; tact gives better results. For those who will not or can not take food except through a nipple, the difficulty is not increased. The greens may be rubbed into a smooth mass with the potato, and then the whole is mixed or agitated with six to eight ounces more of broth. The entire concoction is fed through a nipple. It flows readily, and, should difficulty be experienced, the hole of the nipple may be readily enlarged.

When the stools are normal, or nearly so, and considerably reduced in quantity, a cautious return is made to milk feeding, as follows: One of three kinds of milk, variously modified as will be indicated, are employed, viz.: Skimmed milk, albumen milk, or butter milk. At first the milk preparation is substituted for the 6 a. m. feed, and a few days are allowed to pass, and the effect noted. If no disturbance occurs, another milk feeding is substituted in addition for the 10 a. m. feed, and again the effect is noted. Finally, the 6 p. m. feed is replaced by a milk preparation. Subsequently, the strength of the milk feed is increased, as will be indicated shortly, until the proper strength for the

normal individual is reached. Milk is never given with the 2 p. m. feed. If demanded, one milk feed may be given during the night.

Of the great value of skimmed milk in infant feeding, I have written elsewhere.<sup>1</sup> In the present instance the milk is first given diluted one half or two thirds with water, with the addition of one teaspoonful of flour or powdered arrowroot added. The whole is boiled for ten minutes, and sufficient boiled water added so that the final bulk equals one pint. A pinch of salt is added, and the mixture sweetened with one half of a grain of saccharin, and, later, sugar is gradually added up to five per cent. Cane sugar is to be preferred. Gradually the water is reduced until plain, undiluted skimmed milk is employed. The saccharin and sugar, and the flour or arrowroot are gradually reduced and finally omitted, the milk being boiled for five minutes, with constant whipping. A gradual return is now made to boiled, undiluted, whole milk.

Skimmed milk may be employed with "Laroson" and sweetened with saccharin. One small package (two thirds of an ounce) of this is added to a pint of properly diluted skimmed milk, boiled ten minutes and strained. It is sweetened with saccharin. Unfortunately, on account of the war, this valuable preparation cannot now be secured. Albumin milk cannot now, either, be purchased, on account of the war, nor is it easy to make. A very valuable substitute is found in buttermilk. Two teaspoonfuls of flour are rubbed up with one pint of water, and boiled ten minutes. The water of evaporation is replaced; salt is added. The solution is allowed to cool. One pint of buttermilk is added, and the mixture is brought to the boil with constant stirring from the moment heat is applied. This mixture is employed to supplant one broth feeding at a time, as the skimmed milk feeding was employed. Gradually cane sugar is added, one dram at a time until eight drams are employed to the mixture above. Of course the saccharin is eliminated.

Later, the buttermilk feeds are replaced by boiled skimmed milk undiluted, and later by boiled undiluted whole milk.

Results with this treatment have almost uniformly been prompt. In neglected cases a little time and patience has been necessary—and also courage, especially in those cases in which the stools contain blood. Here the diet is not changed from that given above. A daily intestinal irrigation of one half of one per cent. to a one per cent. solution of tannic acid (temp. 100°) has seemed to do good. Large doses of bismuth are useless. In combination with the kino and chalk mixture, five to ten minims of paregoric have seemed to be of service. But the necessity for the use of this agent seemed to arise in very rare instances indeed, and only in long standing cases.

*Preparation of foods.*—The feeding of solid substances to young children, and even to sucklings, suffering from acute alimentary disturbances, as indicated in the diet above, may only be successfully accomplished if these substances are introduced into the intestinal canal in an acceptable form, so that they may be readily attacked by the intes-

<sup>1</sup>A. Clinical Consideration of the Etiological Importance of Fat, etc., H. Lowenberg, *Therapeutic Gazette*, July 15, 1917.



tinal juices. This can only be brought about by the thorough physical comminution amounting practically to pulverization of all animal and vegetable substances supplied. It has been found clinically that foods thus fed become not only nonirritating to the intestinal mucosa, but, by an increase of the adhesive attraction between the comminuted particles, tends to form smooth and homogeneous masses from which moisture is readily absorbed by the intestinal glands, thus promoting the tendency toward constipation. In order to promote this adhesive tendency to its utmost, it is necessary that the diet contain not only sufficient starch, but a slight excess (*i. e.*, an excess over the amount thought to be digested by the individual). This is provided for by the potato or rice, etc. This mechanical effect of food prepared in this way is by no means its least important action in accomplishing the cure of diarrhea. Thus food may be utilized not only for its nutritive effect, but for its curative influence as well, and it can be readily demonstrated by microscopic slides that much of the comminuted food passes out unchanged, *i. e.*, nondigestion, but not indigestion (fermentation, putrefaction, etc.), has taken place. If this same bulk of food be fed uncomminuted serious irritation and fermentation, with an increase in the diarrhea, would ensue.

Having adopted food comminution as an important therapeutic maneuver, its method of accomplishment is the next important step. I have found sufficient for my purpose a very fine meshed wire tea strainer. That is why I used the word "sieved." The attendant is instructed to cook the food as indicated below, then to mash it well and push it two or three times through the tea strainer by means of a pusher or a spoon. The substances are fed singly or are all incorporated into a mass and fed dry or moistened with the broth. The whole process is not unlike that adopted by an apothecary in the manufacture of an ointment. The starch is cooked—either the potato or the rice—and well mashed. This is then pushed several times through the strainer, and may be likened to the base of the ointment. The greens are mashed and sieved once or twice, and by mixing are incorporated with the starch. They may be likened to the various medical ingredients of the ointment. Having by thorough mixing obtained a homogeneous mass, the entire substance is again pushed through the tea strainer. The meat or fish is treated in the same way, and may or may not be incorporated with the mass. It is now warmed, and may be partially moistened with the broth, and warmed, and thus fed, or may be fed dry, and the broth fed separately, or a sort of puree may be prepared by incorporating the entire amount with the broth and then feeding it with a spoon, dropper, or through a bottle and nipple.

*Fat free broth.*—One pound of meat, preferably mutton; chicken, lamb or beef will do. One quart of water. Boil until meat is tender. Strain. Ice. Remove fat. Add sufficient boiled water and equal one quart. Salt to taste.

*Egg.*—Bring to the boiling point, in a saucepan, sufficient water to cover an egg. Remove from the

source of heat. Allow egg to remain immersed in this water two minutes. Open at once.

*Cereal.*—All are cooked three hours in plain water. Strain. Salt and taste. Push several times through a fine wire meshed tea strainer.

*Baked potato.*—Wash clean. Punch full of holes with a fork. Dampen the exterior. Roll in salt. Bake quickly in a very hot oven. Open at once. Mash well. Push several times through a fine over-meshed tea strainer and employ as previously indicated, alone or incorporated with mashed, sieved greens, dry or moistened with broth, or mixed with the entire amount of broth allowed for the meal.

*Greens.*—Cooked until tender in salt water. Strain, wash and remove skins. Push through the strainer, and feed as above indicated.

*Meats.*—Broiled or roasted, rare. Chop fine. Push through the fine wire or tea strainer.

*Treatment of diarrhea in sucklings. A. Artificially fed.*—My experience with infants under one year are as yet to immature to offer any positive proof that the treatment outlined above for older children is applicable to them. However, in those few instances in which it has been employed, my results have been good. Where several teeth have been erupted I would not hesitate to recommend it. In other infants the following procedure will yield good results. The preliminary treatment is identical to that previously described with reference to starvation and purgatives and other medicines.

Following the hunger period and tea feeding, suitable amounts of one third of a pint of skimmed milk (skimmed at home) and two thirds of a pint of water, boiled with two thirds of an ounce of Larosan and sweetened with one half of a grain saccharin, are fed four to six times in the twenty-four hours and give the best results. An immediate change for the better is usually noted in the stools. The strength of the milk is gradually increased and the Larosan omitted until the normal food is reached. No unboiled milk, however, is ever fed. Larosan is expensive and now unavailable, therefore, use is made of the butter and milk mixture with flour, sweetened with saccharin as previously described. Thus may be fed far into convalescence, replacing the saccharin by gradually increasing amounts (one dram up to eight drams to one quart mixture) of cane sugar or dextrimaltose.

Finkelstein's albumen milk is just as serviceable, but is difficult to make. When returning to diluted whole or skimmed milk preparations the change is made abruptly, *i. e.*, a feeding is omitted and from thence the suitable milk formula is substituted for the buttermilk mixture, the albumen milk, or the Larosan preparation, whichever had been employed.

All of these preparations simply act upon the assumption that, regardless of the initial cause that produces the change in the intestinal contents, the direct cause of the irritation and hence the diarrhea is an excessive acidity of these contents produced by changes in fermentation in the fat and sugar of the milk. Hence, by withdrawing milk, the cause is removed. The period of starvation with or without purgatives permits the bowel to empty itself of the offending substances. These food preparations contain excessive amounts of finely comminuted calcium paracasein (curd) which not only acts me-

chanically in allaying irritation but favors the production of putrefactive bacteria, hence alkalinity, as the acid producing organisms require carbohydrate and hydrocarbon. These substances are only gradually added as tolerance seems to be reestablished during the period of convalescence. The chalk and kino mixture favors the development of alkalinity as well by neutralizing the acids of the gut and by the astringent effect upon the muciparous glands.

Breast fed babies. Starvation. Tea feeding. Purgative rarely. Chalk and kino mixture. Return to breast feeding at four hour intervals. Hydrotherapy.

262 SOUTH SEVENTEENTH STREET.

## ANALYTIC VIEW OF THE PSYCHIC FACTOR IN SHOCK.

BY GEORGE M. PARKER, M. D.,  
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By a process of reasoning, for which, in its human quality, Hume cherished little respect but much affection, we have looked upon the psychic results of a physical damage or trauma inflicted upon the person as singularly damaging. This has appeared to be the instance irrespective of the degree of the trauma. Yet, with a naive inconsistency, society has always selected a series of traumata, designated as punishment, graduated in relation to its hierarchy of morals, and has inflicted these upon the persons of those about it. In the visitation of these selected traumata we have assumed the function to be remedial, constructive, and not destructive. This happy effect we believe to be accomplished by way of a consciously communicated conviction to the recipient that such traumata are designed for his ultimate and higher good. It must be said that such a belief is not constantly accepted nor participated in by the recipient. At least, this he declares by word of mouth and deed. Yet something of truth must reside here, else punishment, in all its forms, would long ago have been completely abrogated. We are far, of course, from believing that specific punishments have checked specific tendencies. Nor, indeed, do we possess the slightest faith in the conscious salvation of the sinner, thus achieved. On the other hand, we do know that something, included within the general notion of punishment, effects certain results and changes within the personality. So far as our limited vision permits, we use two factors; the possibility of an outside situation effecting a modification, and the presence within the individual of something which is modifiable. We now realize the most powerful external agent is neither the hand of God nor the fist of man, but reality. What is transformable within seems never to be a specific and single item of conduct. It is neither drink nor lust nor theft nor deceit which is singly erased. The change, indeed, is so much larger, so much more profound, that we fear to recognize its possibilities as existing within the range of human performance, and, for safety's sake, imputed it to God or some agency outside ourselves. We are thus relieved from imminent danger or ourselves performing this, for are we not miserable creatures who may never aspire to divinity?

In thus giving a thoroughly moral introduction to a discussion of the psychic effects of physical trauma, we might seem to have created a split as wide and deep as that separating the reasoning applied by science from that engendered by theology. Yet in our application to man, we are becoming aware that he is a creature growing well beyond the bounds of causality, and living, achieving, and progressing in a way that reminds one but little of scientific method. In the field of morals, where his attempts at progression have been laid, there is to be discovered a large deposit of what we have referred to as the antithesis of causality. One would hesitate long before stating that the most violent infliction of reality had caused an aspiration. There is nothing about poverty which could, in a strict responsiveness, lead to more than an immediate abatement of it. There is nothing in a gutter which, in strict relationship to its evil and malodor, would lead to more than a temporary or immediate arising from it. Yet we know the transcending limits to which former dwellers in both these areas have arisen. But no one can decently call this a causality series. It has to do with something which cannot be there included. Perhaps no man has failed to be edified, openly or subtly, by the tales of those who in a second have faced death, yet returned. To be told that the whole of life, under these circumstances, flashes suddenly on the screen before one, in some way stimulates. From our universal interest we may be sure that a truth resides here, but one so large that perhaps both the narrator and his hearers miss it. Something in reality at the moment of danger, with its physical infliction, shocks us. Reality, at this moment, strikes as at no other. Can we draw now an analogy between its effect, under circumstances of shock, and that which culturally we have, long and vaguely, been aware of in the application of selected traumata to man? If the scales fell from the eyes of Saul of Tarsus under circumstances described in Holy Writ, with the results therein detailed, may we be justified in suspecting that a similar resultant might be obtained in a railroad day coach where suddenly one of those accidents took place of which every traveler takes his chance? Psychologically, one effects here apparently an immediate comparison. Saul's conversion is described as eventuating with no sudden infliction of an outer reality change. Yet it is only because those who described this occurrence immediately imputed it to God, that we fail to have the causative relationship detailed, which led to the major transformation of personality. But it would be remote from our end to suggest to pathographize the great disciple. If, however, we may discover a similar, though much disguised, resultant in a lesser personality, we may thus at the same moment both better satisfy scientific canons from the careful examination of present material, and placate those of a religious temperament who see the interest of the Almighty vested in a sparrow no less than in man.

A young woman was traveling one evening to her home. She had been away for a year in another city, which had witnessed her initiation into the world as a wage earner. Up to that time she had lived with her mother, where not all the circumstances of her life had been entirely happy. When she was twelve years old her father and mother



were separated. He had gone far from home, and, much later, had remarried. She had been always devoted to him, nor had he failed to remain as her ideal. She had not seen him for a number of years, nor had she met his wife, whom she thought of always as her stepmother. There had, however, been an active correspondence carried forward, at first largely by the girl herself. Her own mother, whom she physically resembled, had seemed to her daughter always to have been less fond of the girl's father than seemed proper or expected. Indeed a major part of the blame for what later had transpired seemed to have been laid at her door. Yet this had destroyed no outer evidences of affection or feeling, although there was evident to the girl a lack of sympathy and affection.

In her year away from home she had succeeded admirably in her business, which was of a kind demanding concentration, exactness, and much alertness. She had become ambitious; had striven to perfect herself, and, as a further development had taken up music after hours and was working with much pleasure upon it. Socially she sought those older than herself and valued men not only older in years but especially those accomplished, experienced and cultured. The personality thus issuing seemed one much better than that usual in her class of life. A late cultivation of graceful manners of demeanor, probably represented that which she described as to be so much desired under the term of "poise." A certain personality developed, with a clear coincidence with what Jung describes as the essence of personality as enclosed in the term "persona," meaning a cloak worn by the actor to designate a given part selected for portrayal by himself.

On her trip there was a collision in which nothing more happened than that many were thrown from their seats; the car was not derailed. The girl herself was thrown forward, striking the cushioned back of the seat in front of her with her jaw. It did not cut her lip nor her tongue nor damage jaw nor teeth. She was not stunned, simply shaken and saw about her many others similarly affected. The crash and jar, however, were very considerable. She was four or five hours late in arriving home. A reasonable fatigue was produced by this, but examination by a physician upon her arrival revealed nothing. Her first night was not disturbed, but on the second she began to have that which she describes as nightmares. These have caused her the largest concern of anything eventuating from the shock. She significantly relates them to the other changes which soon began to appear. There supervened a diffuseness of attention, which is especially disturbing as it concerns her work. She cannot concentrate; there are many dreamy states from which, with increasing difficulty, she pulls herself out, yet which, in their constant recurrence, make many of her reactions to those about her inapposite and, at times, stupid. She takes no interest in her work. People appear extraordinarily trivial, their remarks and their lives futile. A kind of depression generally envelopes her, with a distinct desire to be alone. A constant fatigue is in evidence, but there is a good deal of motor restlessness; she has become irritable, especially with children, of whom

she was very fond, and she feels peculiarly the loss of her highest prized possession, poise.

It would be difficult to define here any definite damage, yet there has been some kind of a disability inflicted, evidenced in work and behavior. Because it lacks the objective qualities of a fracture or a contusion constitutes no reason why we may not see it quite as objectively displayed here, in her difficulties of adjustment. Something has happened, dating from the accident, quite as real as that which occurred to Saul of Tarsus in his conversion. Yet if the actual physical damage, as a *causa*, seems to be eliminated by way of the absence of any physical series of symptoms, is the accident as an efficient cause to be erased? Is it not possible that that to which we have given the term of "shock," may have contained those suddenly appearing reality elements which are seen to possess so profound an effect in producing psychological modifications? Obviously we can study this only with profit from that viewpoint which may embrace a closer inspection of the psychic alterations. Nor are these to be understood from an inspection of symptoms, where the most astute scrutiny issues only in suppositions. We have, however, in her dreams something of an importance which she herself has dimly recognized. Whatever unconscious phenomena reveal the real psychological basis of her present condition, our access to this lies in the dreams. Her earlier nightmares were of a kind in which, not the actual collision was recreated, but rather bizarre arrangements presented, as of subway trains running free upon the street surface, as motor cars, repeatedly escaping a crash. Obviously, if the particular accident stood as the sole expressor of a threat, a danger, this might and would have been reproduced in the unconscious. Yet it seems as though the unconscious were concerned with something more imminent. The threats of disaster are daily occurring in the place of her work, not in the locale of the accident. They are localized in cars in which she travels daily, yet upon the street surfaces where they never travel, but upon which she walks. Something, then, in the subway and on the street conveys a threat; displays an accident from which she escapes. Something which usually is below threatens above. Here is the danger for her which the dream indicates. It is a short step to arrive at a suspicion that what is feared is something in herself; it is she, in the subway and in the street, who fears a crash in herself. Yet this is quite unconscious, for there have been no leaks, displayed in timidities or apprehensions in traffic since the accident. So far as she is aware there is no increased reaction to outer disturbing noise or other stimuli. Now, in the apprehensions of the damage in herself, one might readily go further in a definition of kind, for the figures in the dream are sufficient for this if one chooses to take them as a sign or token of primitive processes. Our use, however, coincides more with Jung in imputing to the figures in the dream, a positive value, one which conveys to the dreamer a definite meaning possible of application. Yet the crystallization of the danger is not arrived at here, save in disguised forms, where a considerable analytic aid would be necessary in amplification through association in order

that the patient should arrive at any degree of a conscious appreciation of it as a whole. Whatever obtains is something obviously of the unconscious; but it is disturbing, and the affect from the dream persists vaguely into waking life. It seems to be of some significance.

It is presumable that, if this dream be built upon a thought process such as we have predicted, this will further expand itself or in some way so develop that the patient may arrive at conscious modes which may closer approach a solution. In a dream, selected by her as one standing out, there is a little party with several men, who she latter left upon their invitation to a card game, urging that she had no luck at cards. Returning with a vague apprehension, she discovered that a man had wagered away her rings given to her by her father. The dream closed as she sought in shop after shop to recover these, yet never finding them. These three men were all older than she, an age which she favors. They were, when fused into a single personality, the man of the world, the successful man and dilettante. Yet actually no single one of these has pleased her. Hence, probably, the fusion represents that tendency which one sees so frequently in the woman who seeks a husband made to order. Yet there must be some pattern for this production which she seeks to love, for, unlucky in cards and lucky in love, her response to the playing of cards, signifies that some such motive is here present. Yet she leaves them and goes beyond. There is some goal other than the composite. Her apprehension about her rings, her father's gift, displays now the goal a trifle more plainly. It is this which she seeks. But they have been lost by one of the men. And she cannot find them. It is this which is the terror. She cannot regain the father's tokens. Yet she has lost these really in her seeking of him; in the dissatisfaction of single individuals; in her wanting many men for their additive qualities, in her leaving them and going on still further. Whatever one may read beyond this in the fixation to a parent, here is a confrontation of its loss. While this, as Freud says, is the obverse of the desire, yet it has the positive meaning of a loss and, with this, a realization of its being conditioned by her own acts.

We find this motive further developed by a later dream, again chosen by her for relation. This freedom of selection from a mass of dreams, in her case extending over a month, is of much use when we must, within a brief hour, arrive at a project of the situation, as the present case demanded. At a tea party the filling for the sandwiches was not quite enough. Her father's second wife, whom the patient calls her stepmother, said she would get some roses, and at the same moment her own mother came in with peanut butter. The patient said, "Oh, do not mix the two." In this dream as in others, the stepmother always appears as tall, beautiful, with "golden" hair, graceful, and the traditional lady. She in reality is rather of the outdoor type, strong and rugged, and rather dark, as is the patient, who, as we have said, resembles closely her mother. Clearly we have here an alternative, roses or peanut butter; but there is to be no compromise, they are not to be mixed. Whichever is to be used applies to something which is not filled completely, which needs

more. One, of course, sees this here as a food at a function which is associated with her home life and with her mother. This life we know to have been felt as inadequate. She has not felt sympathetic with her mother; there has been a distinct aggression, or at least critique, directed at her. This is expressed in her picture of someone almost like a fairy godmother, or mother framed in the beautiful stepmother, one to whom she would feel drawn, one who would be intimate and ideal. It is she who brings the roses for the filling, while her own mother delivers the practical butter. The conscious reaction against the mother is one in which we now recognize a profound menace. It cuts off from the individual a tremendous root. It is of less importance that it is motivated from a desire for an identification with the mother, an impossible gain thus to be achieved in itself as an access to the meanings of self, as well as in the closer relationship to the father. The damage to the psyche is what is significant and what is related to the patient in this dream, for though neither is directly chosen, yet the accent is laid on not mixing the two, while the application of her own mother's contribution to the situation is evident. Here, then, the dream mother, for strictly she is thus, only in dream being the true lady, is no longer paramount. Her own mother is to be chosen. A confrontation is again developed before the patient. The unconscious is driving its lesson further forward.

Finally a comparatively recent dream is recited as exemplifying what she calls the facing of purposes which are superhuman, impossible. Here she is attempting to curl the hair of a little girl, but the hair is so very short that it is impossible to do so; the feeling of a task calling for superhuman powers carries a deep affect with it, which goes into waking life. This little girl, whom she used to love before the accident, now strangely irritates her. The child's hair is straight and long and on certain evenings in the week she has curled it, an easy task. Her own hair was naturally curly when a child. Here, then, is a task which is impossible; the very short hair makes it thus. The dream offends reality, for the hair is long and easy to do. Why is a task of a superhuman character defined in this apparently trivial setting, and one of such apparent insignificance? Or what really superhuman thing is here expressed? Is it that quite as it is impossible for this hair to be curled so it is impossible for her, the patient, ever again to have the curls of childhood? Is it this which we see in her conscious and new irritation at the child, an envy of her as the child? Is there here a confrontation of the fact that she is at the end of her desires as the child?

Thus seen, a certain implacability is presented, issuing from an unconscious. Yet can one verify this hypothesis in her behavior? We know she has lost her earlier garments of poise. Surely, if the dream were only a reinforcement of desire this should not be; one should rather expect to see it more strikingly set upon her as a personality. If, before the accident, she had power to concentrate, to work, if she seemed satisfied and interested, something has come to produce the grayness and remoteness of disillusionment. Could anything more effectually accomplish this than a realization of the frail foundation



of the past desires and a confrontation with their abandonment? Which is the better, before or after the accident? As we have seen her, the question answers itself. She was making adjustment before, now she is not. But, were those adjustments sound and effective and straight psychologically? They worked, at least. Only that can we say, who know nothing exact as to them beyond her limited account. But if sound, why should they have been so instantly disturbed by a passing shock? Here is the acid test apparently. We might appreciate it better if we knew more of what this is, or better, if we were to recognize it, for all know it. And here we return to what apparently happens in shocks, with Saul of Tarsus, or through the physical crash of a railroad wreck, or, perhaps, in the trenches.

In an article, "The Predisposing Factors of War Psychoneuroses" (*Journal of the American Medical Association*, February 2, 1918), we find a similar question posed by Dr. Wolfsohn. In carrying out a study of 100 cases, in which the varied marks of psychoneuroses occurring under war conditions at the front presented, he sought to check these up by a series of 100 other cases in which definite somatic injuries had occurred. His purpose in this was to explain what amounts to our problem as to why shock with no traceable physical damage produces an effect far more disorganizing in certain instances than does shock coupled with definite physical damage effect in another instance. He has, of course, limited himself to predisposing factors, isolated from the family and personal histories in both sets of cases. He has, moreover, shown conclusively that within one, the effects of the shock by itself have educed symptoms known to be characteristic of the psychoneurotic to a far higher percentage than obtains in the other group, in which there has been shock and also physical damage. Again, something is located within the shock as more effective in one instance than in another, but with enough of an effect common to both to suggest that, under extreme conditions, no one may be considered immune to these possibilities. This latter point is nicely emphasized in a few cases of that which he calls the acquired neurasthenic state. Here the conditions of strain have been so prolonged that the results are similar to those obtaining after a single exposure to shock.

Beyond defining, thus, certain fixed predisposing conditions of shell shock, there is no approach to the psychology imminent in the shock. Yet the family history of these cases disclosed parental types of a kind we now recognize as especially liable to afford a vicious psychological environment for the child. By this we mean no more than that the adjustments to life have been rendered singularly difficult, and the liability of unwholesome relations to family and parents as considerable. The personal history also suggests actual occurrence of many marks verifying such maladjustments. What has happened at the time of the shock, then, has in many instances occurred episodically, or in a minor continuous way, previous to their army experience. One might assume, then, that the psychological effect of shock represented something much like that which is presented in less striking and isolated

manner previously. It is obvious, also, that whatever these previous effects had been, a certain degree of personal recompounding has subsequently taken place, so that it did not become manifest until the moment of the shock.

It is possible, however, to get another angle on the psychological factor in shock from the introduction by Bailey to Wolfsohn's article. The former concisely evaluates the varied treatments applied to this group since the beginning of the war. His summarization of the present situation is as follows: Quite recently the attitude in respect to the management of this condition has undergone a marked change. Eighty-five per cent. of all shock patients are not now returned to England at all. It has been found much better to treat them nearer the front, and any release from military discipline is regarded as unfavorable for recovery. Moreover, the general methods of treatment, such as diversional occupation, extra diet, and entertainments, have been replaced by more rapid and much more satisfactory procedures.

Electricity given for psychic effect, which at first was disapproved, has been found to be a valuable agent. This is accompanied by strong persuasion. Cases are reported cured in this way in a few hours which had formerly endured for months, and had resisted all other methods. The personality of the medical officer is a most important factor.

It would appear, therefore, that the experience in England has substantiated what has been observed in similar cases in France, namely, that such patients should be kept under strict military regimen. They should not be sent to the interior. Suggestive measures properly applied and accompanied by electricity for its psychic effect are successful. Delay in the treatment allows the fixation of the neurosis, and once a soldier has reached the interior because of shell shock, it is very difficult to utilize his services again. There is a large significance here contained in two factors possible of isolation. In the first place, we are made to realize that recovery is conditioned by maintaining the treatment nearer to the front than formerly, and that time is an essential factor. That is, the soldier no longer is removed to an environment encouraging a non-confrontation with that from which he had just emerged. Again, we see here the same significant imputation of a certain curative element involved in the confrontation of reality. There is next defined the necessity for instant treatment; the quicker the better. This would seem to indicate that something has occurred which must instantly be seized in order that a benefit may accrue to the patient. We then have defined for us, in a necessarily unexpanded form, what has worked out to be apparently the best method. This is "persuasion" accompanying "electricity given for psychic effect." This is especially effective as enclosed in the personality of the medical officer. Here, then, is a train of purely psychic effects necessary to be applied instantly, under conditions where the patient is not utterly removed from the environment producing the shock. With the best results thus obtained, there seems little doubt that the effect of shock is psychic, which, in our study of a single shock, we

have defined tentatively. In the shell shock cases one may arrive at a suggestive verification of this only indirectly or inferentially. We have, in the first place, a large value imputed to a continued confrontation of a somewhat similar environment to that which was associated with the conditioning factors. Something apparently good, then, for the individual obtains here. Yet, equally plainly, it cannot be read simply in the value of reality in forcing a confrontation of it. There seems to be another kind of confrontation necessary, described in the use of persuasion through the personality of another, and heightened by an artifice enclosed within the application of electricity. While we are left in the dark as to what is urged upon the patient, as to what he is persuaded to do, or what attitudes to take, we are somewhat informed of this possible direction by the insistence upon the importance of the physician's personality. Now it is an obvious fact that personality appeals to personality; that whatever is effected by one personality is located within the other personality. The argument, in other words, is always *ad hominem*. In the word "persuasion" also is involved the notion of bringing about a course of action which has been resisted by the individual. If, then, there is anything effected, it would appear as though this rested upon bringing about a personal attitude by one person in another where a resistance to such an attitude had previously existed. It is this, of course, which is the factor concealed under the requirement that the patient be treated in the environment conditioning the shock. This can mean that only under such an environment can there be wrought the psychic change which demands persistence in a position where something within the individual may be confronted, and to which confrontation he may be persuaded by the personal appeal of a personality to which he is singularly liable. What is brought about, then, appears to be much more a confrontation of self than a confrontation of reality. That which persuades him to this is a personal relation. In this personal relation, then, is included the therapeutic agent, for through this he has been enabled to be persuaded to an attitude which represents a healing.

While this is all largely inferential, it appears to meet, or at least suggest, the possibility of a coincidence with our own hypothesis as to the psychic factors in shock. But there is added to this a therapeutic tryout, which, while seeming to verify this hypothesis, also introduces another factor in the personality of the persuader. As yet, however, we have described no relationship between any of these factors, apparently common to all traumatic psychoneuroses, and the more general psychoneurotic marks. It is reasonable to suppose, however, that within the substantial data accruing about this latter general mass, there should be discovered much that would illuminate the particular problems which have been singularly well crystallized in the traumatic neuroses. It is obvious that the point illuminated by the latter seems to reside in its initiation and the factors therein included. In a general way we have for long given considerable attention to what is called the point of break in the neurosis. It is

pretty much related to reality; something here which the patient may not or cannot meet. It seems, at least, to be in front of this site that the patient crumbles. Hence the worship we have come to pay reality for itself. Our confrontation seems to have become a modern ordeal by fire, with all the conditions of an inquisition fulfilled, society as the grand inquisitor, and reality its thumb screw. Yet in these demands of adjustment, there is some kind of an aim, just as we recognized a goal in the more defined demands included within punishment. Indeed, there seems little doubt that in society's punishment of others there is involved a left handed accusation of self. Analytically, however, the consideration of the break in the psychoneurotic rarely yields so clear a precipitate as that shown in the unconscious of the case briefly presented, this because only under unusual circumstances does life contain so sharp an accent, so impending a quality, as included in the shock. There is also always related in the general course of analysis a series of minor breaks and subsequent readjustments. Whatever has happened has been fairly well patched up. Even after the major break a disturbance is rarely so immediate; the case presents long after the point in which we are now interested, in that phase where another set of adjustments have supervened in the symptoms, from which the patient demands relief and comfort only. The particular nature of this has so especially blinded us to what has happened, that not until Adler and Jung was any attention paid to the much earlier incident of the break. Now, while in a proper analysis all or many of the unconscious motivations appear, it is just this course between the break and the appearance of the symptoms which is so frequently subjected to resistance in its emergence, that, as a datum, it is slow in appearing. Indeed, it seems pertinent here to recall the importance of quick action defined in the shell shock case. That is, we seem to have a right to see a difference here in a time sense. The shock case we have described and the shell shock all have had an earlier interference than the usual psychoneurotic. Hence the finding here might well illuminate an unapprehended part of the usual neurotic structure. Yet, if our supposition as to the nature of the break actually shown in our single case and possible of inference in the army cases be true, this same mechanism ought to be displayed some time in the course of the analysis work with the usual psychoneurotic. Moreover, the symptoms of the latter, in their common quality with those of the shell shock, should be further illuminated and probably themselves illuminate. Finally, the remedial agency, so miraculously effective in the shell shock, should have explained its extraordinary efficacy, to the end that we may possibly define similar modes for the treatment of the usual psychoneurotic.

In the case of the railroad shock we possess the knowledge of a sequence of symptoms, correlated with an approximation to a particular series of personal considerations appearing in the dreams, which we have thought to be of considerable significance. In this there is nothing unusual except that, chronologically, it proceeds from a point close



to the time of shock. All of Freud's effective work has been in the nature of interrelating symptoms to unconscious phenomena. His particular system is of less significance than this general principle of determinism. Yet, so far as we have gone, there has been considered only the unconscious in its prospective directive tendency. This has been apparent. We have related it to shock, which has been suggested as possessing the unique potentiality of such a confrontation. But there has been no attempt to relate the symptom to what we have stated to present here, i. e., a conscious nonconfrontation with the unconscious direction which the shock brings apparently near the surface. The symptom relation, largely, in psychoanalysis has been cast, as we have seen, in relation to the unconscious. Yet here we suggest that it possesses a distinct relationship to a conscious nonconfrontation. Is there, then, something which may illuminate the appearance of the symptom at a given time?

There must be imputed to the symptom not only a meaning in a deterministic relation to an unconscious motivation, but also a kind of adaptative quality. In a rather crude way this has been seen in defining the symptom as an attempt at cure. In Adler's "finalistic" sense, the symptom is an arrangement toward the goal of power; nor is it difficult to recognize that Freud has much ground under his feet in establishing the symptom as a mode of releasing the repressed sex. An adaptation can be read in both these instances, however one may take the relation of the power principle to the sex. Jung, however, has defined the symptom by what he calls its prospective meaning, as exhibiting an adaptation of a very different type. This is best expressed in his consideration of the symbol as "not merely a sign of something repressed or concealed, but at the same time an attempt to comprehend and to point out the way of the further psychological development of the individual." (*Analytical Psychology*: Introduction.) The symptom is, of course, never else than a symbol. If confrontation, as we see it, is a freeing of a definite directive expression, so well exemplified in the dream in a manner to illustrate the "attempt to comprehend and to point out the way," then under conditions of nonconfrontation, the presentation of a symptom would appear as though its presence here possessed a well defined adaptive sense, as a kind of partial or disguised confrontation, if we stick to our notion of the symptom being adaptive. Here, then, we relate it, in an adaptive sense, to a conscious nonconfrontation; instead of to a retroactive series, it stands with one prospective. But more than this, it is conditioned, not only by an unconscious prospective movement, but also by a conscious nonconfrontation of this. If the shock has so far made a nonconfrontation imminent that this consciously comes to be declined, then the appearance of the symptom, as a disguised confrontation, is related to the shock and, in a way, seems adaptive.

It would appear, then, that the usual series in the neurotic would be the shock or the reality situation containing the psychic factor of a sudden approximation to consciousness of a definite, directive, critical movement, then a nonconfrontation of this,

and the appearance of what we call the symptom. The older and still prevailing mode of presentation was the reduction of the symptom by analysis to the sex, or power components, issuing usually in a relief of the symptom and a considerable access of energy by a cessation of a coincident sex repression. Yet also it was becoming more obvious that an approximation to any directive movement by the individual might be as far removed as ever and incapable of handling save through a loose mode of conscious direction in what was termed "sublimations." A chief hazard in analysis emerged here; at times it did harm, however correct in method the reductive process might be. It has been a curious development that we should count those among our psychotherapists whose efforts are described by them as finishing up the person who has been analysed by another. The commentary as to the inadequacy of the straight reductive mode is striking. Jung attempts to make the analysis take the point of view of the individual and is thus to be understood as embracing more than the reductive method of the symptom analysis of Freud and Adler. He has moved in the direction of placing within the conscious control of the individual the general directive tendency of the unconscious. Yet even this has seemed possible only after going through the usual reductive modes; his analyses, he states, are much like those of Freud in a considerable part of this work.

(To be concluded.)

#### DISPENSARY ABUSE.\*

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The dispensary population of New York City is well over a million; the average number of visits paid is probably about four. The number of patients attending dispensaries has increased more rapidly than the growth of the population. Unemployment, a large number of chronic ailments, the failure to secure satisfactory relief, together with the increased interest in and attention paid to public health, are probably responsible for the rapid growth in the dispensary population, particularly under the urge of an increased cost of living, together with special campaigns for the control of tuberculosis, infant mortality, cancer, and mental diseases. An increasing demand for clinical material on the part of medical institutions has also caused an extension of dispensary facilities, so that today we find a vast number of public and private, free and pay dispensaries operating as specialized clinics or as out patient departments connected with hospitals covering almost the entire field of medicine.

The general dispensary, and I use the term to cover both those connected with and those detached from hospitals, provides opportunities for the public to secure services in general medicine or surgery, diseases of the eye, ear, nose, and throat, diseases of childhood, dermatology, neurology, venereal

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diseases, gynecology, obstetrics, orthopedic surgery, and dentistry, together with x ray, chemical, and pathological laboratories.

Public health movements have played an important part in the rapid development of the modern dispensary system. There were only twenty public health dispensaries in 1904 in the entire country, while today there are very nearly one thousand. The rapid growth of new types of dispensaries during the past few years indicates former weaknesses, when the dispensary was regarded as a secondary institution.

Special activities have become the evidence of dispensary progress. Diseases of occupation now find themselves cared for in a clinic. There is a special clinic for whooping cough, for heart disease, etc. Specialism has fastened itself upon the dispensary system so that, today, the best type of dispensary is a cooperative association of specialists in all fields.

The older idea, that the function of a dispensary was to provide drugs for the sick poor, or to serve as a medium of feeding interesting cases into a hospital for purposes of study or teaching, is being relegated to the background.

The present time finds the dispensary situation in a state of transition. Dispensaries are now being thoroughly involved with numerous educational problems, as well as those economic and social, consequent upon the expansion of the probation system and the broadening of our views with reference to family rehabilitation.

When it is realized that New York City constantly has more than 135,000 persons suffering from sickness, and that less than ten per cent. have an opportunity for treatment in hospitals, one can perceive the tremendous responsibility thrown upon dispensaries as collaborators with the general practitioners upon whom the community depends for the maintenance of public health, in conjunction with the highly developed and generally efficient health department, whose service to the community has been of inestimable value.

As to the problem of dispensary abuse, I am not talking in terms of any particular dispensary. I am considering the dispensary situation as a whole. Furthermore, I am aiming to take another view of dispensary abuse, in that I shall stress abuses by, rather than abuses of, the dispensary.

We all realize that a very small percentage of dispensary attendants, averaging about three per cent., can afford to pay fees, but it is questionable whether these have sufficient family funds to be able to afford the fees of specialists at current rates. In Boston, it was found that forty per cent. of the families of dispensary patients earned less than fifteen dollars a week, and only fifteen per cent. over twenty dollars a week. The possibilities of abuse by the attendance of patients from such families is exceedingly small, so that the number who are falsely receiving charitable aid need not excite us. One hears of the effect of dispensaries on private practice, but it is doubtful if the financial rewards from patients of the dispensary type would greatly enrich the profession.

Doctor C. N. B. Camac has grouped the ordinary

forms of dispensary abuse, and has pointed out the poor and hurried work of dispensary physicians, the attempts at diverting patients to their offices, and the habit of what he calls "manikinizing the patients," for purposes of instruction. He refers to the possibilities of pauperizing the public, the dangers of under equipped departments, their utilization merely as channels for hospital patients or subjects for medical teaching. He stresses the tendency to destroy clinical accuracy as a result of poor dispensary organization, or inadequate equipment, and, finally, discusses the question involved in the statement that dispensaries deprive practitioners of legitimate sources of income.

I might call attention to the fact that many of our free dispensaries are expensive to patients because of the time lost from work. Some one has called dispensary medicine bargain medicine; and all bargains may prove to be, at times, expensive luxuries. Again, many patients are, in a sense, suffering from attempts at inadequately outfitted dispensaries to give service that is impossible for them. In this connection, I may quote from E. O. Otis, who says: "I do not believe that it is the province of the dispensary to treat its tuberculosis patients, nor can it satisfactorily do so." He points out the necessity of home visitation by physicians and nurses, and dwells upon the possible advantages arising from the class method of handling this type of patient. But take a larger view of dispensary abuse, in terms of the modern ideas concerning dispensary values. I point out three types: first, those visited upon individuals; second, those affecting local communities; third, those affecting society as a whole.

While there have been marked improvements, one is able to see the results to patients and the disadvantages of hurried treatment and overcrowding in dispensaries, unnecessary medication, and a lack of follow-up work and home visitation. Small dispensaries are allowed to build up clientele larger than they can manage. More than one half of the patients seek relief for conditions requiring the attention of specialists rather than of general practitioners. The lack of specialized departments and inadequate equipment, together with insufficiently trained specialists, result in an unintentional abuse of the patient who is placing his trust in the dispensary doctor.

The overcrowding of dispensaries interferes with proper medical work, when the physician must necessarily give a part of his time to clerical work that is essential, but can be done by one without medical training. In some New York dispensaries physicians are handling over 3,000 new cases annually; a state of affairs which is opposed to efficient service. On a three day a week service one physician cannot properly attend to more than a thousand new cases a year. Five new patients a day and ten to twenty old patients represents an amount of work that is a reasonable maximum, viewed from the standpoint of the work accomplished. As A. Flexner says: "The well conducted dispensaries are well equipped and well organized dispensaries. The moment that equipment and organization fail, omission begins; no general rule prescribes where it will stop." The



mere establishment of laboratories, however, is insufficient: they must be used; dispensary rush and laboratory use are not generally compatible.

It is unfortunate, but true, that an abuse of patients ensues because dispensaries do not hold a large proportion of their clientele until cure can be written after their names. The institutional character of the dispensary has tended to destroy the personal relation which should exist between doctor and patient in order to achieve the most successful results. The institution of free dispensaries, which for the most part are not free, making a charge for registration, for drugs, and the appliances supplied, tends to force some people into accepting charity when they are perfectly willing to make some payment for service. The California Social Insurance Commission, for example, found that of 2,587 patients, only fifty-three were dependent upon charity for support, indicating that the great mass of dispensary patients were not really in the dependent class.

The hours are not properly fitted to the needs of the clientele, requiring many to absent themselves from gainful occupation and others from educational institutions, occasioning losses which may actually outweigh the benefits gained by the visitation.

When the New York County Medical Society in 1913 had a committee investigating dispensary abuse, it was recommended that charges for drugs and appliances be stopped. Would it not be advantageous to make the charge for services given, rather than to point out that the drugs and appliances were, after all, the main things for which people should pay at a dispensary?

The support of dispensaries of various types falls upon what may be regarded as a loosely defined community. In some instances expenses are borne by unions, department stores, community centres, supporters of organized hospitals or private detached dispensaries. That the funds expended shall accomplish the maximum results is desirable.

It is obvious that certain shortcomings arise from the fact that patients do not get under dispensary treatment early enough, and many are assigned to a single department of the clinic wherein diagnosis cannot be made without reference to other departments. There is a constantly growing need for team work in diagnosis, wherefore dispensaries should serve their communities by developing diagnostic centres. This achieved would be a distinct advantage to the doctors, in that it would be possible for them to go with their patients to such diagnostic centres for the purpose of securing consultations at fees which are not prohibitive. It would also raise the standard of medical practice by more closely linking the private practitioner with the diagnostic specialist. Diagnostic centres are by no means new, and their establishment on a pay basis in conjunction with existing institutions is one of the problems of the immediate future. The establishment of dispensaries should be more related to the needs of specific portions of the population. Zoning systems have been attempted in connection with the treatment of tuberculosis, and are now being considered in relation to maternity and prenatal care. There is no reason why the various neighborhoods now represented by distinctive associations should not serve

as a starting point for a consideration of dispensary needs, with a view to safeguarding the welfare of the neighborhoods.

For greatest community efficiency, the outpatient department of a general hospital represents an ideal situation, although some of our most successful dispensaries are dissociated from intimate hospital relations. The advantages to be derived from the interrelations of hospital and dispensary staffs, the rapid transfer from hospital to dispensary or dispensary to hospital, as may be required, together with follow up work and social service attention, would redound to the advantage of the community. Unfortunately, communities have been accustomed to assess the value of dispensaries upon the number of patients treated, a faulty basis of judgment, for the number of patients is not an index of the character of the work performed. The number of visits made by each patient would be a safer index, while a tabulation of those who have accepted and followed the advice received until they were recorded as cured would be of far greater value. Here is an instance: the inquiry into the Department of Health, Charities, and Bellevue and Allied Hospitals reported a study of a thousand patients at the Gouverneur Hospital Dispensary. The average number of visits in the general medical clinic was 2.3, and 3.7 in the gynecological clinic. Of the thousand patients, 52.6 per cent. paid only one visit, and one half of these said they had received no benefit; 47.4 per cent. made two or more visits; 26.5 per cent. stated that no benefit had been derived, and only 6.4 per cent. were reported as cured. Under such circumstances, it would be difficult to say that the value of the dispensary for this thousand patients had been very great; but, hear further: *in one clinic 163 patients were treated by two physicians in an hour and a half.*

The previous Health Commissioner, Doctor Amster, has raised this question: "Is it better for a patient to have competent medical services within his means of payment, or to have indifferent medical care which is considered free?" This question introduces a number of problems. As demonstrated in the report of Chapin, 1909, "Expenditure for the cure of sickness increases as income increases." "An income of less than \$800 does not permit expenditures sufficient to care properly for the health of the family." Under circumstances existing today these figures would probably be raised in the city of New York to \$1,200. The place, therefore, of dispensaries is particularly in connection with families in the low income group. On the other hand, families having incomes between \$1,200 and \$1,800, under the pressure of prolonged illness, or of sufferings which require most careful diagnosis and continuous study, would soon be reduced below the line of self support if there were no institutions enabling them to cut down on their medical expenditures without sacrificing their efficiency. Under such circumstances the establishment of pay clinics appears to be of the utmost importance. The charges that could be made by willing patients would then be for medical service rather than for drugs and appliances, as too generally the present custom. Pay clinics are not new. A genitourinary clinic in Brooklyn, a neurological clinic in Manhat-



tan, a clinic in charge of labor organizations, have already introduced this measure, modeling them in part upon the most excellent pay clinic plan devised and established by the Boston Dispensary. The pay dispensary takes on new value because of the possibility of the growth of social insurance. Health insurance laws will not suffice to control disease, but they have a tendency to decrease it as a means of decreasing compensations. On the other hand, health insurance, by giving adequate financial relief to individuals, will make families less dependent upon charity. For this reason society tends to be relieved of the burden of a free dispensary by the substitution of a dispensary system which will help families maintain their independence and self respect.

One of the greatest social abuses lies in the fact that modern medicine is stressing preventive work, while dispensaries for the most part are devoting little thought to this service. As some one has suggested, modern medicine deals with disease on a wholesale, rather than on the retail plan. The institution of babies' welfare stations in connection with clinics and cardiac classes, tuberculosis classes, and similar bits of educational machinery, represent an attempt of dispensaries to participate in large preventive movements. The inadequacy, however, of work in this direction, evidences a form of social abuse which easily may be rectified. The dispensary should expand to become a health educational centre in order to live up to its most modern obligations.

The dependence of dispensaries upon voluntary service is unsatisfactory. There is no reason why dispensaries should be wholly dependent upon medical charity. Voluntary medical service is not to be regarded lightly in so far as efforts and interests are concerned, but there is a grave question as to whether society as a whole can safely depend for sufficient and efficient medical service upon unpaid medical care.

Then, as to following up patients. If dispensaries are to treat ambulant cases only, obviously, assuming that illness prevents attendance at the dispensary, there is a break in the medical care, unless provision is made for home visitation by doctor, nurse, or social worker. H. F. Day, in the *Boston Medical and Surgical Journal*, March 2, 1916, points out the gains of a follow up system. In a male genitourinary service, during 1911-1912, before the follow up system was installed, only 37.6 per cent. of the patients made more than one or two visits, while during 1914-15, after follow up care, 76.5 per cent. made more than one or two. Similarly, on the medical service the figures were fifty-one per cent. before and ninety-four per cent. after follow up work was begun. As to the advantages of dispensary service, in the eye clinic in 1911-1912 before follow up, fifty per cent. of those advised to secure glasses purchased them, while in 1914-15, after the follow up system, ninety-seven per cent. purchased glasses. In the gynecological clinic, 1913, seven per cent. took advantage of the opportunity to secure the operation advised, while in 1914, ninety-five per cent. accepted the operation as a result of the follow up plan. Seeing all this, it might properly be

asked whether society is not being abused when there is failure to institute a follow up scheme which results in such a marked advantage to patients. The Webbs, in *The State and the Doctor* quote Dr. Lauriston Shaw of Guy's Hospital as stating, "These great institutions (outpatient departments of voluntary hospitals) while preventing the proper development of other agencies, are quite unable efficiently to fill their places. They cannot carry their services to within reasonable distance of every patient's door, nor can they follow the patient to his home when too ill to attend at the outpatient department, and ill enough, or suitably ill, for admission to the wards." This criticism loses force when dispensaries are properly organized with investigators, visiting nurses, social service workers, and possibly visiting physicians.

Many dispensaries are not located with relation to the clientele to be served. A new plan is required for the development of industrial clinics, ambulance zones and first aid stations in order to promote social efficiency. From the standpoint of effective social use the partial employment of a dispensary plant is unsatisfactory. By rotation of physicians, dispensaries may give better service and provide for special hours for children and workers without interfering with work or education. This also would be more economical in that the per capita cost would be decreased through the spread of the overhead charges.

The time has come when the dispensary must take on the character of a health centre. A department for the prevention of disease was projected at Mount Sinai Hospital, and every dispensary should have a department for the examination of those who believe themselves to be in good health. The numerous studies which have already been made through the agency of the City Health Department, through life insurance examinations, through school medical inspection, and the examination of potential recruits have revealed the importance of greater stress being placed upon the study of supposedly normal individuals. Dispensary work becomes most effective through the early detection of diseases or the recognition of defects, which, if neglected, may lead to incapacity. It is to the credit of the city that the health centre idea has already been recognized and at least one such centre is in actual existence.

It appears essential that some large coordinating movement be instituted that will serve as a clearing house for dispensary activities. A step in this direction has been taken in the Babies' Welfare Association which coordinates a large number of institutions interested in the welfare of children. The principle involved however, is applicable to the dispensaries when petty jealousies are cast aside and dispensaries are recognized as possessing an excuse for existing only in proportion to their service to society.

There has been marked failure to utilize constructively the statistical material available from dispensary records, faulty as they may be. They hold a vast amount of valuable material which might lead to reforms in medical and social treatment.

We are in an age when dispensaries can no longer

feel the individual case to be more important than the disease for which he is treated. Treating a man for rheumatism is entirely different from treating rheumatism in men. Too frequently a rare disease presenting itself in a clinic is deemed of far greater importance than the vital resources of the patient suffering from it. Social benefit is derived from the study of the patient and his exhibition as clinical material, but equal interest should be manifest in his rapid restoration.

Dispensaries abuse society in applying the term "minor" to conditions which are not fully appreciated as factors in social economics. Chronic rheumatism, bronchitis, cardiac diseases, renal degeneration, arteriosclerosis, "colds," are conditions which may appear to be too routine and individually inconsequential in the hurried dispensary. From the social standpoint they are conditions of major importance. The amputation of an index finger is economically and socially of equal importance to the diagnosis and operation upon a patient with appendicitis. Social values of diseases are emphasized with the development of highly specialized clinics for the early detection of disease or the prompt giving of adequate first aid treatment. In cancer, mental diseases, pediatrics, and venereal diseases, this has given rise to new types of dispensaries in which public education is deemed of the utmost importance.

Of primary importance is the lack of adequate dispensary standards, a condition which is being gradually remedied as a result of recent recognition of its value.

In the thirty-fifth annual report of the Charity Organization Society, discussing a study of 103 families, the comment is made that fifty-five per cent. of the sickness was "of the chronic and degenerate type where the individual needs reeducation and adaptation to lead the efficient life, and where the social and economic situation must be understood in order to improve conditions." The change required involves shifting the viewpoint from the individual patient to the social, economic, educational, public health point of view which should mark the purpose of every dispensary. The private patient is a term which has long been employed, but without due thought to the significant fact that every patient has his relations to the public health. When dispensary systems regard themselves as social institutions for the protection and promotion of public health, and adjust their organization, methods, and means of support, in accordance with this view, the various abuses now attributed to dispensaries will cease to exist.

230 WEST NINETY-SEVENTH STREET.

**Noma Following Paratyphoid B Infection.**—E. Romanelli (*La Riforma Medica*, April 6, 1918) reports a case with a fatal termination in a child of two years. The noma followed an infection with paratyphoid B and the mouth condition was shown to be due to the same bacillus. Antidiphtheric serum, so highly recommended by some, was found inefficacious, while arsenobenzol successfully used in several cases by Nicoll was given without effect in this case in daily doses of .30 gram. The unfavorable result was probably due to the severe infection.

## A BRIEF BIBLICAL EVOLUTION OF MEDICINE.

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Attending Physician to the Jewish Seaside Home, Atlantic City.

According to ancient tradition, a woman after giving birth to a male child remained unclean for seven days; in the case of a female child, fourteen days. Then followed a period of purification—for a male, thirty days; for a female, sixty-six. Referring to another source, miscarriages fell under the same law, provided, however, the fetus was completely formed and its features were well differentiated. Monstrosities and all fetuses not viable were exempt from the above named rule. This interpretation of the Biblical law served as an incentive to the scholars of that period for the diligent study of embryology. The esteem in which those were held who occupied themselves with this study is shown in the legend of King David, who devoted a great deal of his time to the diligent pursuance of these investigations. Samuel, it is said, was able to tell the exact age of a fetus. The fetus, it was held, is completely formed at the end of the sixth week. A grave digger, by occupation, but also an embryologist, describes an embryo at the end of the sixth week as follows: "Size, that of the locust; eyes are like two specks at some distance from each other; so are the nostrils; feet like two silken cords; mouth like a hair; the soles are not well defined." He adds that the embryo should not be examined in water, but in oil, and only by sunlight. Samuel contended that it was impossible to differentiate the sex prior to the end of the fourth month. As mentioned in Gen. R. xiv., the soft parts are formed first, then the bones. Monstrosities, cyclopia, monopia, double back with double spinal column, and atresia esophagi, etc., are also mentioned.

The Bible identifies the blood with the soul. The ancient scholars regard blood as the essential principle of life. The relation between strength and the development of muscles is mentioned in the Bible. These students noted the fact that the muscles changed their form when in motion. Respiration is compared to burning, and expired air cannot sustain life. The life of the organs of the body depends upon the heart. Each gland secretes a fluid peculiar to itself, although all the glands derive their material from the same source. The difference in the structure of the teeth in herbivorous and carnivorous animals is noted. Saliva, besides moistening the tongue, adds to the palatability of food. The stomach performs a purely mechanical function, that of churning the food; it is compared to a mill. Digestion proper is carried on in the intestines. The time occupied in the process of digestion is not the same in all individuals. The end of the digestive period is made manifest by the return of hunger. Eating when the bowels are full is likened to the making of a fire in a stove from which the ashes have not been removed. Normal defecation hastens digestion. Birds digest their food rapidly; dogs slowly. The reasoning faculties are lodged in the brain. The movements of the body depend upon the integrity of the spinal cord.

There are numerous references to the influence of climate, customs, trade, etc., upon the development of the organism as a whole, and upon certain groups of muscles. By one savant, the menstrual is considered as an extra nutritive material which is discharged periodically when of no use, but which is converted into milk during the period of lactation. Absence of menstruation indicates sterility; fear and cold may be instrumental in the arrest of the flow.

That medicine was an integral part of the religion of Israel is made more evident from the pathological studies of the rabbis than from any other branch of medical science. It is, indeed, remarkable that these philomaths seem to have been the first to recognize practically, what is at present the prevailing theory, namely, that the symptoms of all diseases are merely outward manifestations of internal changes in the tissues—a theory never advanced by their contemporaries, *e. g.*, Hippocrates and his disciples, and only vaguely hinted at by Galen. Their pathological studies were a direct outgrowth of the law concerning the "flesh that is torn of beasts in the field," which becomes unfit for food. Certain rules concerning this infection are enjoined upon those who come in contact with the flesh of an animal that "dieth of itself or is torn by beasts." These students went a step further, and declared that the word "unfit" included the flesh of animals afflicted with any disease that sooner or later would have caused the death of the animal.

In order, therefore, to determine the condition of the internal organs, each slaughtered animal was subjected to an autopsy, that is the practice even today. The pathological changes of the lungs have been most diligently studied as to color, consistency, cavities, and vegetable growths. Redness of the lungs indicates hyperemia, a condition which is not fatal; blue and light green discoloration is not considered dangerous; black designates that the object has begun to disintegrate; and the part of the lungs thus affected cannot return to its normal state. Bright yellow is regarded as the color indicative of the most fatal condition. If, on inflating the lungs, it is found that air does not enter into a certain part of them, it is then important to find out whether the obstruction is caused by pus or mucus in the bronchi, which might have been expelled by coughing, or is due to thickening of the tissues. In the latter case the animal is unfit for food. Caseous degeneration "in which there is no blood, and it crumbles under the nail," makes the flesh of the animal unfit for food. Softening of the lung is most fatal. In the case of an animal with collapsed lungs the following rule is given: If after they have been immersed in water they can be inflated with air, the flesh of the animal is fit for food; if they cannot be so inflated, it is unfit. A pitcher shaped cavity in the lung, filled with fluid, renders the animal unfit for eating. An empty cavity is not dangerous to life. The rabbis speak of vegetable growths on the lungs in connection with adhesions of the lung to the thorax; and they describe several forms, all of which are not considered dangerous.

Perforation of the outer coat of the brain is not fatal; but the slightest pertusion of the inner coat

is mortal. One scholar contended that an injury of the spinal cord is deadly, while another held that it is only fatal when the injury extends to more than one half of its transverse diameter. A sheep that dragged its hind legs was diagnosed as suffering from ischiagra, but an opposing factor maintained that it was a paralysis due to the solution of continuity of the spinal cord. The sheep was killed, and the diagnosis of the latter was confirmed. This is the only case on record in ancient literature where a diagnosis was made during life and verified at a post mortem examination. Rabbi Levi saw one who suffered from tremor of the head, and he remarked that the man was in sufferance as a result of softening of the spinal cord; he held that such cases were not fatal, but that the patients lost their reproductive functions.

Penetration of the heart is considered fatal, but no other pathological changes of the heart are mentioned. A transverse division of the trachea is not regarded as fatal, provided it is less than one half of its circumference. Longitudinal wounds of the trachea heal rapidly. Perforation of the esophagus is quickly mortal in its consequences, since the food may escape into the mediastinum. Valvus is held to be fatal, and perforation of the stomach or of the intestines is fatal. Extirpation of the spleen in animals and in man is not considered fatal, but rupture or wounding of this organ is. Ablation of the uterus is mentioned, and is not considered mortal, but atrophy and abscess of the kidney are. Accumulation of transparent fluid in the kidney is not fatal.

The pathological changes in the liver mentioned in one of the ancient books of learning are: that in which the organ becomes dry and bloodless and "crumbles under the nails"; abscess, and stonelike hardening. Extirpation of the liver is not considered fatal if there is left intact the part which surrounds the biliary duct and "that place from which the liver receives its vitality." Absence of one testicle is spoken of, and the unfortunate is looked upon as sterile. Hypertrophy and atrophy of the testicles, scrotal hernia, and elephantiasis scroti are also mentioned. Various forms of hypospadias and epispadias are described. One hundred and forty pathological conditions are enumerated which in the eyes of the law make a man a "cripple," and, therefore, unfit to perform any religious service in the Temple. Fifteen of these describe various osteologic deformities of the head, spine, and extremities.

The rare cases of individuals having a tendency to hemorrhage are related, and the fact that this affection is hereditary is noted.

Wounds in the different parts of the body caused by various weapons, sword, arrow, hammer, etc., are mentioned in the Bible, and often elsewhere. Inflammation and abscesses, gangrene, and putrid discharges are also referred to. Wounds were treated by the application of wine or oil, bandages or sutures. The surgical operations mentioned in the Bible are those of circumcision, and castration, the latter being prohibited. During the Scholastic Period, surgery attained a high degree of development. Many physicians devoted themselves to it. Surgeons, when operating, used to wear a tunic



over their dress. They used various surgical instruments. In major operations the patients were given an anesthetic or sleeping potion. Venesection was extensively used upon the healthy and the sick alike, one authority going so far as to recommend its use once in thirty days, but after the age of fifty venesection should be employed less frequently. It is not to be performed during inclement weather; and a careful dietetic régime should be followed for some time after the operation. Bleeding by means of leeches and by means of cupping is frequently mentioned.

Dislocation of various joints, fractures, amputations, and trephining, are discussed in the Talmud (the Book of Learning). Artificial teeth, made of hard wood, gold, or silver were employed. Extirpation of the spleen was successfully employed upon man. The following forms of castration are mentioned: amputatio membri; extirpatio testiculorum; subcutaneous stretching or cutting of the cord; and obliteration of the testicle by means of gradual pressure. Intubation of the larynx was practiced upon animals, and a plate was used in case of loss of substance of the cranium. A uterine speculum is also mentioned.

The practice was adopted of freshening up the borders of old wounds in order that union might be effected. The operation for imperforate anus in the newborn is described. In an accident in which the abdominal viscera were protruding through a wound, the reposition of the organs was effected automatically by frightening the patient, which caused the abdominal muscles to relax; after this the external wound was closed by means of sutures. Nasal polypus is said to cause "fœtor ex ore." Crutches and various other orthopedic appliances are mentioned, while intestinal parasites and hydatids are frequently spoken of. Extraction of the fetus through an incision made in the abdomen was an operative procedure known to these Talmudic students.

Human anatomy, the basis of all medicine, had not been studied scientifically by the physicians of the Talmud (they seem only to have boiled human bodies, as the physicians of other countries had done, and, counting the bones, to have come to erroneous conclusions), by Hippocrates, by Galen, who used monkeys for his subjects; by the Arab physician, Avicenna, or by their respective followers. The Jewish and the Mohammedan religions, and the Christian church were all opposed to a desecration of the human body such as proper anatomical investigation would have required. The German Emperor Frederick II permitted dissection; but Pope Boniface VIII prohibited it. Hippocrates and Galen ruled supreme in the medical world up to the thirteenth century. The Arab physician, Avicenna, wrote his celebrated *Canon*, which work took rank next to the writings of Hippocrates and Galen. But their works were translated into Arabic, a language which, in Europe, was known only to the Jews, who translated them into Hebrew and Latin, and thus held the key to medical science. Learning from these great scholars, the Jewish teachers and physicians wrote works of their own. They excelled in surgery and in medicine (including ophthalmology), in therapeutics, pharmacology,

and toxicology. Their connection with the drug trade of the East helped them to contribute also to a practical knowledge of pharmacology at a time when every apothecary posed as a doctor; but with these branches of the true science of medicine, there was during the first millenium of the common era combined also a knowledge of pseudoscience, astrology, and cabala. Superstition was still all pervading, and it was against these pseudosciences Maimonides wrote. Astrology was to him not based on science, but on superstition; and in his works he warns against its usage. Luigi Mondino de' Luzzi, professor at Bologna, who died about 1326, dissected three female bodies. From that time anatomy received, with little or no interruption, the attention it deserved, and medicine, from being a more or less pseudoscience, commenced to be a real one, although half a millennium had still to pass before it was entirely liberated from mysticism and superstition.

521 PACIFIC AVENUE.

### Treatment of Wounds of the Pleura and Lungs.

—Grégoire (*Presse médicale*, March 14, 1918), discussing the indications for radical surgical treatment in these cases, states that while persisting hemorrhage is a definite indication for operation, it seldom presents itself, the injured subject seldom reaching the operating table while still alive. The remaining dangers to which these cases are exposed are practically limited to infection. Primary infection, while rare, is so severe and sudden as to resemble an actual pleuropulmonary gangrene, and the subject generally succumbs under any form of treatment. Usually, infection is secondary. Pleural infection is commoner and more grave than lung infection. The pleura may have become infected either directly or from the injury to the parietes or a wound of the lung itself. The second of these varieties is very frequent; its prophylaxis consists in treatment of the existing compound fracture, the removal of free bone fragments, and proper cleansing measures. Fluid accumulations in the thorax should not be neglected, forming a good culture medium. Even in the absence of infection, some effusions must be eliminated by thoracotomy because they are recurrent; thoracentesis is insufficient in these cases, probably because it fails to remove clots and false membranes. Foreign bodies still constitute a perplexing problem. Projectiles, while highly septic and causing a large mortality by lung infection, are nevertheless often tolerated perfectly for months. Some fragments, it would seem, can be allowed to remain; others must be removed. But to decide which ones are those likely to cause serious complications is a difficult matter. Doubtless any intrathoracic projectile which is causing no alarming physical signs, hemothorax, nor copious hemoptysis, may, unless of large size, be allowed to remain without immediate risk. Where, in addition to a retained projectile, an effusion exists, mere evacuation of the thorax is followed by recovery in the very great majority of cases, provided the foreign body is smaller than a hazelnut. In such cases the thorax need be drained only if pus is found. Larger projectiles should be surgically removed, but these are seldom retained in the thorax.

# Medicine and Surgery in the Army and Navy

## THE EPIDEMIOLOGY OF TRENCH WARFARE.

By VINCENT BARDOU, M. D.,

France,

Auxiliary Physician, 124th Regiment.

It is generally recognized that the physical condition of the soldier on campaign offers an excellent culture medium for all known types of bacteria. The present trench warfare is somewhat sedentary, obliging the men to remain for hours at a time in mud in winter and in water when the thaw comes.

I will give my personal experience of one year passed with my regiment in the trenches, as far as the epidemiology of the situation is concerned.

Cases of typhoid fever were quite numerous in one of our battalions after a sojourn of twelve days in muddy trenches on the Somme, a place where infiltration of water was practically nil, the soil being composed of clay. The mud, dampness, and fatigue were important factors in the etiology of the various diseases observed in our regiment, but their importance was only relative. The extent these different epidemics assumed is hardly to be compared with that formerly noted.

From the beginning of October to the month of January every man who came to the medical visit with symptoms of febrile gastric disturbance was kept under observation at the regimental infirmary, and if, at the end of two days, no improvement took place and if fever continued, he was evacuated to an ambulance at the rear with a diagnosis of "*febrile indisposition*."

Each month the ambulance returned a report to us showing the number of cases of typhoid (laboratory diagnosis), the number of deaths and the complications arising. Up to November there were eight cases of typhoid with quite serious complications.

From the month of December we began vaccinating all the men at the front with Vincent's vaccine, the ambulance doctors notifying us of their arrival on a certain day and time. All the men without exception, led by their sergeants, were brought to be vaccinated and after each injection they were given either one gramme of antipyrine or analgesine.

The vaccination was carried out in three series, one week apart and each individual received five c.c. of serum in all. Theoretically, after each injection, the soldiers should rest up for at least twenty-four hours. I shall show how this rest was observed. It is hardly necessary to say that a very strict control was exercised in order to see that every one got his vaccine. Officers, under officers, and soldiers were obliged to present themselves at the infirmary on vaccination days. Those who had exceeded the quarantine, as well as sick men, were of course exempted. Let me take one battalion of our regiment as an example and follow it during its vaccination, so as to give an idea of the way in which prescriptions were carried out, given the circumstances. The battalion in question had been twelve consecutive days in the trenches, with rain, snow, and infected mud. The poor fellows were rationed

only during the night and therefore only got cold food. They were finally relieved and on the next day received orders to go to a village some distance away. Without having any rest of any consequence they started on the march and when they arrived at the cantonment they were informed that the first injection of antityphoid would be given them in two hours. Our commander, always very solicitous for the health of his men, tried by every means to put off the vaccination until the men were in better condition, but he failed in the attempt.

Consequently, all these fagged out men, in a rather bad physical condition, were obliged to be vaccinated. After their injection they were given antipyrine, and with it some hope that they would get some rest. But at 11 o'clock that same night there was an alert sounded in the cantonment and after divers orders the departure was fixed for 10:30 in the morning. Consequently, the men passed a sleepless night, only to leave the next morning for a point eight miles off on the march. By good luck, carts had been requisitioned so that their outfits could be carried for them and it was only after a day passed in a railway train that the greatly desired rest was at last given them!

After such adventures it might be supposed that many men would be ill. Far from it. The number of sick who came to the medical visit, was just about the same.

The second series of injections were given under better conditions, although the next day's rest was interfered with by a review that a general was to pass a mile and a half from where the battalion was stationed. Upon this occasion the men reacted more. The second injection was more painful and the temperature was higher, although in no case did it go above 102.7° F. As to the third series of injections, it offered nothing in particular.

One might suppose that numerous and rather serious accidents in anaphylaxia would arise, but such was not the case. However, I would record the following three cases:

CASE I.—Soldier N., ten minutes after his second injection, complained of feeling generally ill and of an intense pruritus. A scarlatiniform eruption covered his body, particularly over the trunk. No rise in temperature. The eruption diminished in intensity and a half an hour later there was no trace of it. On the following day there was nothing abnormal and the patient had passed a good night.

CASE II.—Soldier G. presented, several days after being vaccinated, a kind of tension of the tissues over the point of injection and pain in the entire upper left limb upon the slightest movement. He developed an abscess. I mention this case because this complication after vaccination with Vincent's serum, although not common, is occasionally met with and is due to the serum itself and not to improper asepsis.

CASE III represents another form of accident following typhoid vaccination which cannot be attributed to the injection is the following case. A soldier, at the time of the injection, was seized with a mild syncope of a very transitory type, but which left him in a condition of general weakness which persisted until the next day. This individual was alcoholic and very emotional.

The above are the only instances of untoward effects of typhoid vaccination which I observed. Did the antipyrine have anything to do with them?

I do not think so. The results were very appreciable and cases of typhoid decreased rapidly.

There is an epidemic disease particularly to be feared in all agglomerations of men; I refer to measles. It is true that we had many cases, especially in January and in June. The first case developed during the first week in January, and after this several cases occurred in different companies. There were few complications in the form of rather obstinate bronchitides but generally mild in type.

I think that the majority of cases of measles were, in reality, rubeoia, not merely because the subjects attacked had already had the measles in childhood, but also on account of the mildness of the process. But for all that, we certainly observed true measles with an intense eruption, high temperature and complications. The contagiousness was, taken all in all, very slight, and our regiment only gave a total of sixty-two cases of rubeoia and among these there were not more than ten cases of true measles.

During the entire year a single authentic case of scarlet fever occurred, and, as soon as discovered, all necessary precautions were taken, viz., isolation of all the men who had been in contact with the patient, disinfection of the rooms occupied and whitewashing the walls. Every morning the orderlies made the men gargle with potassium permanganate solution, and at the visit their throats were carefully examined in order to detect any suspicious angina.

I well remember the ravages caused by scarlet fever and measles in 1912 among the different garrisons, and yet these men were far less fatigued than our regiment was during trench warfare.

The most serious epidemic we had was mumps, and it can be truly said that not a month passed without some cases occurring. However, in the summer there were decidedly fewer cases. The height of the epidemic was during January-February, and in these two months we had over 100 cases. Then the epidemic began to subside gradually, so that by July there was not a single case, but as the season advanced they began to recur. As to prophylaxis, as soon as a case was diagnosed, the patient was isolated in the first place, and then evacuated at once to the rear in a special automobile for contagious cases.

Although we were in a country rather inclined to cerebrospinal meningitis, only two cases occurred in the entire regiment. Here, briefly, are the case reports:

CASE I.—D. was brought to us on a stretcher on January 20th. He was unable to move; he could not speak, but gave us to understand that his head pained him. Kernig's sign distinct. Easy and frequent vomiting. The diagnosis of cerebrospinal meningitis was only too evident. Temperature 103° F., abdomen distended. He was immediately evacuated to the rear and the entire company isolated. Each morning all the men had their throats swabbed with iodine glycerine, and a careful disinfection of the nose and eyes was carried out. No other case occurred in the company. The patient was heard from later when he was on the road to recovery.

CASE II.—Corporal R. came to the office with a toricolic and headache, in April. The patient stated that he had vomited in the evening before the visit. Examination showed that the movements of the neck were painful, tongue coated, temperature 101° F., and a slight Kernig's

tagious ward, and, on the following day, the stiffness of the neck was more marked, Kernig's sign distinct. He was evacuated with the diagnosis of cerebrospinal meningitis, which was confirmed at the base hospital. Eventually, he recovered.

On both occasions, the buccal mucus was examined in all the subjects who have been in contact with both patients. Germ carriers were detected and evacuated to the rear, where they remained until all danger from them had disappeared.

It is to be remarked that although Case I had only been at the front for a fortnight, the second had been there since the beginning of the campaign, and in the cantonment where we were no case of meningitis had been observed. Therefore, here are two sporadic cases of cerebrospinal meningitis, but an epidemic of the disease in the true sense of the word, there was none. And these two cases did not occur after particularly arduous days. The first occurred while the regiment had been at rest for twenty days; the second case developed while we were in a quiet sector.

No case of tuberculosis was observed during the year. There were some tuberculous subjects who entered the ranks voluntarily and whose lesions progressed from the fact of the campaign, but, of primarily healthy men, becoming tuberculous from fatigue and general war conditions, there were none.

Undoubtedly, life in the open, constant exercise, healthy food, life in pine woods and, above all, regular and methodical use of time, such as can be carried out in trench life, greatly influenced the sanitary condition of the soldier, because in barracks a year does not pass without some cases of tuberculosis developing.

Finally, from the viewpoint of epidemiology for one year, our regiment showed:

Mumps, about.....	150
Rubeola .....	62
Typhoid and paratyphoid.....	49
Cerebrospinal meningitis.....	2
Scarlet fever.....	1

It appears to me that this little list is rather reassuring than otherwise, and proves that the sanitary condition of the French troops during this war is excellent, as it may be taken as a fair average of the existing conditions throughout the western front.

## MEDICAL NOTES FROM THE FRONT.

### *Resection of War Wounds.*

GENEVA, June 7, 1918.

In order to understand the indications in cases of crus for resection, one must reflect upon those cases in which it will be useful in a healthy subject. For example, a joint is traversed by a bullet; there results a comminutive fracture of the bones composing it. Now, what end is to be attained by resection and what does the operation offer?

If the patient is seen within a few hours after the receipt of the injury the object of resection is to remove the contused and crushed portions which, if left to themselves, will result in the production of a suppurating arthritis. As soon as the crushed and lacerated portions of bone are removed, those that are deprived of all vitality, the essential condition of



conservative surgery has been fulfilled and it is only from the viewpoint of perfecting the orthopedic result derived from a resection that more extensive sacrifice of osseous tissue is permissible.

If resections had only for ultimate end the thorough removal of decomposing matter and to prevent the retention of sepsis liquids which may develop in any wound of warfare, the operation would be practically useless when the same objects in view can be attained by other means. Render a wound aseptic and afterward to maintain the asepsis is the essential indication to fulfil.

But this ideal antisepsis has not as yet been found, and numerous are the cases where resection is indicated without question, regardless of all the progress made during the past three years.

When the patient is first seen it is often one or more days after traumatism, at a time when a suppurating arthritis is already in progress or perhaps a septicemia requiring radical measures of treatment, yet a conservative treatment may still be essayed. In these circumstances, resection has no other end than to assure a free drainage, but it should be economical, because it is of necessity done in healthy tissue. Resection is to be done in cases of severe crushing, serious wounds of the joints in which the epiphyses are practically destroyed or at all events are reduced to numerous fragments of all shapes and sizes or when irrigation washes away a number of splinters and bits of bone and where the rest of the bone tissue is merely retained by a few strips of periosteum or capsule. In most cases of war injuries a resection will be an essentially atypical one on account of the infinite variety offered by these traumata. The treatment of a joint injury presents for each articulation certain peculiarities derived from its anatomical makeup and the function belonging to the limb. It is better to do a bloodless operation by means of an Esmarch band, since a dry wound will allow the surgeon to estimate better the amount of damage done to the bone. The incision is begun over the traumatic focus and should be carried down to the bones. It must be long enough to give proper exposure of the parts involved as well as sufficient room to operate with ease. The mobile bone splinters are removed, as well as missiles and other foreign bodies, after which the number and extent of the bone fissures are to be noted. The resection of bone will naturally vary in extent from one case to another, but it is useless for drainage purposes and bad for the future of the limb if too extensively done. The amount of bone resected should be in proportion to the extent of the lesions. In subjects of twenty years of age or less, whose growth is yet incomplete, it is better practice to remove nothing beyond the cartilages of conjunction. In older subjects the extent of the excision may be greater, as the danger of future shortening from removal of a fertile bone productive area is of much less import. In the majority of cases it is necessary to resect the other bone of the limb to the same extent as its fellow if the forearm or leg is the seat of injury, as this is the only means for obtaining satisfactory drainage and good union without pseudarthrosis. The bone ends should be sawed off evenly.

It is a question whether or not the bone should be

sutured with wire or other material. Some advise suture, but since resection is done with the end of obtaining good drainage between the two fragments no suture should be used. It is hardly necessary for me to say that the resection must be strictly subperiosteal, following the classic technic of Ollier and the Lyons school. Immobilization is of the utmost importance and may be realized by plaster casts or some good splint, particularly the Thomas pattern. American surgeons will do well not to overlook the plaster casts with handles as used by the French, as they are unquestionably of great value for the treatment of the wound and the ease they offer for frequent change of dressings. Carrel's method with Dakin's solution should be employed whenever possible. The dressings are to be changed as seldom as possible, the temperature chart being relied on as an indication for renewing them. The patient's facies, pulse and pain, if any, must also be taken into consideration. Whether the case is one of immediate or secondary resection the conduct to follow is the same, but in the latter circumstance long incisions and counter openings are essential. To obtain asepsis of the traumatic focus, quite independently of minute disinfection of all undermined foci in the wound, every portion whose vitality is compromised by supuration should be cut away, in other words the resection must be free and all necessary counter openings made to assure absolute drainage. If any benefit is to be derived from secondary resection it must be done early. An important factor from the viewpoint of operative results resides in the choice of the time selected for the interference and it is more than possible that this may explain the numerous unsuccessful results obtained by resection recorded by surgeons. In the majority of their reported cases the lesion was advanced pyarthrosis where arthrotomy, attempted in the first place, failed and amputation became obligatory. It was thought that such a sacrifice might be avoided by resection; the results were evidently mediocre, but the deplorable conditions and the late date at which the operation was undertaken explain the unfortunate results.

Finally, although resection performed during the period of inflammatory reaction has quite a different prognosis from that where infection has developed, it is nevertheless surprising to obtain excellent results occasionally, because the inflamed periosteum becomes irritated functionally and consequently offers a more powerful osteogenesis.

It is hardly necessary to say that many objections have been raised against resection and there are three that should certainly be considered. Firstly, ankylosis has been said to result, but from the functional viewpoint this cannot be considered as such a bad outcome after all. It is often preferable to have an ankylosed limb in good position than a joint which offers a few movements, not extensive enough to be of any practical use. As to flail joints, they may be considered fortunate when the gravity of the injury at the time of operation is considered and a useful limb may often result by modern perfected orthopedic apparatus and limbs preserved by resection are of infinitely greater use than an amputated member. But no matter how encouraging and excellent the results, conservative treatment cannot

be applied in all cases, and the continued progress of a lesion that resection cannot eliminate must ultimately lead to amputation, and this sacrifice must sometimes be quickly made in order to be successful. If after resection the case does not go well, if suppuration continues or if osteomyelitis develop no hesitation is permissible. Amputation alone can save the patient from death from septicemia. It must also be done in extensive wounds of the limbs with crushing of the bones and joints, severe laceration of the soft strictures or injury to the important arteries and nerves. Here conservative surgery is worse than useless.

CHARLES GREENE CUMSTON.

## ARMY MEDICAL SERVICE IN AUSTRALIA.

*Differences in Organization from American Forces.—Nurses Have Relative Rank.—Pharmaceutical Corps with Commissioned Rank.—Scientific Service Corresponds to Our Sanitary Corps.*

Australians are more like Americans than any other section of the Anglo-Saxon peoples, except the Canadians. It is interesting therefore to note the points of difference in the forms of organization which have been adopted by the two peoples in their army medical service.

In their general outlines the two services follow the British model, rather than the Continental. Both have a corps of medical officers and of dental officers of graded rank, the Australians have a corps corresponding to our Sanitary Corps, in which, as in our own army men of special attainments in any direction may be commissioned, even though not graduates in medicine. Theirs is called the Scientific Service, a happier title than ours. Their nurses have relative rank, and their pharmacists actual rank, in both of which they differ from the United States.

Surgeon General H. D. Fetherston, Director General of the Army Medical Service of Australia, accompanied by his staff, passed through New York some weeks ago on his way to the battle front in France. During his stay in the United States, General Fetherston visited the Surgeon General's Office in Washington and was also afforded an opportunity to observe the operation of the medical department at Camp Greenleaf and at the medical supply depots in Washington and New York.

Major D. A. Cossar, staff officer for pharmaceutical services in the Australian army, recently spent a week or so in the United States, visiting the Surgeon General's Office and the medical supply depot in Washington and the medical supply depot here. He was on his way home through Canada after a nine months' tour through Egypt, Palestine, Greece, Italy, France, Great Britain, and Canada, during which he made a study of every phase of the medical supply service of the Australian army. When war was declared, Major Cossar was conducting a pharmacy in Hawthorn, a suburb of Melbourne. He was president of the Australasian Pharmaceutical Society, and was called on in an advisory capacity, with the honorary rank of captain, to help in the reorganization of the medical supply service. As a result the service was placed in the hands of ex-

pert pharmacists, with commissioned rank, and now Australia has about a hundred commissioned pharmacists with rank ranging from second lieutenant to major. There is a captain in charge of the medical supply depot in each district, a political division corresponding to our state, and a captain or lieutenant in charge of the medical supply service at each hospital.

All the dispensing for the troops is done by "qualified men," that is, men legally qualified to handle poisons and corresponding to our registered pharmacists. This change came about eighteen months after the war began. At first the Imperial forces did not recognize the Australian commissions, but now they do, and there are twenty-one commissioned pharmacists serving with the Australian troops "overseas" in France and England.

The length of the voyage between Australia and Europe necessitates special care regarding sanitation of the troop ships, and the medical department of the Australian army has a special transport unit which voyages to and fro constantly, to look after the health of the troops going to and of the invalids returning from Europe.

The whole of Australia has about 3,000 physicians in active practice, though more than that are registered. Of these, 1,200 are in the Army Medical Service. Some of them have been loaned to the Imperial army, some are on duty with the Australian troops in Egypt, Palestine, France, and in England, and some are on duty in Australia. Many of the medical reserve officers on duty in Australia are not on full duty, but are called upon to give a day or half a day as their services may be required, and are paid only for such time as they put in on active duty. This effects a great saving both from a financial and from a professional standpoint. A surgeon residing near a base hospital can keep up his own practice, look after his own affairs, and still put in two or three days or half days each week at the base hospital. This method has been very helpful in bridging over the lack of doctors for civil practice.

Australia has over 100 dentists in the "overseas" army, and 300 in Australia, all of whom have commissioned rank, ranging from second lieutenant to lieutenant colonel. Each dental unit is composed of one dentist, two sergeants who are mechanics, and a private as orderly. The scientific reserve includes specialists in any line which will be likely to be useful to the medical department, but who are not graduates in medicine. The Australian Nursing Reserve includes 2,100 nurses in "overseas" duty, and 400 on duty in Australia. Every one of these nurses has completed a full three years' training course. Besides looking after the Australian forces, 400 have been loaned to the Imperial army for service in India, 400 for service in Greece, 200 for service in Egypt, and a number for service with other than Australian forces in France and England. Australian nurses are paid at the rate of \$2 a day and upward, with allowance of sixty cents a day for rations. There are two matrons in chief with the relative rank of major, one in England and one in Australia. Matrons, or chief nurses, have the relative rank of captain; head nurses, lieutenant, and staff nurses, second lieutenant.



## MEDICAL NEWS FROM WASHINGTON.

*Readjustment of the Army Medical Corps.—Selection of Surgeons.—Reorganization of the Army Nurse Corps.—New Appointments.—More Commissioned Officers Needed in the Public Health Service.—Estimates for New Marine Hospitals.*

WASHINGTON, D. C., June 29, 1918.

Important legislation affecting the medical service of the military establishment has been embodied in the army appropriation bill by the Senate, it being based on the subject matter of separate bills that long have been pending before Congress.

By the Senate amendments, the Medical Department of the regular army is increased by one assistant surgeon general with the rank of major general, and three assistant surgeons general with the rank of brigadier general, all of whom shall be appointed from the Medical Corps of the regular army. The President also is authorized to appoint in the medical department of the national army, from the Medical Reserve Corps or the regular army, not to exceed four major generals and eight brigadier generals for each 1,000,000 officers and enlisted men of the entire national army. The amendment also provides that the commissioned officers of the Medical Corps of the regular army, none of whom shall have rank above that of colonel, shall be proportionately distributed in the several grades as now provided by law; and that the commissioned officers of the Medical Reserve Corps, none of whom shall have rank above that of colonel, shall be proportionately distributed in the several grades as now provided by law for the Medical Corps of the navy. The President is authorized to designate as "consultants" officers of either the Medical Corps or Medical Reserve Corps and may relieve them as the interests of the service may require. It is anticipated that promotion in the Medical Corps of the regular army will be at a normal rate during the war, and that the commissioned personnel will not become too large for the eventual military force to be maintained in this country after the war.

The increased rank for reserve officers is intended as a slight measure of recognition of the efforts of distinguished surgeons and physicians in aiding the government during the present emergency.

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Those members of the commissioned personnel of the army medical department who are selected for surgical work are taken after the exercise of the utmost care in ascertaining qualifications for this particular kind of work. Selection comes under the general surgery division of the Surgeon General's Office, which is charged with the classification of the surgical qualifications of all surgeons in the United States, with selecting and grading those best qualified to be military surgeons, and with placing those that are commissioned where they can render the best service to the army. Having selected those that the army will require in a given time, the division assembles them in training camps and more frequently in special schools for instruction in the latest methods of surgery. Three of these schools are in New York City, and one each in Philadelphia, New Orleans, Rochester (Minn.), Chicago, St. Louis and Cleveland. Attention also is given by the general surgery division to surgical equipment, with

a view to keeping pace with the latest developments in devices, apparatus, methods, etc.; it selects the personnel for overseas duty; and it holds the records of all surgical cases in camps and cantonments. The division also publishes a monthly magazine, giving special surgical methods in use abroad, and it has prepared a complete indexed digest, constantly revised to date, of all the leading reports of cases taken from American and foreign journals and from the leading surgeons of the allied armies.

Colonel William H. Moncrief, Medical Corps, is chief of the surgical division, and he is assisted by Lieutenant Colonels M. G. Selig, R. F. Sullivan, and A. B. Knaevel, and Captains H. Wilson and H. Davidson.

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Another amendment made by the Senate to the army appropriation bill is the embodiment in that measure of a separate bill relating to reorganization of the Army Nurse Corps. The amendment provides that the Nurse Corps shall consist of one superintendent and as many chief nurses, nurses, and reserve nurses as the Secretary of War may prescribe. For each army or separate military force beyond the continental limits of the United States there is provided one director and not exceeding two assistant directors of nursing service. The rates of pay for the members of the corps are prescribed as follows: Superintendent, \$2,400; assistant superintendents and directors, \$2,000; assistant directors, \$1,800; chief nurses, \$360 in addition to the pay of a nurse; nurses, \$780 for the first period of three years' service, \$840 for the second period of three years' service, \$900 for the third period of three years, \$960 for the fourth period, and \$1,020 after twelve years' service (including in all cases time of service as a contract nurse); reserve nurses, when on active duty, shall receive the same pay as nurses that have served in the corps for periods corresponding to the full period of their active service; and all members of the corps, in addition to the foregoing, the sum of \$10 a month when serving beyond the continental limits of the United States (excepting Porto Rico and Hawaii). Provision also is made for retirement after twenty years' service; for cumulative and sick leave; quarters, heat, light, transportation, and necessary expenses.

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Lieutenant Colonel Charles F. Morse, Medical Corps, has been appointed director of the Army Veterinary Service, in place of Colonel Reuben B. Miller, Medical Corps, National Army, assigned to other duties. Lieutenant Colonel C. J. Marshall, Veterinary Corps, National Army, has been appointed assistant director. An advisory council of the Army School of Nursing has been appointed, consisting of Colonel W. H. Smith, chairman, Colonels C. L. Furbush and W. F. Longcope; Misses Adelaide Nutting, Lillian D. Wald, and Anna C. Maxwell; the superintendent of the Army Nurse Corps; superintendent of the army Nurse Corps; superintendent of the navy Nurse Corps; director of Department of Nursing, American Red Cross; president of the American Nurses' Association; president of the National League of Nurse Education; president of the National Organization of Public Health Nurses; and the dean of the Army



School of Nurses. A standing committee, composed of Colonels F. F. Russell and B. C. Vaughn and Lieutenant Colonels W. H. Welch and H. D. Arnold, has been appointed to consider and report to the Surgeon General of the Army upon all questions of policy concerning undergraduate medical education used by the medical department, the medical colleges, or other instrumentalities connected with such undergraduate education, or with hospital internships, etc. Lieutenant Colonel Arnold has been designated as the representative of the Surgeon General to the committee on education and special training of the War Department. Colonel W. R. Parker, Medical Corps, National Army, is to be officer in charge of the division of head surgery in the Surgeon General's Office, vice Colonel T. C. Lyster, Medical Corps, National Army. Colonel R. B. Miller, Medical Corps, National Army, has been placed in charge of the personnel division, vice Brigadier General Robert E. Noble, Medical Corps, National Army.

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Assistant Surgeon General J. C. Perry, of the Public Health Service, recently appeared before the House appropriations committee and explained why thirty additional commissioned officers were needed by that service. There is need for these additional officers because of extension of activities that are not of a temporary nature, but permanent. Marine hospitals need fifteen of these additional. With equipment of the hospitals to maximum bed capacity, including additions for which money already has been appropriated, there will be a total increase of 744 in the number of beds, and estimating that a physician can only give adequate professional attention to fifty patients, it is evident that the fifteen additional medical officers will be required. In wards where acutely ill medical and surgical patients are treated, thirty should be the maximum for each physician. Quarantine stations will require seven additional officers, and field investigations eight.

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The Secretary of the Treasury has asked for the following additional appropriations for completion of authorized marine hospital construction, equipment, and furnishing, etc.: at Savannah, \$124,644; Reedy Island, \$127,000, and Cape Charles, \$377,325. The sundry civil appropriation bill as it passed Congress provides \$151,500 for a quarantine station at Cape Charles; \$61,500 for two barracks buildings, quarters, etc., at Reedy Island; \$26,000 for four barracks buildings, etc., at Savannah; \$15,000 for repairs to the old marine hospital and grounds at Cincinnati, and for a refrigerating plant at Mobile, Ala.

**Army Medical Rank.**—A doctor who had been for some years on the staff of a special hospital, joined up at the beginning of the war, and was soon appointed "Medical Specialist" to the leading military hospital at one of the largest camps in his country. When asked what he was specialist in, he replied "Specialist in everything." Whenever a serious case occurred, of whatever nature, he was the specialist called in for consultation!

**A Search for Nonphysical Standards for Aviators.**—Dr. R. P. Parsons (*United States Medical Bulletin*, April, 1918) says our navy has rejected hundreds of applicants for the flying corps because of trivial minor defects, most of whom could have become successful aviators, and many of whom have since made good in the Canadian Royal Flying Corps. One of Great Britain's greatest flyers has but 4/20 vision uncorrected in one eye and not a great deal more in the other. Such a man would have been rejected from our own corps. Aviators are required to have 15/15 hearing in either ear, although when flying the aeronaut plugs his ears tightly with cotton to diminish his annoyance from the sound of the motor. Doctor Parsons says: "Let us remember that, after all, we want for the personnel of our flying corps, men who can fly or at least who can learn to fly." A great number of flight instructors were asked to state the most essential qualities for a successful aviator. All agreed that the candidate must have the following characteristics:

Coolness under strain. Dependableness to always do the correct thing at a critical moment. Mental and physical alertness. Lack of any inherent fear of being in the air. Persistence and perseverance in his ambition to become a successful aviator.

The points generally agreed upon were that he must be: Intelligent, athletic and endowed with good muscular coordination, possessed of a keen sense of equilibrium, a good judge of velocity and distances.

There was disagreement as to whether the temperamental type of extreme stolidity or that of great nervous energy was preferable, many cases being cited of men of each type who had proved their expertness as aviators. Two instructors regarded physical strength as a valuable asset, but on being questioned most of the instructors deemed it not indispensable, citing cases that clearly disproved the contention of those two instructors.

There was a notable paucity of opinions concerning qualifications which were purely physical; indeed, the question of exceptional vision was mentioned by only one instructor.

The author gives the results of the application of a series of tests to flyers of different grades of excellence. He concludes that the Bárány test for equilibration is not so useful a test as one devised by himself which gives a direct test of a man's ability to judge of equilibrium by tipping a seat in any direction, the results being recorded electrically. He concludes that "almost any young man with a reasonable amount of common sense, the usual amount of 'nerve' possessed by most young Americans, and a keen desire to be an aviator, can realize his ambitions and learn to be a perfectly good flyer in a very few hours. It is questionable indeed whether more actual skill is required in learning to fly than in learning to drive an automobile. We are coming to believe that, after all, the most important quality that determines one's success as a flyer, is that of 'nerve.' Every one realizes that flying is a dangerous occupation. The flight pupils realize this as much as any one, and those who can just forget it and feel perfectly at ease in the aeroplane, are the ones who are most successful."

# Editorial Notes and Comments

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### EXTENSION AND LIMITATION OF THE "PRACTICE OF MEDICINE."

One of the ways through which progress has repeatedly to be won is by means of the breaking up of the crystallization that continually tends to form around language. The demands of the widespread methods by which the modern world reaches out for healing aid throw science and legislation back to the originally broader use of the term medicine. Both the Greek and Latin forms of this current term comprehended much more than is commonly included in it, even if we do not confine ourselves strictly to the use of drugs or "medicines." To these ancient peoples the root and forms of the word referred to that which "cured, remedied, helped, was good for," even "protected, ruled over." In all there was the wider meaning of necessary service in the face of weakness and need which should at least form the background of all modern medical practice.

Two important steps have been taken in a forward direction toward both a broader policy and one of greater responsibility in the restatement

recently of the definition of the practice of medicine.

First the Supreme Court of Illinois, in a decision of a few months ago, defined medicine to include "the healing art," that is, the science of preserving health and treating diseases, whether with medicinal substances or otherwise. Any one so occupied with the treatment of disease is a physician, but this only emphasizes the requirement of the necessary educational qualifications for all such persons. The specifications of the decision which permits any physician to sign a death certificate further emphasizes this fundamental requisite. Then the Supreme Court of New York has also recently reiterated the definition of the "practice of medicine" in the case of the reversal of a judgment affecting an unqualified practitioner, who undertook the removal of superfluous hair from the skin of a certain patient with an electrical needle.

The statutory definition of the practice of medicine is as follows: "A person practices medicine within the meaning of this article, except as hereinafter stated, who holds himself out as being able to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition and who shall either offer or undertake by any means or method, to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition."

The treatment of a growth of hair may constitute but a minor bit of medical practice, but scientific logic as well as often lamentable results of untrained manipulation would lead one unhesitatingly to admit that it falls into the category of the treatment of human ills thus defined and necessarily safeguarded by the requirements for training and skill demanded of the licensed physician. At any rate, such a standard is set by the legal authorities and is therefore incumbent on the would be practitioner.

This by no means extends a dangerous license to the physician, but, by laying stress upon the educational requirements of any practitioner, it puts all forms of healing upon a basis secure and responsible in regard to public need. At the same time it places the many forms of practice which have arisen and become approved through their ability to meet this public demand properly in the hands of those capable of testing and using them to the best advantage. It safeguards the professional ranks, but still more it safeguards the public, at the same time granting them fuller

opportunities for seeking and finding the peculiar sort of help they need. None the less it puts a far greater responsibility upon the physician to prepare himself conscientiously in the requirements which make for good judgment and skill and in that broader mindedness which not only welcomes but seeks out what is new to extend and enlarge the old.

### THE NERVOUS ELEMENT IN GOUT.

Many conditions, heretofore etiologically obscure, are now associated either definitely with disturbances in the glands of internal secretion, or with deranged innervation in some part of the nervous system, particularly of the vegetative nervous one. It seems, in fact, that the latter has exclusive control over the glands of internal secretion, and disturbance in the latter must be directly credited to this part of the nervous system. The so called constitutional diseases and the various diatheses are chiefly concerned in these neuroendocrine disturbances. In all of them, however, there is a basic constitutional infirmity, which accounts for their common familial distribution. Among the conditions around which this nervous element seems to be particularly active are the neuroarthritic, asthma, hemophilia, epilepsy, urticarial conditions, hay fever, and particularly gout and gouty conditions. Familial eosinophilia is probably included among them. The eosinophilia is particularly interesting because of its previous close association with parasitic infections. Most probably all the so called diatheses are of vegetative origin. The joint conditions in gout are explained as catarrhal joint conditions brought about by disturbed innervation. While the previous theories concerning the relationship between gout and uric acid are not so religiously held, it is still likely that while the relationship exists the uric acid lies in relation to effect rather than cause. In all likelihood it is the renal condition in gout that causes the uric acid retention. It is only the severer manifestations of this form of neuroarthritis which are manifested by clinical gout. Minor involvement is manifested by skin manifestations or the various metabolic conditions still very poorly classified under "acid" conditions. As long as the elimination of uric acid is not too restricted, attacks of gout do not occur.

Of the internal secretion of glands which are largely concerned in the causation of gout, the thyroid holds first place. The fact that men suffer more from gout than women is explained on the ground that thyroid activity is less in the male

than in the female. On the other hand, after the menopause, when the thyroid activity is much lessened, the tendency to gout in the female is not so markedly less than in the male. The thyroid seems to have a trophic control over the organism with respect to the development of neuroarthritic conditions. It is not certain that the endocrinous system controls the vegetative nervous system or whether it is vice versa, but, in all likelihood, both can react upon each other to form a vicious circle. The sympathetic controls metabolic activity in this respect through the thyroid, and stimulation of the sympathetic inhibits the overfunctionation of the autonomic system. Overfunctionation of the latter, especially when not held in check by proper functioning of the sympathetic, causes sluggish metabolic conditions which ultimately are at the bottom of the neuroarthritic conditions. The tendency to these diatheses is reduced by stimulation of the sympathetic, as occurs in acute febrile conditions when many of these neurotic diatheses such as asthma, enuresis, etc., seem to disappear. The sympathetic and the autonomic systems exercise an antagonistic control over each other. When one outstrips the other, whether because of gland disturbance or otherwise, the balance is broken and organic disturbances usually follow.

### GREAT BRITAIN DRAFTS DOCTORS.

The draft age has been widened in Great Britain to include all men between the ages of eighteen and fifty. For the first time doctors, as such have been included in the draft and are paid the compliment of having the limitation of age for them extended to fifty-six. This step shows how urgent is the need in the British army both for fighters and for physicians. In view of the fact that we are but entering upon the road which Great Britain has traveled these four years past, it is well that we should study the effects of this act as it may furnish a guide as to what we may have to do later ourselves.

The wording of the regulations issued show that it is not expected that every physician under the age of fifty-six shall enter the army medical service, although they may have to do so if in the opinion of the government, their services are more important to the army than to civilians. It does mean, however, that the British government proposes taking full charge of the practice of medicine both in civil and military life. Application for exemption from drafts may be made on any of the following grounds:

(a) That it is expedient in the national interests that the practitioner should, instead of being employed in military



service, be engaged in other work in which he is habitually engaged; or in which he wishes to be engaged; or, if he is being educated or trained for any work, that he should continue to be so educated or trained.

(b) That serious hardship would ensue if the practitioner were called up for army service, owing to his exceptional financial or business obligations or domestic position.

(c) Ill health or infirmity.

(d) Conscientious objection to combatant service.

Such applications may be referred to a medical tribunal having authority to grant a certificate of exemption. This certificate may be for absolute, conditional or temporary exemption, and we learn from the regulations that: "A certificate granted or renewed on occupational grounds shall, and a certificate granted or renewed on personal grounds may, be subject to the condition that the practitioner shall undertake such professional service and under such conditions as the Director General of National Service may, after consultation with the medical tribunal and in concert with any government department concerned, from time to time deem best in the national interests."

The wording makes it clear that the Government purposes to make such use of the services of the practitioner as circumstances may be deemed best for the public welfare. Some physicians will be assigned to civil practice in certain districts with a view to relieving others who will be ordered into the army service. The British Government has assumed a very grave responsibility, though it seems to have been incumbent upon them to take such step because of the unfortunate conditions existing in some sections where the civil population has been deprived of adequate medical ministrations. Fortunately the Government will consult the local organizations of physicians with a view to avoiding the infliction of unnecessary hardship either on doctors or patients.

We hope that we are as yet a long way from the necessity of following the example of Great Britain of drafting medical men, but if our army is increased in the next twelve months as it has been in the past, it will not be long before we face the same need, and this would mean a necessity for the governmental regulation of civil practice as in England. It is estimated that we have 76,000 doctors under the age of fifty-five. Already we have approximately one in eight of these in the service. We are told that we are to have an army of 4,000,000 by the end of 1918. This would mean 40,000 doctors out of the 76,000, or more than half of those who are of military age. Notwithstanding the thoroughness with which the profession has been organized, and the enthusiasm with which its members have taken up military duty, it is doubtful whether we can double our present medical staff

within the year without resorting to the draft, and it is therefore well to study the experience of our British Allies who are now going through this novel experience.

#### CONTROLLING VENEREAL INFECTION.

Military authorities are keenly alive to the dangers from venereal diseases and have instituted vigorous measures both for the prevention of infection and for the prompt and efficient treatment of the soldiers who have contracted either gonorrhoea or syphilis. But no regulations, however severe or well enforced which are purely military, can deal adequately with the problem. If success is to be hoped for, the only path to it lies in a campaign conducted among the civil population. The difficulties are immense, but not too great to be overcome by energetic, intelligently directed efforts. The menace of venereal diseases proceeds from the civil population, and drastic steps must be taken to deal effectually with them. This is thoroughly recognized by army and public authorities everywhere, and in no country more so than in the United States.

Surgeon General Blue, of the Public Health Service, has shown himself fully alive to the peril and has stated that, in his opinion, the need for control of venereal infections, in connection with the prosecution of the war, constitutes the most important sanitary problem at the present time confronting the public health authorities of this country, and the army medical authorities are at one with him in this belief.

According to a distinguished British medical specialist, Lieutenant Colonel L. W. Harrison, writing in *The State Journal of Medicine* for April, 1918, the burden of dealing with venereal disease will fall on the civil community. Soldiers infected during the war, while in the army are efficiently treated, because they are under disciplinary control. Moreover, preventive measures to some extent have been brought into effect for their protection, but, with regard to the civil population, the situation is very different. Boys and girls, and of course girls especially, have been divorced from home restraint, and, in some countries the necessity for bringing into force laws calculated to prevent the dissemination of venereal infection has been appreciated. The most comprehensive and most carefully thought out of these is an act known as the venereal diseases prevention act, which has been passed by the government of Ontario and which became a law on July 1. This act is somewhat drastic, one provision prohibiting marriage by any person suffering from venereal disease, while another provision is to the effect that any action or conduct likely to result in the spread of the disease is regarded as a serious offense.

The penalty for contravention of either of these clauses is a heavy fine or imprisonment for a year. Lieutenant Colonel N. W. S. McCullough, the able chief of the Board of Health of the Province of Ontario, was mainly responsible for the framing of the Ontario act and his foresight is to be highly commended.

The Province of Saskatchewan has also passed laws with view to controlling venereal disease and both that province and Ontario require venereal disease to be reported and those suffering from it to be placed under proper treatment.

The pioneer country in this direction was Western Australia, where a bill for the control of venereal disease was passed in 1915. Another province of Australia, Victoria, has followed suit. The records for 1916 in Western Australia justify the legislation, for during the last seven months of the year 1917 cases were notified. While legislation of the kind referred to above is without doubt a long step in the right direction, and while educational propaganda and other measures now in vogue will go far toward scotching the evil, there are those well qualified by experience to speak with authority who contend that still more radical methods should be enforced.

The example set by Ontario, Saskatchewan, Western Australia and Victoria should serve as an incentive for the initiation of a universal campaign against perhaps the most destructive disease known, one said to be as easily prevented as some diseases which by hygiene and other measures have been exterminated. The military importance of such a movement cannot be overestimated, for venereal disease in a command materially reduces its military effectiveness.

#### EXCHANGE IS ROBBERY?

This was the decision arrived at by the War Office in London concerning the proposed exchange of English for German prisoners. To exchange thousands of well cared for Germans for invalids or cripples would certainly be unprofitable, so, for a fraction of time, John Bull prided himself on being a very practical and far-seeing man. Some said he had not been practical because he had not made reprisals and ill treated the Hun prisoners. Well, that was contrary to his humanity, and the German nation needed a lesson most surely in that. Some said that to release so many thousands would retard the conclusion of the war, but examination showed that those affected would not perhaps be more than a quarter of a million, perhaps not more than a hundred thousand. Meanwhile, stories of cowardly abuse of English prisoners were multiplied

by those who had escaped or who had actually seen things done. France had already entered into a treaty, while English soldiers were still dragging out a wretched existence, fed on little that was real food and much that was also unreal in the way of lies concerning disaster and defeat.

Was this a fair reward for fighting? Some of them had been prisoners since 1914. It surely was not, and the edict has gone forth that an exchange is to be made. Imitating France, the chief clause in the treaty will release all who have been in captivity more than eighteen months. With such a possible "home coming week" awaiting American boys in the unknown future, a keen observance of results in all such movements among the Allies will be kept by authorities as well as the rank and file.

#### TO ELIMINATE ROTATING HOSPITAL SERVICE.

In the need for medical men for the army, a need which will increase as the war goes on, it is necessary to cut to a minimum the number of men who are engaged in hospital service. Dr. S. S. Goldwater, whose special knowledge of hospital administration entitles his opinion to great weight, has written a letter to the editor of the *NEW YORK MEDICAL JOURNAL*, which appears in another column, advocating the elimination of the rotating service in hospitals. This service, as at present organized in most hospitals, assigns a physician to a particular service for a limited period, after which some one else takes over the same service. In this way, many men will appear as being assigned to the same service, though as a matter of fact they give but a few months out of the year to it. This practice is entirely proper in peace time but, as Doctor Goldwater points out, it should be abrogated for the present in view of the overwhelming need for medical men in the army.

#### THE SIZE OF THE FRENCH ARMY

In view of the vague guesses which have been made from time to time regarding the size of the French army, it is interesting to have an authoritative statement from an official representative of the French Medical Department, Colonel Charles U. Derclé, who is liason officer in the office of the Surgeon General of the United States Army, that about one million of the French army have been permanently disabled, and a little more than a million killed in battle. On January 1, 1917, there were, not including natives of the French colonies, and workmen in war factories, 4,725,000 men and officers in the French army, of whom about 3,000,000 are at the front. The western front measures 755 kilometres in length; of this the Belgians hold 25 kilometres, the English 165, and the French 565, or three quarters of the line. This is a wonderful showing for a people who were reported in some newspapers to have been, a year ago, "bled white."

## News Items.

**First Woman Lieutenant on Duty as Surgeon.**—Lieutenant Ollie Josephine Baird, of Detroit, began her duties as contract surgeon at Camp McClellan July 1st, and has the rank, pay, and quarters of a first lieutenant. She has not yet been allowed to wear the insignia of her rank, but the regulation salute has been accorded her. Lieutenant Baird was one of the first five graduates from the Mayo clinic and formerly practised medicine at Detroit.

**Iowa State Medical Society.**—At the annual meeting of this association, held in May, the following officers were elected: President, Dr. Max E. Witte, of Clarinda; president-elect, Dr. William L. Allen, of Davenport; first vice-president, Dr. William A. Rohlf, of Waverly; second vice-president, Dr. Evan S. Evans, of Grinnell; secretary, Dr. Tom B. Throckmorton, of Des Moines; treasurer, Dr. Thomas F. Duhigg, of Des Moines; editor, Dr. D. S. Fairchild, of Clinton.

**Annual Meeting of Railway Surgeons.**—The twenty eighth annual meeting of the New York and New England Association of Railway Surgeons will be held in New York on October 21st, with headquarters at the Hotel McAlpin. A special feature of the program will be a symposium on the Modern Treatment of Infected Wounds. Dr. J. S. Hill, of Bellows Falls, Vt., is president of the association, and Dr. George Chaffee, of Little Meadows, Pa., is corresponding secretary.

**New Officers of the National Tuberculosis Association.**—At the annual meeting at Boston, June 6th-8th, the following officers were elected for the ensuing year: President, Dr. David R. Lyman, of Wallingford, Conn.; honorary vice-presidents, Hon. Theodore Roosevelt, Sir William Osler, Colonel George E. Bushnell, M. C., U. S. Army; secretary, Dr. Henry Barton Jacobs, of Baltimore, Md.; treasurer, William H. Baldwin, Washington, D. C.

**Formation of Emergency Relief Units in New York.**—The formation of emergency relief units for service during calamity in any part of the city was discussed at a meeting of two hundred physicians and nurses from the city hospitals on July 1st in the West 125th Street police station. Special Deputy Police Commissioner Rodman Wanamaker has given to the officers of the units information about police relief measures in London and Paris. Classes of fifteen women each will be instructed in the police station Monday, Tuesday, Wednesday, and Thursday evenings. One of the physicians said that the Grand Central Palace, at Lexington Avenue and Forty-seventh Street, will be turned into an emergency hospital. The hospital will accommodate 2,500 patients.

**American Red Cross Sets Record in Preparing Evacuation Hospitals.**—Three hospitals were established in record time along the line northeast of Paris a few days after the last German offensive was launched. In the case of one hospital, the officer in charge left Paris with ten nurses and ten tons of equipment, without knowing exactly where the hospital was to be located. He found a desirable building, and had the place fully equipped, including an operating and x ray room, within three days. The second hospital had a few beds and a little equipment when the officers arrived. Its capacity was increased to six hundred beds by means of equipment rushed from Paris on motor trucks. The trucks reached the hospital simultaneously with the wounded from the battlefield.

**Another Hospital Ship Torpedoed.**—The Canadian hospital ship *Llandovery Castle* was torpedoed by a German submarine about seventy miles southwest of the Irish Coast. There were on board about 258 persons, including the crew, nurses, and members of the Canadian medical service. Of this number all except twenty-four were drowned. Among those saved was Major T. Lyon, Canadian Army Medical Corps. The German U boat commander said that the ship was sunk because he had intimidation that eight American flight officers were on board. There were no combatants on board and the ship had been engaged exclusively in hospital service for several months. When sunk she was on her way to England. Her identity as a hospital ship was clearly indicated and was known to the U boat commander. In consequence of this attack the sailing of the U. S. hospital ship *Comfort* has been delayed.

**Higher Rank for Medical Officers.**—To remedy the fact, that because of inferior rank the medical officers of the regular service and the National Army were unable to compel obedience to their orders, the Senate has adopted an amendment allowing four assistant surgeons general for the Medical Corps of the Regular Army, one to have the rank of major general and the other three to have the rank of brigadier general. In the National Army, for each million men four major generals and eight brigadier generals are provided from the Medical Reserve Corps of the Regular Army.

**American Laryngological, Rhinological, and Otolaryngological Society, Inc.**—At the recent annual meeting of this society, the following officers were elected to serve for the ensuing year: Colonel H. S. Birkett, Canadian Army Medical Corps, of Montreal, president; Dr. Robert Lewis, of New York, chairman of the Eastern Section; Dr. Clifton M. Miller, of Richmond, Va., chairman of the Southern Section; Dr. Otto J. Stein, of Chicago, chairman of the Middle Section; Dr. Claude E. Cooper, of Denver, chairman of the Mid-Western Section; Dr. John J. Kyle, of Los Angeles, chairman of the Western Section; Dr. Ewing W. Day, of Pittsburgh, treasurer; Lieutenant Colonel William H. Haskin, Medical Corps, U. S. Army, of West Point, N. Y., secretary; Dr. George L. Richards, of Fall River, Mass.

**Military Course at Columbia Compulsory.**—Full plans for introducing compulsory military training and for enrolling all students of the college in the Reserve Officers' Training Corps will be put into operation at Columbia next fall. It is calculated that there will be 850 men in uniform. The coordination of academic, military, and athletic training has been worked out by Dean Hawkes, Colonel John P. Finley, U. S. A., retired, who will be professor of military science and tactics, and Professor George L. Meylan, medical director of the gymnasium, who will introduce the new ideas in mass and play athletics found by France to be invaluable for war. The plan proposes to take men who are not physically fit and make them physically fit. It is estimated that the percentage of students fit for high military service can be doubled by the training.

**Personal.**—Dr. Walter B. James, president of the New York Academy of Medicine, has been appointed head of the State commission for the study of the feeble-minded. How to provide institutional care for the feeble-minded, of whom there are about 30,000 in New York State, has been a problem that has vexed the legislature many years.

Dr. David L. Edsall, Jackson professor of clinical medicine in the Harvard Medical School since 1912, has been appointed dean of the school, succeeding Dr. Edward H. Bradford, whose resignation has been accepted. Doctor Edsall will assume his new office on September 1st.

Colonel Jefferson R. Kean, M. C., U. S. Army, has been promoted to the rank of brigadier general. General Kean was medical director of the American Red Cross and organized the first fifty base hospital units for overseas service before the United States entered the war.

Major Harvey Cushing, Medical Reserve Corps, United States Army, has had conferred upon him the honorary fellowship of the Royal College of Surgeons in Ireland. Major Cushing is on leave of absence from Harvard University.

Dr. Joel E. Goldthwaite, of Tufts University, Boston, director of military orthopedics with the American Expeditionary Force in France, has been promoted to the rank of lieutenant colonel.

Dr. A. R. Cushny, professor of materia medica and pharmacology in the University of Dublin since 1905, and who was formerly connected with Johns Hopkins University and the University of Michigan, has been made professor of materia medica in the Edinburgh University.

Dr. Bernard S. Rosenzweig, 993 Park Avenue, New York, announces that pursuant to an order of the Hon. Justice Edward B. La Fetra, in a Special Term of the City Court, that on and after July 1, 1918, he has been authorized to change his name and assume that of S. Bernard Ross.

Colonel William S. Thayer, of Baltimore, professor of clinical medicine at Johns Hopkins Hospital, has been elected a foreign member of the French Academy of Medicine.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### RECENT OBSERVATIONS IN DIGITALIS THERAPY.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 1153.)

In spite of its well known property of slowing the heart rate by stimulating the vagal cardioinhibitory apparatus, digitalis is not effectual in all forms of heart involvement associated with an increased rate. In at least some of the conditions in which it fails to benefit, diminished sensitiveness of the vagus—or possibly, reduced power of the vagus to act owing to abnormal tone of the opposed accelerator, sympathetic mechanism—appears to be responsible.

In the so called "irritable heart" of the soldier, in which, in addition to a constant slight increase of rate during bodily rest, a markedly excessive rise in rate takes place upon exertion, Lewis finds that, while vagal tone is not abolished, it is questionable whether vagus activity is unaffected, for the pulse fails to return to normal after exercise. Experiments with adrenalin and apocodeine having shown, on the other hand, that the sympathetic (accelerator) system is more easily stimulated or depressed than normal in these subjects, Lewis thinks one may best account for the high pulse rate as being due to an excessive irritability, among other structures, of the acceleration reflex arc and the rhythm producing centre itself. Mental strain appears at least as important a factor in bringing on the condition as physical exertion. Absence of physical signs, except the tachycardia itself, is characteristic of most cases. The uselessness of digitalis in nearly all these patients now seems well recognized. Rest in bed is itself contraindicated in most instances; Meakins and Gunson, 1917, found it to exert a most unfavorable influence on the return of the pulse rate to normal after exercise. Evidently the heart, in spite of its poor response to the functional exercise test, is in no need of the rest which confinement to bed or digitalis, if it succeeds in slowing the rate, affords. For indeed, gradually increasing exercise has, as a rule, proven the best corrective measure in this condition. Garrod, 1917, and others, have maintained that "soldier's heart" is not a single clinical entity, but comprises a number of different morbid states. Garrod states that even among men exhibiting the "effort syndrome," some respond well to exercises while others do not. In a variety of war heart observed among soldiers of the British Mediterranean Forces, in which the myocardium seemed temporarily damaged by malaria, dysentery, or trench fever, complete rest proved to be the most important factor in the treatment. The morbid condition in this type of case is believed to be a dilatation of the auricles, especially the right auricle. Garrod is not convinced of the efficacy of either digitalis or nux vomica in these patients, but mentions Graham as believing that the former drug

lessens the chance of redilatation, to which the heart in such cases is very liable.

Whereas the various observations already presented tend to show that in tachycardia of nervous origin, digitalis is usually of relatively slight or no utility—the heart not being subjected under these conditions to overwork such that its nutrition is impaired—nervous heart disturbances do at times become so pronounced that actual cardiac insufficiency is induced, thus affording digitalis the opportunity to act beneficially. As Hoover, 1915, points out, there are instances met with of myocardial incompetence following prolonged, intense mental, and emotional distress. Such cases are probably related at times to overactivity of the thyroid gland, which, in turn, is associated with overactivity of the sympathetic cardioaccelerator mechanism. The excessive katabolic chemical changes characteristic of hyperthyroidism doubtless themselves hasten the ultimate weakening and dilatation of the heart in this condition by preventing adequate nutrition of the myocardium. While in mild nervous or hyperthyroid disturbance of the heart digitalis seems relatively ineffectual in reducing the heart rate, where actual weakening and dilatation result, with further increased heart rate, digitalis may be expected to reduce this additional increase in rate, overcome dilatation, and on occasion promote diuresis. According to A. W. Meyer, 1912, the frequent pulse of tuberculosis yields but little or not at all to therapeutic doses of digitalis, not only in the presence of fever but likewise when hyperthermia is absent.

Paroxysmal tachycardia, it is well known, exhibits a relatively regular rhythm with greatly increased rate. A considerable variety of pathologic states of the heart may underlie it, but the chief predisposing or exciting cause appears to be an undue irritability—or irritation—of the heart which leads it to break away from the control of the normal pacemaker and respond to excessively frequent impulses arising usually in the auricle but occasionally in the ventricle. According to Lewis, 1912, the new rhythm in this condition shows only limited subordination to vagal and sympathetic control. Remembering that digitalis is credited with the property of increasing the irritability of the heart muscle, and noting further the relative insusceptibility of the heart to vagal influences in this condition as pointed out by Lewis, we may readily understand why the drug fails in the majority of instances to arrest seizures of paroxysmal tachycardia. Prolonged paroxysms tend to induce dilatation of the heart, which owing to the extremely high rate does not have a sufficient opportunity to empty itself; yet digitalis seems unable to afford much benefit. W. T. Vaughan, 1918, suspects that digitalis in large doses may itself be an exciting cause in the production of the ventricular form of paroxysmal tachycardia where conditions predisposing to it already exist. The fact that vagal stimula-

tion induced otherwise than by digitalis, *e. g.*, by pressure on the vagus nerve or on the eyeballs, the swallowing of cold water, the induction of vomiting, etc., not infrequently succeeds in arresting a paroxysm, while digitalis so often fails, is perhaps accounted for by the added action of the latter in enhancing cardiac irritability, the other measures acting upon the vagus alone. Lewis states that in the intervals between paroxysms a full course of digitalis may ultimately improve the condition. As a rule he gives one half to one drachm of the tincture or one half to one ounce of fresh infusion daily for the first week. The dose is then increased until nausea or headache appear, and finally reduced to the maximal quantity borne without undue discomfort. This treatment he finds sometimes successful where other remedies have failed.

(To be continued.)

**Phototherapy and the Air Cure in Surgical Tuberculosis.**—R. Brunon (*Presse médicale*, February 24, 1918) pleads for more widespread recognition of the benefits of light and air, and less routine hospital treatment. He reports the case of a boy of fourteen years with multiple tuberculous bone lesions who, after remaining in a hospital bed for a long period and being subjected to repeated currtage of the disease foci, one day disappeared. A few months later he returned almost unrecognizable, having grown, filled out, walking without difficulty and with sinuses nearly all closed. It was learned that, despairing of recovery in the hospital and longing to live unrestrained in the country, he had had himself helped over the hospital wall, and had wandered from farm to farm, generally sleeping in the open air, rain or shine, and begging food from peasants. In a few days his dressings had all been pulled off by thorns and he was merely wiping his wounds with grass or leaves and leaving them uncovered. Winter had brought him back to the hospital for shelter; all the benefit from his escapade was soon lost and after a few months he succumbed to tuberculous meningitis. Such a case from the start should have at least been out of bed in the hospital garden for a few hours a day. Another case, in a young man of twenty, was one of long standing hip disease with numerous sinuses. Excision of the head of the femur yielded improvement, but, in the subsequent months, the condition became very grave. The family took the patient back, that he might die among his kin, and the following measures were instituted: Starch enemas, raw meat, general alcohol rubs, and an air and light cure at the open window. Twice daily the affected tissues were exposed for a few minutes to diffuse light. A nurse taught the mother to apply antiseptic dressings. Within two weeks diarrhea ceased, and the general condition improved in the succeeding months. Three summer months in the country did no good, loneliness and absence of the family being keenly felt. Upon return to town in the fall and resumption of the open window treatment progressive improvement began at once. Soon he was able to walk with a special shoe, the general condition was good, and but little suppuration remained. In this case, air and diffuse light saved the patient.

**Fractures of the Femur.**—John McH. Dean (*Journal of the Missouri State Medical Association*, May, 1918) sums up the treatment under three heads: first, the general good care of the patient, preferably in the upright or semiupright position; second, reduction with care not to break up impactions; third, good retention apparatus. In intracapsular fractures removal of the head of the femur is recommended by some surgeons, but lately autogenous bone pegs have been extensively and successfully used; wire or steel nails are to be discarded. In the young, the adult and the middle aged Whitman's plaster of Paris cast with Buck's extension seems to be the choice of retention splints, while after sixty we should resort to the Hodgen splint. Extracapsular fracture shows seventy-seven per cent. partial or total disability, while intracapsular fractures seldom result in bony union owing to the fact that the nutrient vessels enter the neck of the femur about its middle and the vessels in the capsule are destroyed by the damage to the capsule, and finally the vessels entering the head of the femur with the ligamentum teres are inadequate. Another unfavorable anatomical condition is the absence of real periosteum on the femoral neck.

**Treatment of Psoriasis.**—H. W. Barber (*British Medical Journal*, March 30, 1918) recommends the following plans of treatment in order to return men to active military duty in the minimum period of time. Where there is a generalized eruption on the body and extremities the patient should receive a bath every morning, the first two baths containing cresol and sodium or potassium carbonate, thereafter only the alkali. Following the bath and again in the evening all of the affected parts, except the genitals, are to be covered with the following ointment:

Chrysarobin, .....	0.6 (gr. x);
Salicylic acid, .....	1.0 (gr. xv);
Phenol, .....	0.6 (gr. x);
Zinc oxide, .....	6.0 (dr. iss);
Lanolin, .....	} of each equal parts, to make 30.0 (oz. i).
Petrolatum, .....	

During this treatment the same suit of pajamas is worn night and day and allowed to become impregnated with the ointment. The genitals are protected by thorough application of Lassar's paste. If any area becomes acutely inflamed Lassar's paste containing a little ichthylol should supplant the ointment. At the end of a week the eruption is usually well cleared up, when Lassar's paste containing two per cent. of salicylic acid is applied to the treated parts, the pajamas are changed, and the bath reduced to alternate days. Very resistant patches of eruption may require the application of an ointment like the one given, but containing 1.3 gram of chrysarobin and 1.6 gram of salicylic acid. Lesions on the scalp and forehead should be treated by the application of the following ointment after cutting the hair very short and shampooing:

Pyrogallic acid, .....	0.6 (gr. x);
Salicylic acid, .....	1.0 (gr. xv);
Phenol, .....	0.6 (gr. x);
Ointment of yellow oxide of mercury, .....	30.0 (oz. i).

Florid persons with an inflamed eruption should have a milk diet with free purgation and a mixture of wine of antimony and potassium citrate.

**The Results of Treatment in Pernicious Anemia.**—Arthur Bloomfield (*Bulletin of the Johns Hopkins Hospital*, May 1918) in analyzing the results of the newer methods of treatment in pernicious anemia, as transfusion, splenectomy, and attempts to eliminate "foci of infection" does not hold quite so optimistic a view of the efficacy of these measures as others who have reported their immediate results. He considers fifty-seven cases in detail, turning particular attention to the comparative value of the various proceedings now being tried to prolong the life of the sufferer from pernicious anemia. In this series there was no definite evidence that these therapeutic measures had any effect. When it has been decided to resort to transfusion Bloomfield recommends repeated injections if the patient responds well, as single transfusions in cases which were not affected by other treatment were of no benefit. In patients who are not refractory to any of the forms of treatment, remission has occurred after transfusion, although transfusion did not appear to increase the duration of the remission. While the count was high the patient usually experienced a sense of well being after the transfusion, quite possibly due in some cases to the psychic effect. The central nervous system symptoms were not benefited by any of these procedures. The cases in this series did not bear out the view that transfusions were "held" better after splenectomy, nor did splenectomy make the remissions longer or more marked, or have any effect in prolonging life.

**Rubber Grafts.**—Delbet (*Presse médicale*, April 4, 1918) reports concerning four cases—two under the care of Veau and one each, of Huguier and Basset. Two of the grafts were used for muscular hernias of the thigh; in the other two cases the object was to liberate muscles or tendons caught in scar tissue. In one of the hernia cases a sheet of rubber was fastened by interrupted catgut sutures to the margins of the opening in the fascia, which was of about the size of a silver dollar. The muscle hernia did not recur, though when the fascia lata was under tension, resistance to the pressure was less at the site of the graft than in the surrounding area. In the other hernia case, a better method of fixation was employed, the margins of the sheet of rubber being cut into short strips which, after the rubber had been slipped between the muscle and the aponeurosis, were worked into the latter. A perfect result was obtained. The third case had broad scars on the forearm, adhering to the flexor muscles and preventing motion at the wrist. There were also signs of injury of the ulnar nerve. At the operation the whole of the adherent scar was removed, the nerve sutured, the muscles drawn apart, and the destroyed fascia replaced by a sheet of rubber four centimetres broad and ten centimetres long. Two months later one half the normal motility at the wrist had been recovered, but the ulnar paralysis persisted. In the fourth case the flexor tendons of the index and middle fingers, adherent to callus on the second metacarpal bone, were liberated and a sheath of thin rubber made for each tendon. The result was excellent. Rubber is thus shown to be useful both as a means of sustaining tissues and to permit of the sliding of tissues one upon the other.

**Comparative Activity of Local Anesthetics on the Cornea.**—Torald Sollmann (*Journal of Pharmacology and Experimental Therapeutics*, February, 1918) found the application of various agents to the rabbit's cornea a satisfactory method for comparing their efficiency as surface anesthetics. The order of efficiency proved markedly different from that of the same agents in immersion or conduction anesthesia, and the results furnished remarkable confirmation of the clinical experiences of ophthalmologists. On the cornea, cocaine and holocaine were the most efficient; then followed betacaine, alpin, quinine and urea hydrochloride, tropacocaine, and lastly, novocaine. Antipyrin and potassium (chloride) were practically ineffective. The rapidity and duration of the action varied with the concentration. For just effective concentrations, the duration was shortest with cocaine and tropacocaine and longest with quinine and urea. Addition of sodium bicarbonate, one quarter per cent., increased the efficiency of the anesthetics considerably—two to four times—with the exception of quinine and urea, which was rendered less efficient. Addition of epinephrine, one in 20,000, failed to increase the efficiency, and is therefore inadvisable in practice. Mixtures of the anesthetics with each other or with potassium did not lead to potentiation. The results showed why cocaine is still considered the superior anesthetic for mucous membranes and why novocaine has failed to establish itself in this field.

**Prophylactic Triple Inoculation Against the Typhoid Group.**—Georges Dreyer, A. Duncan Gardner, Alex. G. Gibson, and E. W. Ainley Walker (*Lancet*, April 6, 1918) record the results of a series of carefully conducted observations made to determine the most favorable conditions for the production of immunity by the injection of a combined vaccine for typhoid and the paratyphoids. As a result of these observations they conclude that the combined vaccine should contain 1,000 million of each of the three organisms per mil and that the initial dose should be half a mil and the second one mil. The agglutinin curve for each of these three organisms varies in different persons, both in the maximum reached and the precise day of its attainment, but in general the height is reached from the first dose between the sixteenth and twenty-fourth day after injection. Following this the titres fall rapidly at first and slowly later. The administration of the second dose on the sixth or seventh days after the first checks the rise of the agglutinin titres and delays it somewhat; if given between the thirteenth and sixteenth days, or before the time of maximum, the effect is but a slight nick in the rise of the titres, or a brief plateau; if the second dose be given later than the twenty-fourth day the fall in the titre is temporarily arrested after a few days and then slowed down materially. The chief effect of the second dose, given within a few days of the maximum of the titre produced by the first, is to delay the fall in agglutinin titre and prolong the period of effective immunity. It seems probable that it would be best to postpone the administration of the second dose to the eighteenth or twentieth day after the first.



**Prophylaxis of Malta Fever.**—H. Vincent (*Presse médicale*, March 7, 1918) advocates, for this purpose, active immunization of goats in the same way as herds of cattle and sheep are vaccinated against anthrax. He has prepared from ten strains of the *Micrococcus melitensis* and one strain of *Micrococcus parameitensis*, a polyvalent vaccine each mil of which contains about two thousand millions of the organisms. The animals are given two injections, each of two mls, at an interval of four to eight days. Such injections awaken an immunity of sufficient strength to protect against a large dose of the virus, administered either under the skin, intravenously, intraperitoneally, or by mouth.

**Acne Vulgaris.**—C. E. O'Donnell (*American Medicine*, March, 1918) treats acne by eradicating the seborrhea: Internal medication is of little value. Calcium sulphide and other preparations have been known to cure but, as a rule, their effect is disappointing. Sulphur is excreted through the sweat glands as sulphur dioxide, a local antiseptic and astringent. Vaccines may be of benefit. Antiseptic ointments should not be used. Chemical caustics should be used in treating persisting sebaceous folliculitis. They may be applied by means of a toothpick. Tonics in the form of iron, small doses of thyroid, and Fowler's solution are of value.

**The Workman's Hand: Its Treatment in Sepsis.**—Edward H. Risley (*Interstate Medical Journal*, April, 1918) emphasizes the importance of bed treatment in septic hand infection, and of splints in finger and hand infection from the very outset. Edema of the dorsum of the hand more often denotes a palmar than a dorsal focus; lymphangitis in some degree is almost always present. The white blood cell count is not a reliable guide as to the severity of the infection. Lateral incisions are of the greatest value and are less liable to open uninfected tendon sheaths. When the infectious process is localized dry dressings with boric wick or rubber tissue drains are the best, whereas wet dressings help to localize infection. Early passive motion and massage are of the utmost importance in shortening the period of disability, and early plastic operations or amputations are desirable after a preparatory course of the Zander treatment.

**Rheumatoid Arthritis.**—Ernest A. Dent (*British Medical Journal*, March 30, 1918) says that much can be done in this disease to arrest it in the early stages and to relieve the suffering of the advanced stages. Since it is prone to attack specially those with lowered vitality nothing must be done which further impairs resistance. In acute and sub-acute cases the patient should be in bed and the joints should be kept at rest during acute pain, but when this subsides they should be moved gently to prevent stiffness. To lessen the pain the joints may be painted with guaiacol and tincture of iodine, one to six, mesotan in olive oil, or a twenty-five to fifty per cent. mesotan ointment in lanoline may be applied. Methyl salicylate with three parts of olive oil or six of tincture of iodine can be painted thickly over the affected parts and covered with lint and oiled silk. Blisters are specially useful in chronic cases. Adhesive plaster splinting reduces pain and swelling in many cases. Extension with light

weights to prevent the joint surfaces from rubbing together is also often helpful for the relief of pain. Flexion of joints can be prevented in large part by suitable splinting worn for part of each day only. The joints should be used as much as possible without causing pain. Breaking of adhesions under anesthesia is not satisfactory. The diet should be light in the acute cases, but in chronic cases it should be ample, with an abundance of fats. Woolen clothing should be worn at all seasons and a warm, dry climate is beneficial. In febrile cases guaiacol, the salicylates, creosote, quinine, and salol are all of value, and aspirin and phenacetin often relieve the pain. Hyoscyamus and cimicifuga should be tried for the relief of cramps. Opium and morphine should never be given on account of the danger of habituation. Constipation and digestive disorders should be cared for, oral sepsis and other foci of infection should be treated, and lavage should be practiced when there is dilated stomach. Colchicum and alkalies should be prescribed where gout is present. Passive congestion, heat, massage and electricity are all of value in relieving pain, promoting suppleness, preventing contractures and maintaining nutrition of the parts. Stock vaccines should not be used, but where there is an active focus of infection a vaccine made from the contained organisms may prove helpful. Pituitary and other gland extracts have been recommended.

**Rectal Anesthesia.**—R. H. H. Goheen (*Indian Medical Gazette*, January, 1918) says that rectal ether has proved with him in eighty-two cases a safe and satisfactory method of general anesthesia when intestinal lesion cases are excluded. It is not suitable for laparotomies. It is particularly convenient for surgery of the mouth, head, neck, and other regions above the diaphragm. It is not economical for operations that can be performed in less than thirty minutes, but almost ideal for nervous thyroid cases, or others who dread inhalation anesthesia. There is less hyperemia about the head and neck, and consequently less hemorrhage in operations in this region. It is less irritating to the lungs than ether given by the open method, probably because it reaches the lungs in a naturally warmed and dilute condition. The postoperative nausea and vomiting is also less than with inhalation anesthesia. His method of administration is as follows: Weigh the patient; clear the bowels by cathartics and a saline enema; give hypodermically morphine grain one sixth and atropine grain 1/150 one half to one hour before operation, or, instead of this, induce primary anesthesia by chloroform inhalation and proceed at once with a mixture of three parts of ether to one part of olive oil. This mixture is shaken thoroughly for one minute and then one ounce of the mixture to every twenty pounds of the weight of the patient is introduced into the rectum through a catheter at the rate of one ounce per minute. The patient's hips should be slightly raised while this is being done. To prolong or deepen the anesthesia a little more may be given, for an overdose some may be drawn off through a rectal tube, and to cause the anesthesia to cease, draw off all the mixture and wash out the lower bowel with one pint of soapy water.

**Ligation Treatment of Causalgia.**—Lortat-Jacob and Hallez (*Presse médicale*, March 28, 1918) report the case of a wounded man with associated paralysis of the right median and ulnar nerves and marked and persistent sensory disturbances of causalgic type in the median distribution. A vascular injury had necessitated ligation of the brachial artery. Galvanism, the ethyl chloride spray, and salicylic ionization having all proven useless in relieving the pain, surgical treatment was decided upon. The median was freed for a distance of five centimetres and a moderately tight ligature of No. 1 catgut placed about the nerve in its infraxillary portion. On the first day the pain was markedly diminished and on the second disappeared completely. Evidently such a ligature is capable of inhibiting or eliminating for a time the perineural sympathetic irritability and the congestion of the trunk of the nerve without injuring the nerve fibres themselves which are undergoing centrifugal repair. The procedure is simpler and more easily carried out than denudation and excision of the periarterial nervous plexuses, and deserves recognition as a radical means of relief for severe causalgia in certain cases of median paralysis. It can be accomplished under brief general anesthesia with ethyl chloride.

**Severe Cicatricial Stenosis of the Esophagus.**—Sencert (*Bulletin de l'Académie de médecine*, March 12, 1918) asserts that the chief obstacles to the passage of sounds in tight esophageal strictures are met with at the upper opening of the stricture and in its interior. In the former situation the obstacles are, the narrowness of the orifice, its eccentricity, and the presence of a prestrictural dilatation presenting diverticular false openings which may be confused with the true opening. Obstacles within the stricture itself consist in the multiplicity of the strictured points and the irregularity of the lumen, which may be sinuous, oblique, or deflected bayonet fashion. The only way to circumvent these obstacles is to attack the stricture from below upward and to abandon the idea of carrying out repeated catheterization through it, the progressive dilatation being effected only along a permanent conducting strand passed through the stenosis. Gastrostomy is the first step in the procedure. Then, apart from exceptional cases in which a leaden shot and silk thread can be gotten through from above, the thread is passed by retrograde catheterization of the esophagus under visual control either through direct gastroscopy or retrograde esophagoscopy. The third step consists in continuous dilatation, carried out by the passage of rubber tubes of progressively increasing diameter, these, in turn, being fixed to the gastric end of the esophageal thread and drawn through the stenosis with the aid of traction on the oral end of the thread. The first rubber tube pulls after it a second silk thread which on the next day will draw through a second rubber tube of larger calibre, and so on until the necessary dilatation of the stenotic channel has been secured. In six weeks to two months the most severe strictures can be mastered by this method. Sencert had carried it out with success in fourteen cases.

**Analgesics in the First Stage of Labor.**—R. W. Stearns (*Northwest Medicine*, March, 1918) urges the early use of small and repeated doses of morphine to produce analgesia in the first stage of labor. The initial dose should never exceed fifteen milligrams (one fourth grain) and the selection of cases is of importance if the remedy is to prove truly valuable. There are six general indications for its use. The first is for the relief of the wearing, early, pinching or back pains so common in young and nervous primiparas. The second, tetanic contraction of the lower uterine segment and cervix; the third, threatened shock from long and severe pain; the fourth, inertia of the uterus from reflex causes in nervous, highly sensitive patients. The last two are: For patients with fulminating pains of great severity which must be checked to prevent too rapid delivery and damage to the maternal soft parts, and for the relief of pains of any sort in patients not used to bearing pain and who do not stand it well, even in moderation. These indications will include about thirty-five per cent. of all cases seen in general obstetrical practice. The only contraindications are idiosyncrasy, previous habituation, the patient's own scruples against taking any drug, and cases with irregular and feeble pains.

**Simplified Method of Blood Transfusion.**—Rieux (*Paris médical*, March 23, 1918) uses two trocar needles—the one plain, for insertion in the recipient's vein; the other with an additional inlet forming an acute angle with the narrow shaft of the needle, for the donor. A graduated receptacle holding about 500 mls and containing an isotonic citrate mixture at 38° C. is connected by tubing with the oblique inlet of the donor's needle. Another receptacle with an opening at the top and two lateral openings, the one above for entrance of the citrate mixture, and the other below, for exit of the mixture, is connected at the upper lateral opening with the longitudinal inlet of the donor's needle, and by the lower lateral opening with the needle leading to the recipient's vein. The citrate solution mixes with the donor's blood as the latter leaves the vein, and consists of sodium citrate, either six or eight grams; sodium chloride, 7.5 or seven grams, in 1,000 mls of distilled water. In an injection of one litre of blood and citrate mixture in equal parts the patient receives, according to the citrate solution used, but three or four grams of sodium citrate. The elevation of the citrate receptacle is so regulated beforehand that the citrate solution and blood mix in approximately equal amounts. The needle for the recipient's vein may be inserted either before or after the blood has been obtained from the donor. The amount of blood injected is known by noting the difference between the entire quantity of mixture introduced and the amount of citrate solution that has left the upper receptacle. Obtaining the donor's blood by mere puncture into the vein facilitates the procedure as a whole and permits of obtaining 250 to 300 grams of blood—an amount removable with impunity—from each of two or more donors, if necessary. The blood meets the citrate and becomes incoagulable immediately upon leaving the donor's vein.

# Miscellany from Home and Foreign Journals

## The Cardiac Disabilities of Soldiers in France.

—W. E. Hume (*Lancet*, April 13, 1918) has made a careful inquiry into the cardiac disabilities encountered in 5,000 soldiers sent up with the diagnosis of valvular disease or disordered action of the heart (V. D. H. or D. A. H.). At the preliminary examination a little more than eight per cent. of the patients were found to be suffering from easily recognizable diseases not of circulatory origin. The remaining ninety-two per cent. complained of breathlessness, pain in the chest, palpitation, giddiness, and other vague symptoms. Of these 5.5 per cent. were found to have gross organic cardiac disease, while the remainder fell into the class of D. A. H. cases. A very careful investigation was made of these latter and it was concluded that the symptoms of which they complained might occur under varying conditions of the body and mind and that no definite pathological basis for them could be determined in the vast majority of cases. No single underlying cause could be discovered. Some of the men belonged to that class of persons who throughout life are unable to undergo any prolonged strenuous physical exertion without cardiac symptoms. In such it might be supposed that the heart muscle, like the skeletal, was incapable of much increase in size and power through training. In another and a small group of men the D. A. H. was definitely due to some permanent or temporary damage to the heart muscle as the result of rheumatic fever, influenza, the enteric group of infections, trench fever, or other infectious diseases. A third group seemed to depend upon a disturbance of the innervation of the heart. Except in the first group and in a proportion of the cases in the second, the majority of the men could be returned to active duty following a course of graduated exercises.

**Paroxysmal Tachycardia.**—Frederick W. Price (*Lancet*, April 13, 1918) uses this term to include the conditions in which there occurs a marked increase in the heart rate, which begins abruptly without apparent cause and ceases as abruptly after a variable period, and which is due to the assumption of an abnormal rhythm. The abnormal rhythm varies, and, while its point of origin is usually in the auricle, it may arise in the ventricle. Temporary auricular fibrillation and auricular flutter are the commonest causes. The duration of each attack and the frequency of the repetitions vary within very wide limits. The etiology of the condition is obscure, but it is commonest in males and during middle life. A rheumatic history and the presence of some valvular or myocardial involvement are very common, but the condition also often occurs in the absence of all such factors. The symptoms may vary all the way from none recognizable by the patient to those typical of decided cardiac failure. The pulse rate is generally above 140 and may rise to 300, though it usually lies between 150 and 190. The pulse is of smaller volume than normal and may be regular or absolutely irregular. Pulsus alternans is very common during the paroxysms. The blood pressure is usually dimin-

ished in the attack. The area of cardiac dullness may enlarge materially, but with the cessation of the attack, the heart rapidly regains its normal size. Polygraphic and electrocardiographic tracings show different features, depending upon the origin of the abnormal impulses. The diagnosis rests mainly upon the cardiac rate and the abrupt onset and disappearance of the attacks. It may be confused with the tachycardias of less severe grade associated with the normal rhythm, but is readily differentiated by the suddenness of onset and termination and by the discovery in graphic records of the abnormal rhythm. The prognosis for a particular paroxysm is generally good, but when the attack is very prolonged it should be more guarded and should be based upon the rate of the heart, the duration of the attack, and the degree of cardiac failure present. Prognosis as to the recurrence of paroxysms is impossible. The degree of integrity of the myocardium should be estimated between the attacks and if there is no material limitation of the field of cardiac response and the attacks are infrequent and of short duration the prognosis may be regarded as good.

## Nature and Symptoms of Cardiac Infection in Childhood.

—F. J. Poynton (*British Medical Journal*, April 13, 1918) here presents some of the features of rheumatic disease of the heart and points out that the first attack of rheumatism in childhood may be of any grade of severity from the most transient and vague to the rare, rapidly fatal type. In the early cases with cardiac involvement there are two important groups: The one with sore throat, arthritis, and morbus cordis; the other with chorea and morbus cordis. In the very mild cases of the acute type, as in all other rheumatic cardiac cases, some degree of cardiac dilatation is to be found. In these very mild cases this is often the only evidence of cardiac involvement and must be looked for in every case of rheumatism in children, even in the absence of cardiac symptoms. It is best made out by careful percussion of the cardiac dullness with records kept by taking tracings from the points marked. The chief symptoms of this condition, aside from the slight enlargement of the heart, are shortness of breath, pallor, palpitation, and fainting attacks. The pulse is rapid and compressible. The first sound is often shortened and a soft mitral systolic bruit may be heard. In the severer grades all of these symptoms are exaggerated. The opposite picture to this mildest one is that of the most severe type of rheumatic heart infection. In this type the general evidences of severe, acute infection are pronounced, the rheumatic symptoms marked, and the cardiac dilatation and weakness are great. Death ensues in a very brief time, with or without the development of pericarditis and evident valvular lesions. A second form of this fatal carditis is the insidious type, occurring in feeble children. Here the symptoms are not very definite, but progressive weakness and evidences of cardiac dilatation are striking. The author says that the consideration of pericarditis, endocarditis and myocarditis apart from carditis is essentially artificial but is



necessary on account of their individual importance. Rheumatic pericarditis in children is of three types; acute pericarditis, acute internal and external pericarditis with mediastinitis and pleurisy; and malignant pericarditis. The striking feature of pericarditis in children is the rarity of large effusions. It must be constantly borne in mind that the symptoms of all types depend largely on the presence of a concomitant carditis. A brief sketch of the features of each of the three forms of pericarditis is given.

#### Paroxysmal Tachycardia of Ventricular Origin.

—W. T. Vaughan (*Archives of Internal Medicine*, March, 1918) has encountered since 1913 eighteen patients with the characteristic features of paroxysmal tachycardia, viz., sudden onset and offset; constant, regular, rapid rate and typical electrocardiographic tracings. In sixteen cases the pacemaker lay in the auricle, as was demonstrated graphically. In two, however, the condition was of another type, the impulse originating in the ventricle during the paroxysms. The author presents a detailed description of these cases, with electrocardiographic tracings, and summarizes the similar cases previously recorded in the literature. Digitalis might be an exciting cause of the condition, but there must in addition be some other predisposing factor, such as excessive irritability of the ventricles from impaired blood supply or some other cause. Digitalis in therapeutic doses in the majority of cases does not markedly increase the tendency to successive ventricular extrasystoles.

**Adhesive Phrenopericarditis.**—F. Trémolières and L. Caussade (*Presse médicale*, April 4, 1918) have encountered twenty cases of adhesion of the apex of the heart to the diaphragm, and establish it as a distinct nosological entity having special characteristic symptoms. Precordial oppression is complained of generally coming on during rapid walking or running, though at times apparently induced by the process of digestion or even occurring during rest. There is more or less severe pain of the angular type, occurring in paroxysms. Yet careful examination reveals no aortitis, arteriosclerosis, chronic nephritis, tabes, diabetes, nor high blood pressure. Auscultation reveals only a rise in the heart rate, reduplication of the first sound or muffling of both sounds, but inspection and palpation will show absence of the apex beat. This, with the angular pain, is the chief clinical symptom; the diagnosis is clinched, however, by x ray examination, which shows that the left cardiophrenic sinus, normally clear and especially marked in deep inspiration, has disappeared, being replaced by a triangular area of opacity, plainly circumscribed externally, with its base resting on the diaphragm and its summit merged with the cardiac apex, or oftener, with the lower part of the left ventricular margin. The angular attacks may recur only once a month or become more frequent up to one every hour. In some cases the apex beat is perceptible almost as well as normally, but its site remains fixed and is not displaced during lateral inclination of the thorax. Exclusive limitation of adhesions to the apical region is suggested by absence of the other physical signs generally attributed to cardiac bands.

Such patients constituted two per cent. in a series of 1,000 heart cases. In seven of the cases the original cause was tuberculosis or protracted bronchitis; in six, rheumatic fever, and in five, the eruptive fevers, especially scarlet fever, and in the other two, possibly dysentery and malaria. Generally the initial stage of the adhesive disease remains latent. Only rarely does it follow an acute diffuse pericarditis or a combined inflammation of the serous membranes. Symptoms appear at the long-est in five years after the original pathological change.

#### Amyl Nitrite in Diagnosis of Mitral Stenosis.

—R. A. Morison (*British Medical Journal*, April 20, 1918) emphasizes the fact that the diagnosis of early mitral stenosis is often a matter of great difficulty, though one of great military importance. In many doubtful cases a diagnosis can be made by auscultation successively in the standing, in the recumbent, and in the recumbent position after exercise. Lying, alone, will sometimes bring out a previously inaudible presystolic murmur, and this is more likely to appear on lying after exercise. In other cases, however, these procedures fail to bring out a murmur, while the inhalation of a pearl of amyl nitrite to the point of a reaction will often cause the appearance of the typical presystolic or of a full diastolic murmur. In other words the amyl nitrite advances the scale of physical signs to the point where a diagnosis is possible. In some other cases where a diastolic or presystolic murmur was present the inhalation of amyl nitrite abolished the murmur. Such cases also had definite aortic insufficiency and the presystolic or diastolic murmur was evidently of the Flint type.

#### Time Element in Isolation of Dysentery Bacilli From the Stools.

—C. J. Martin and F. E. Williams (*British Medical Journal*, April 20, 1918) recall the fact that prior to the war the bacteriological diagnosis of dysentery was held to be as satisfactory as that of diphtheria, and the further fact that a number of workers among the troops of both sides have recently reported very large proportions of negative results from bacteriological stool examinations in cases of clinical dysentery. Using a perfected technic, which they describe, the authors were able to isolate dysentery bacilli from fecal material when they were present in anything above the ratio of one colony of dysentery to 500 of other organisms in the primary plate. With the employment of this method 1,050 efforts to recover the organisms were made in a large number of cases of clinical bacillary dysentery at various stages of the disease and they obtained positive results in sixty-eight per cent. up to the fifth day of the disease; in 17.4 per cent. between the sixth and tenth days; in 6.3 per cent. between the eleventh and fifteenth days, and in about three per cent. between the sixteenth and fiftieth days; after which no positives were obtained. In other words the chance of recovering the bacilli diminished very rapidly after the first few days of the disease, and this was true without reference to whether the stools remained dysenteric or not. This fact puts a very serious limitation on the bacteriological diagnosis of bacillary dysentery.

### Typhoid Infections of the Mouth and Pharynx.

—A. Campani and F. Bergolli (*La Riforma Medica*, April 6, 1918) describe several different types of oral and pharyngeal alterations in typhoid. There may be a simple reddening with edema of the pharynx, either with or without tonsillitis, which is frequently seen at the onset of the disease. This is called the erythematous type and is found in thirteen per cent. of cases. Another form occurring in 5.5 per cent. and especially in the grave cases is the crustomucus, with encrustation of the lips and tongue, congestion of the soft palate and pharynx with abundant mucus secretion. A third variety is the miliary vesicular seen in the third week of the disease in 16.1 per cent.; a fourth is the true angioma of Duguet and was noted in thirteen of 108 cases. The last category comprises cases where punctiform or lenticular vesicles are present on the hard palate.

**The Factors Concerned in the Appearance of Nucleated Red Blood Corpuscles in the Peripheral Blood.**—Cecil K. Drinker, Katherine R. Drinker, and Henry A. Kreutzmann (*Journal of Experimental Medicine*, March, 1918) in the present paper studied the influence of hemorrhage and infusion as procedures designed to increase the rate of blood flow through the blood forming organs. In thirteen out of nineteen dogs a slight increase in the number of nucleated red cells followed hemorrhage and infusion, in five cases there was a slight decrease, and in one, no change. This slight increase the authors term a pseudocrisis. The true crisis is more extensive and occurs just before a rapid increase in the red cell count, and usually about the last of the first week following hemorrhage. As bleedings are continued, regeneration takes place irrespective of the appearance of nucleated red cells in the peripheral blood. The observations of Hough and Waddell that a sudden and unaccountable leucocytosis may foretell rapid regeneration are upheld.

**Mumps Meningitis.**—Julius Kaunitz (*Journal A. M. A.*, May 18, 1918) calls attention to the fact that this complication of mumps is very seldom recognized, there having been reports of only 150 cases in the literature. The rarity of its recognition may be due to the fact that it is often mild, and, usually, of very brief duration, with prompt recovery. In a few autopsies a serofibrinous meningitis has been demonstrated. Three cases of this complication are reported. In one of them symptoms were very severe and threatened death from medullary compression, but were promptly relieved by lumbar puncture. In the other two the symptoms were very mild and transitory. The condition closely resembled tuberculous meningitis in its course, but it could be differentiated from that disease by its association with an attack of mumps within two weeks of the onset of that disease, by the fact that the spinal fluid did not contain tubercle bacilli, and by the presence of many mononuclears in a clear or opalescent fluid within the first twenty-four hours of the beginning of symptoms. The prognosis was usually very good, but the complication might prove fatal occasionally, or leave a hemiplegia or damaged optic or auditory nerves.

### Bacteriological Studies in Bacillary Dysentery.

—Bezançon, Ranque, Senez, Coville, and Paraf, in studies of 300 stools during an epidemic which broke out simultaneously in several small foci in a certain military district in the late summer of 1917, were able to establish clearly the rôle of Shiga's bacillus in the more severe and clinically typical cases, while in the mild the Shiga organism was generally wanting and was replaced by aberrant bacilli of the dysentery group. The Shiga bacillus was isolated in large numbers from forty-three cases, and in dishes of lactose litmus agar at times almost completely replaced the normal intestinal flora, no colonies of colon bacillus being found. In twenty-six milder cases were found a number of different forms of organisms which did not correspond to any of the classical types of dysentery bacillus and never occurred in the severe or fatal cases. These atypical organisms are divided by the authors into five separate classes, according to their respective behaviors with indol and various sugars and their susceptibilities to agglutination by anti-Shiga and anti-Flexner serums. In each focus of dysentery the organisms responsible for the mild cases were of a single type. In one focus, however, the examinations revealed, in addition to the Shiga bacillus in five cases, the A paratyphoid organism alone in four cases and the typhoid organism alone in one case, in spite of the fact that the symptoms were those of dysentery. In no case in the entire series was the Flexner or the Hiss bacillus encountered.

### Studies in Calcium and Magnesium Metabolism.

—**Experiments on Man.**—Maurice H. Givens (*Journal of Biological Chemistry*, April, 1918) in order to determine whether there is any "normal" range for the urinary excretion of calcium and magnesium in adult man, and what the quantitative relation of these elements to each other is, observed nine healthy laboratory workers in this study. The character of the diet was not particularly limited, with the exception of the amount of milk taken. At first the articles in Sherman's diet containing more magnesium than calcium were taken, and the urine collected for three days. Then the relationship of calcium to magnesium ingested was reversed by adding to the diet either fresh or dried milk, calcium lactate, or magnesium citrate, and the urine was collected for a second period of three days. In the first instance the daily output of calcium ranged from 0.05 to 0.24 gramme, and that of magnesium from 0.03 to 0.15 gramme. On the diet having more calcium than magnesium the limits were 0.12 to 0.47 gramme of calcium and 0.05 to 0.23 gramme of magnesium. In these subjects there was generally a greater excretion of calcium than magnesium in the urine, or if this was not the case, it could be readily produced by the ingestion of either dried skimmed milk or raw milk, which increased the urinary output of both calcium and magnesium. By taking calcium lactate it was always possible to increase the urinary calcium excretion, but the excretion of magnesium in the urine was apparently not affected by magnesium citrate. Milk was more efficacious than calcium salts, *e. g.*, calcium lactate, in increasing the urinary excretion of lime.



# CANADIAN MEDICAL CONGRESS

Held in Hamilton, Ontario, May 27 to 29, 1918

*By far the largest medical meeting which has ever been held in the Dominion was opened by the Governor General of Canada, on May 27, 1918, in the picturesque city of Hamilton, Ontario. The congress was a combined meeting of the Canadian Medical Association, the Ontario Medical Association, the Canadian Public Health Association, the Ontario Health Officers' Association, and the Canadian Association for the Prevention of Tuberculosis. During the entire week the meetings were largely attended. Some thirty well known physicians and surgeons from the United States read papers and took part in the discussions.*

## The Proceedings

### CANADIAN PUBLIC HEALTH ASSOCIATION AND ONTARIO HEALTH OFFICERS' ASSOCIATION.

*Annual Meeting, Held May 27th and June 1st.*

Dr. W. H. HATTIE, of Halifax, Captain, Canadian Army Medical Corps, in the Chair.

Two features marked the proceedings of the first two days. One was the special attention paid to the problem of venereal diseases, and the other that child welfare occupied the most prominent place in the programme.

**The Control of Venereal Diseases.**—Lieutenant Colonel JOHN W. S. McCULLOUGH, M. D., D. P. H., of Toronto, opened the proceedings with a paper which dealt almost wholly with the act for the control of venereal diseases in Ontario which Colonel McCullough has been largely instrumental in putting through the legislature. By its provisions any person under arrest, may, if, considered necessary by the medical health officer be examined to discover if he is suffering from venereal disease. If this be so, he is liable to detention and treatment. Physicians in charge of places of detention are required to report cases within twenty-four hours. Examination and treatment may be enforced by a medical officer of health. To protect physicians reporting such cases after examination, the act provides that action of this character can only be brought with the consent of the provincial board of health. It is further provided that the medical health officer or his deputy has the right of entry in the day time, to premises for the purpose of inquiry or examination of persons known to be infected. Hospitals designated by the board are required to provide facilities for treatment, only qualified physicians are allowed to attend or treat sufferers from venereal disease under pain of heavy penalties. Those advertising remedies or cures for venereal disease, are subject to severe punishment, as well as those found guilty of infecting others. Provision is made for maintaining secrecy in the matter. Reporting the names of sufferers which has not worked well wherever it has been tried, is not sanctioned by the act, those reporting using serial numbers.

Doctor BRYCE, of Ottawa, gave as his opinion that the success of carrying out the act would depend on the facilities provided by the eighty-eight hospitals called upon to treat these cases. The question of free treatment of venereal diseases had been discussed, but no definite conclusion with regard to this point reached. One advantage certain-

ing to free treatment was, that as the suppression or control of venereal diseases is not so much for the good of the individual, as for the race and state, and because treatment as outlined in the act could be relied upon, such treatment would tend to do away with secret treatment. Treatment in the hospitals named in the act would be free, that is the hospitals are required to treat all cases of venereal disease sent to them, but at the same time, as Colonel McCullough had pointed out, it would not be fair that all should be treated free. With respect to the term cure in connection with venereal diseases Colonel McCullough had stated that the term was only used in a relative sense. If the disease were made noninfective the object of the act would be fulfilled. He further stated that no provision for the inspection of prostitutes, had been made, other than the clause permitting those authorized to go in daylight and make examination, and this power would be exercised by the large majority of the medical officers of the province.

**A Plea and a Plan.**—Captain W. H. HATTIE, M. D., of Halifax, N. S., then delivered the presidential address of the Canadian Public Health Association, entitled "A Plea and a Plan."

**Value of Public Health Work.**—The address following was that of Captain H. W. HILL, M. D., of London, Ont., as president of the Ontario Health Officers' Association. Captain Hill pointed out that at one time public health officers were regarded by the body of the profession as nuisances, almost as outcasts, but that of recent years somewhat grudging admission had been made that their theories were often correct, and, put into practice, had resulted in a great saving of life and in increasing general good health. The war had brought health officers completely into their own and had demonstrated the incalculable value of sanitation and hygiene. He considered that there were three essential fields of these twin preventive measures, venereal diseases, tuberculosis, and child welfare. So far as the prevention of infective diseases was concerned, the only ones of any great moment were, venereal diseases and tuberculosis. The others were relatively small matters. Typhoid fever had been virtually driven out, while diphtheria and scarlet fever still take their toll but are being rapidly eliminated. As for the control of venereal diseases, the speaker thought the problem was difficult rather on account of its psychological bearings. A commencement looking to the suppression of venereal diseases, must be made with prostitutes. These must be examined and when found to be infected, isolated. The places of incarceration must be supplied by the Government.



### Means of Infection in Venereal Diseases.—

Captain GORDON BATES, of Toronto, read a paper dealing with the venereal problem. The gist of the information contained therein was gained through a considerable experience in treating venereal diseases in private practice and in the medical service. In his opinion, illicit sexual intercourse was the crux of the problem. The general public was beginning to understand from statistics available from military districts that a large proportion of the cases of venereal disease existing in the Canadian army were contracted previous to enlistment. While organized prostitution was and is present on a comparatively large scale in Canada, it was, perhaps, by means of illicit intercourse that infection was most widely spread. Young girls who work in the daytime sold themselves for a small sum or gave themselves for sexual intercourse. Feeble-minded females were responsible for a good deal of venereal infection and were particularly difficult of restraint. Captain Bates drew attention to the fact that the control of venereal diseases was very largely a civilian question. In the army, effective steps could be taken to prevent the spread of infection, but in civilian life the matter was surrounded with difficulties. Among preventive measures advocated by the speaker was educational propaganda, the providing of wholesome recreation and the provision of home like, clean houses in which girl workers could live at a moderate cost in place of cheap and nasty boarding houses.

### Detection of Syphilis in Its Primary Stage.—

Captain HILL, referring to the detection of syphilis in its primary stage, stated that the Wassermann test was absolutely unreliable at this stage as a means of diagnosis. In the primary stage of syphilis the Wassermann test was generally negative and consequently misleading.

**House Disinfection after Scarlet Fever and Diphtheria.**—Another point which gave rise to much discussion was as to the value or otherwise of disinfection of the house, clothes, furniture and so on after contagious fevers, scarlet fever initiating the discussion. Several present recommended disinfection by formaldehyde and potassium permanganate. Captain Hill, however, said that so far as experience with scarlet fever had taught him, if there were any discharge from ear, or even if a herpes he would not permit a patient to leave the hospital. Any form of discharge following scarlet fever, rendered the patient liable to transmit the infection. Moreover, he declared that scarlet fever infection from a discharging ear could be carried almost indefinitely. He quoted a case in which infection had been transmitted five months after convalescence had set in. Further, he had not carried out house disinfection after scarlet fever for some years. Many in the audience were firm believers in the efficacy of house disinfection and strenuously upheld their views. A resolution was therefore moved by Colonel McCullough and carried, that a committee should be formed to investigate with respect to house disinfection after communicable diseases, with special reference to scarlet fever and diphtheria. Such a committee was named and will proceed on their investigations immediately.

**The Problem of Infant Feeding in Rural Districts.**—The first paper read on the subject of child welfare was by Dr. ALAN BROWN, of Toronto, on the subject of the rural infant feeding. He pointed out the many difficulties that mothers living in the country have to face, in nursing, feeding, and weaning babies, often far removed from the advantages of regular observation and advice.

**Infant Feeding in War Time.**—Dr. GRACE L. MEIGS, Washington, D. C., read a paper on infant welfare in war time. She said, in part that the lack of trained women to stimulate interest in nursing was one of the greatest obstacles to the conservation of infant life. She suggested that rural hospitals might be one way of overcoming the handicaps that women have to contend with when giving birth to children.

### The Medical Student in Child Welfare Work.

—Dr. RICHARD BOTT, of Cleveland, Ohio, discussed the question whether the medical student of today was equipped to meet the problems of child welfare: private medical practice in its relation to public health service for children, and whether the present medical education scheme could be adapted to the needs of training in infant and child welfare work. He advocated a broad premedical education in this direction for students.

Dr. CHARLES J. HASTINGS, medical officer of health for Toronto, said child welfare work, the country's home line of defense was, at last, coming into its own. He strongly advocated breast feeding, as well as the pasteurization of milk as a precaution against various epidemics and against the contraction of tuberculosis by infants.

**Mental Defectives in Canada.**—At the combined session of the Public Health Associations held on the afternoon of the second day, the first paper was read by Dr. CLARENCE HINCKS, of Toronto, who gave statistics showing the prevalence of mental incapacity, and suggesting remedies. He stated that there were 30,000 mental defectives in Canada. Venereal disease played a prominent part and a campaign of education was sorely needed.

**Other Papers Read.**—These papers included: "An Experiment with Diphtheria Carriers," by Dr. A. B. RUTHERFORD, of Owen Sound; "The Value of Establishing Sewerage Systems in Small Ontario Towns," Mr. A. F. DALY, Toronto; "Interpretation of Water Analysis," By Dr. H. M. LANCASTER, Toronto, and "The Study of Some Outbreaks of Typhoid Fever," by Dr. W. C. ALLISON, of Toronto.

**Officers for the Coming Year.**—The officers elected for the coming year of the Canadian Public Health Association were: President, Dr. J. A. Hutchinson, Westmount, Que.; vice-presidents, Dr. H. W. Hill, London, Ont.; Mr. L. A. Hamilton, Toronto; Dr. R. W. Bell, Toronto; secretary, Dr. R. D. Defries, acting in the absence at the front of Major Fitzgerald, M. D. Officers were elected for the Ontario Health Officers' Association as follows: President, Dr. G. R. Cruickshanks, Windsor, Ont.; first vice-president, Dr. W. A. McCauley, Cooper Cliff, Ont.; second vice-president, Dr. Dickenson; secretary, Dr. J. W. McCullough, Toronto.

ONTARIO MEDICAL ASSOCIATION, CANADIAN PUBLIC HEALTH ASSOCIATION,  
AND THE CANADIAN MEDICAL ASSOCIATION.

*General Session.*

**The Problem of the Returned Soldier.**—The first paper read dealt with psychogenetic conditions in soldiers, their etiology and treatment and was contributed by Lieutenant Colonel COLIN RUSSELL, C. A. M. C. The psychogenetic conditions and the subdivisions of this type were described. Such conditions comprised physical and mental disabilities, but the futility of refinement of classification was obvious. Psychogenetic conditions represented a conflict between the natural inherent instincts and the more lately acquired control of these instincts by the higher centres. The effect on the result of the conflict of deficient control was either congenital as in mental deficiency or due to lack of proper training as well as to natural exhaustion of the acquired higher control under prolonged strain. The defeat of the higher centres and the abolition of the critical activities of the censor rendered the patient open to suggestions that met the wishes of the conquering instinct. They varied in type from complete blindness to complete mutism and, curious to relate, all these types appeared in epidemics. During the early stages of the war, trench fever was remarkably prevalent. This type had almost wholly disappeared. The conditions following shell shock presented no physical or pathological symptoms. They simulated, however, a variety of pathological states. For example, convulsive seizures resembling epilepsy occurred sometimes subsequent to shell shock. These seizures differed from true epilepsy, in that the movements were purposeful, whereas, in true epilepsy, the reverse obtained. These conditions were classed formerly under the term hysteria. War had not been responsible for their initiation, but had aggravated inherent instincts. The treatment of such conditions consisted in putting down the usurping instincts and stimulating the higher centres to resume the duties allotted to them. The conditions of shell shock being often due to an idea, the treatment of these cases should be in special hospitals in charge of experienced men. An authority on the subject had stated that ninety per cent. of psychogenetic cases were capable of cure.

Attention was drawn to the fact that soldiers suffering from shellshock frequently had no inducement to dismiss the idea from their mind. On the contrary, from their point of view, if they did so they would be returned to the army, while, on the other hand, if they continued to harbor and foster the idea that they were shell shocked, designated by Russell as loss of control of mental intelligence, they would draw a nice pension. Several instances were given in which men presenting various symptoms, as paralysis and so on and who were by means of rational measures disabused of the idea that they were thus afflicted.

It had been stated that shell shock cases disappeared from the French Army when a rule was made that a soldier claiming to suffer from it would not receive a pension.

**The Mental Attitude of the Returned Soldier.**—Colonel I. H. CAMERON, C. A. M. C., read a paper on General Surgical Observations, with Special Reference to Orthopedics.

Although the title of the paper was as above, it dealt more with the economic and social treatment of the returned soldier than with the surgical aspect. A résumé of the history of orthopedics was given and the address abounded with apt quotations and allusions. Colonel Cameron stated that the returned men came home with the idea that the state owed them everything and they in return owed the state nothing. The state never owed them anything, and now it only owed them the equality of the law. Well meaning people who formed organizations to look after the soldiers were responsible for the present conditions. It was suggested as a solution that foolish sentiment be excluded, that returned men, among other things, be given better literature and be provided with educational films in place of the comedy ones now being exhibited.

Lieut.-Col. HADLEY WILLIAMS, C. A. M. C., discussed the surgical treatment of nerve injuries and Lieut.-Col. ROBERT WILSON read a paper on The Place of Physiotherapy in the Treatment of the Invalid Soldier.

**Tribute of Canadian Universities to the War.**—At the meeting Dr. J. H. ELLIOTT, of Toronto, paid a touching tribute to the graduates and undergraduates of the Canadian universities and their part in the war. He read the names of all those who had fallen, while the audience stood with bowed heads. Of these, forty-one belonged to the University of Toronto, seventeen to McGill University, Montreal; six to Queens University, Ontario; five to Dalhousie University; two to the University of Manitoba, and one to Western University, making a total of seventy-two. Doctor Elliott then recited that immortal poem by John McCrae, "In Flanders Fields."

**The Prevention of War Neurosis, Shell Shock.**—In the Section of Medicine, Dr. THADDEUS HOYT AMES, of New York, read a paper on the Prevention of War Neuroses, Shell Shock.

Doctor Ames said that although he had not been at the front, he had gained a considerable amount of experience concerning the effects of shell shock, having witnessed a large number of cases of neurosis arising from it in returned soldiers in the hospitals of Montreal and Toronto. Such neuroses only occurred in some regiments and not at all when organic disease was present. Discipline played a great part in the prevention of war neuroses, but discipline alone was not sufficient to prevent their occurrence. Men should be eliminated in medical examination for the army, whose nervous temperaments were unstable, while mental deficiency, and insanity should absolutely preclude admittance. Men who have had neuroses but who had completely recovered might be favorably considered. It was pointed out that traumatic hysteria was a thing of the past, largely owing to the publication of Pearce Bailey's book. A large proportion of cases of neurosis might have been avoided had the patient been assured by one who understood and in whom he had confidence that fear was nothing to be ashamed of.

The medical officers had something to do with the



state of affairs. There were some men who exerted control over soldiers. When neuroses were frequent, the medical officers were to a large extent to blame, and authorities went so far as to say that shell shock should be always warded off if the men were properly looked after. The line officers were equally responsible for the outbreak of neuroses in a regiment. They should assume responsibility for the welfare of their men and take a personal interest in them. The lieutenants and noncommissioned officers, being most intimately in touch with the men, it was in these reliance must be placed to prevent neuroses. They should make themselves acquainted, as far as possible, with their men, and should behave to them as if they were human beings like themselves, and not as merely cogs of the machine. The slightest change in a man's demeanor or habits should be reported immediately. The line officer rather than the medical officer had the first opportunity to notice any such change. The man should be given something to interest him, to divert his mind from introspection, put between two veterans, in fact every means taken to distract his attention from himself. Sharp reprimands, so as to bring about a reaction, sometimes served this purpose. Chatting with some, joking with others, and speaking sharply to yet others. They must be dealt with according to their several temperaments, and whether they had neuroses or not, nearly entirely depended upon their officers. Rarely had officers of this stamp to say: "If you do not carry on I have a bullet for you here." They induced the men to relieve themselves of the burden that oppressed them. The medical officers did not have such constant opportunities of watching the men, but when sick they had somewhat exceptional ones for becoming acquainted with their idiosyncrasies. The human mind was always peculiarly open to suggestion. The soldier was so, in particular, and the sick soldier preeminently so. Moreover, they believed in their medical officers.

Subjection to strict discipline, the fear of severe punishment or death from allowing their emotions to run riot, had a strong restraining influence. Training of the body and mind tended to keep up morale. The life of the soldier was apt to lead to the unleashing of the primitive emotions and especially of that of fear. Soldiers could be prepared to be harassed by Huns. They could be prepared to combat fear successfully or to hold in check sex emotions. They could be taught that discipline was both for the good of the state and themselves. They should be taught the cause and origin of neuroses by the medical officer and told that fear is a normal healthy reaction, in the presence of danger, and came to all except to the insane and the liar. A discussion of fear did soldiers much good. When they knew that every one was doing his bit, the knowledge gave them confidence, and confidence was essential. Officers, then, were responsible for the existence of neuroses in regiments, and the condition could be prevented by the establishment of confidence between them and their men.

**Significance of Heart Murmurs in Candidates for Military Service.**—Dr. LEWELLYS F. BARKER, Baltimore, delivered the address in medicine at the afternoon session of May 30, the subject being on

the Significance of Heart Murmurs Found in the Examination of Candidates for Military Service. Doctor Barker said in part that under improved methods and standardization a large proportion of men suffering from heart murmurs and now not fit for active service would be rendered wholly or partly fit. The methods for determining which of the men with an apparent heart murmur was fit for military duty, also the methods for determining the condition of those incapacitated for full duty but eligible for part, was dealt with by the speaker, who added that some of the murmurs heard in the region of the heart were outside of the heart and were made by other organs near. These, however, had no effect upon the man's capacity for military service. The various forms of intracardiac murmurs were referred to, differentiating the man totally exempt on physical grounds from the man who was just as fit to carry on as if the murmur was not apparent.

**Pneumonia in Army Camps.**—Dr. W. G. MACCALLUM, Baltimore, read a paper in the Section in Medicine on The Pneumonia of Army Camps. He said that while he did not wish it to be regarded as a dogmatic statement, it might be said that an epidemic type of pneumonia different from the ordinary types had occurred in army camps and among the civilian population recently. In San Antonio, Texas, this disease had been studied and during the past few months at Camp Upton and at Camp Dodge, Iowa. The disease was not lobar pneumonia, but of bronchial form caused by a hemolytic streptococcus, gave rise to empyema, was very deadly and epidemic. The pneumomococcus of lobar pneumonia was now being very closely studied. There were other types of pneumococcus in different parts of the world, notably, the Rand pneumococcus of South Africa. It was easy to produce serum to treat pneumococci, but, with the exception of one form, such treatment was useless. Little was known as to the clinical side of streptococcal pneumonia. It was a condition that came on spontaneously, after a cold, for instance; frequently after measles, sometimes after scarlet fever. Exposure to cold was a predisposing cause. The disease had a rapid course, accompanied by sore throat, swelling of the larynx, voice affected, owing to deep ulceration of the vocal cords, dyspnea, vigorous efforts to get breath, râles everywhere, tubular breathing but not distinctly so. This condition continued in most cases when fluid collected in the pleural cavity. The lungs became compressed with accumulation of fluid and flatness appeared. The fluid, at first, was slightly turbid, of a strawlike color, became brown, and later purulent and thick. Measures for relief were by aspiration, or by resection of ribs and washing out with Dakin's solution. All cases ended in a high mortality. No really reliable statistics with regard to this point were available. This statement was in reference to streptococcal pneumonia. The mortality, according to MacCallum, was higher in streptococcal pneumonia than the figures indicated.

At autopsies it was revealed that the lungs were distended with air, the lymph glands in the bronchial region enlarged, and there were many distinctive physical features which clearly differentiated it



from lobar pneumonia. On section of the lung large nodules were found which could be felt; they were no longer hemolytic, they were peribronchial nodules which looked like miliary tubercles. So much like were they to miliary tubercles that they were sometimes mistaken for these. Occasionally they grew as large as a pea, and quite firm and hard. The cut surfaces, when death had occurred from lobar pneumonia, looked like a pancake; in streptococcal pneumonia like marble. The fluid accumulated rapidly, adhesions often imprisoned the fluid, and this encapsulation made aspiration difficult. Finally, induration took place, thickening of the framework of the lungs. Microscopically, the alveoli above the bronchus were filled with blood. Polynuclears were in the alveoli. The alveolar and bronchial walls became indurated and thickened. The rapid infiltration of the tissues suggested the name of interstitial bronchopneumonia. The great distinctive feature was the filling of the bronchial tubes with polynuclear cells. The condition was one which differed from bronchopneumonia. It had been known for some time, but the idea of connecting it with streptococci was somewhat new.

As for its etiology, careful investigations, bacterial studies at autopsy, and so on, discovered in all cases one organism, a streptococcus, which was recognized as hemolytic. The streptococcus was perverse to work with and yielded the most meagre results. It grew in long chains and matted together, agglutinating spontaneously. Some of the streptococci permeated sugar and some did not. They were divided into hemolytic and nonhemolytic organisms. There were different types of nonhemolytic streptococci.

Occasionally pericarditis and abscesses were found in patients suffering from the interstitial type of pneumonia, but no septicemia. Doctor MacCallum was confident that no septicemia set in until shortly before death. No streptococci were found in blood. This statement had been contradicted, other observers had claimed to have found streptococci in the blood. The infection was severe and transmitted readily. It was conveyed by personal contact, by spray from the mouth and nose, and the infection spread rapidly. Sterilizing methods did not appear to stay its spread, while mechanical sanitation was almost impossible, and other forms of prophylaxis must be referred to with caution. Vaccine had been made but not employed, for the reason that the epidemic was on the wane and therefore the effects of its use could not be tested thoroughly. Interstitial bronchopneumonia was a very serious disease, and it was not unlikely to demonstrate its virulence soon and in all parts of the country among the civil population. Some cases had occurred in Canada.

Doctor MacCALLUM, of London, Ont., in discussing Professor MacCallum's paper, said that he had seen cases of pneumonia in Camp No. 1 in Canada the postmortem examinations of which agreed with the Professor's description of autopsy findings of the cases he had seen.

Dr. THOMAS McCRAE, of Baltimore, predicted a new type of pneumonia. Its association with measles was imperfect. One man associated it with

measles while another stated the contrary. He suggested that milk and butter might be sources of infection by means of hemolytic streptococci. These were found in milk. The disease should be recognized as a new clinical type.

Professor W. G. MACCALLUM stated that it had been suggested by Rosenau that cheese might convey the infection. He had caused cheese and butter to be examined, but no streptococci were found in either. He reiterated the expression of his conviction that the infection was transmitted by personal contact by spray from nose, throat, and mouth. He did not believe in Rosenau's theory of the transmutation of germs. In answer to Professor McPhedran's question as to the possibility of establishing immunity by vaccine treatment, he would say that efforts in this direction had been made in South Africa, and that complete success had not been achieved because the proper strains had not been employed. Experiments made at Camp Upton appeared to offer a favorable outlook so far as bringing about immunity by vaccination was concerned. In immunization by vaccination appeared to lie the chief hope of successfully fighting the disease. It was conceivable that an antitoxin might be produced. However, such a conception was visionary, and reliance must be placed rather upon a vaccine. Probably a satisfactory immunity would be produced by this method. Tests with vaccines should not be made until the autumn, when recruits came into winter quarters. Infection increased when men were huddled together in barracks. The disease began at Camp Dodge among negroes, and the largest number of cases among white troops occurred in the barracks adjacent to those occupied by the negroes.

(To be continued.)

## Letters to the Editors.

### DO AWAY WITH ROTATING SERVICE IN HOSPITALS.

NEW YORK, June 27, 1918.

#### To the Editors:

The United States is now in the war. The nation is getting into its stride. The changes and readjustments required for the effective conduct of the war are difficult, and are becoming more difficult every day, but they are never impossible. Of necessity, the business of the country has been reorganized; the same imperious necessity calls for the reorganization of the civil hospitals.

Up to the present time, the enrolment of medical men has kept pace with the army's growth. But a million Americans have now taken their place in the fighting line; ships are available for the rapid transportation of a second million; a third million is streaming into the training camps, and more doctors are needed. The hospitals of the country must help to furnish them; they can if they will.

By undertaking to retain in its service only the actual number of men required to care for its patients, the hospitals can at once release a large number of physicians for army service. Every hospital that has not already done so should at once place its staff on a war footing by abolishing the rotating service.

What is the rotating service? It is a plan of organization which requires or permits two, three, four, or even six men, each serving six, four, three, or perhaps only two months annually, to hold down one man's job. There may be reasons of educational policy which justify a rotating service in ordinary times; today any such plan is contrary

to the national interest and is self condemned. In this crisis no plan of organization is admissible which does not release every competent physician who can be spared for military duty. No man should be permitted to excuse himself from entering the Medical Reserve Corps on the plea that a hospital needs him, unless his presence in that hospital is indispensable—not two, three, or four months in the year, but all the year.

For the period of the war the rotating service must go. The continuous service plan is the only patriotic one for hospital organization at this time. One job, one man! It is the duty of hospital authorities to adopt this plan now, and to make it plain to the men who are thus released from hospital service for the period of the war that the purpose of their release is to make it easier for them to decide where the path of duty lies.

(Signed) S. S. GOLDWATER, M. D.,  
Chairman, War Service Committee, American  
Hospital Association.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Talks on Obstetrics.* By RAE THORNTON LA VAKE, M. D., Instructor in Obstetrics and Gynecology, University of Minnesota; Obstetrician in Charge of the Out Patient Obstetric Department of the University of Minnesota, etc. St. Louis: C. V. Mosby Company, 1917. Pp. 157.

The plan and scope of this book is rather unusual, but it may be said without qualification that the material is excellent. Doctor La Vake discusses eleven topics in obstetrics which represent to him the most important problems in the field. He does not pretend to treat these exhaustively, but gives the result of his personal study, experience, and judgment in each case, following no consistent plan of presentation, and the later chapters in the book assuming the form of notes rather than a formal discussion. This is no adverse criticism, however, as his judicial statements and his advice are always definite, practical, and sound, making a book particularly valuable to the young practitioner. He discusses sepsis, toxemias of pregnancy, and hemorrhage in obstetrics in greater detail than the other topics. These occupy more than half the volume; the balance of the book is occupied by short, pithy "talks," as he likes to call them, on Heart Lesions and Tuberculosis, Forceps, Podalic Version, Prolapse of the Cord, Breech Delivery, Delivery of Twins, Cesarean Section, and Occiput Posterior Positions. The work furnishes a practical and informal supplement to standard texts.

*Health for the Soldier and Sailor.* By IRVING FISHER, Professor of Political Economy, Yale University; Chairman, Hygiene Reference Board of the Life Extension Institute, and EUGENE LYMAN FISK, M. D., Medical Director of the Life Extension Institute. Adapted in part from their recent work, "*How to Live.*" New York and London: Funk & Wagnalls Company, 1918. Pp. xxii-148. (Price, 60 cents.)

Since the royalties from the sale of this book go toward the philanthropic work of the Life Extension Institute—whatever that is—it may be assumed that the authors mean well. The reviewer can say with a clear conscience that he has rarely seen a more futile and inept book. Out of the six chapters, 148 pages, the first chapter only, thirty-two pages, applies even remotely to the soldier's or sailor's needs or interests. The rest is quite irrelevant. The soldier is informed that "tight shoes with extremely high heels deform the feet"; "when possible, sandals, now fortunately coming into fashion, are preferable to shoes, especially in early childhood"; "wealth gained at the expense of health always proves in the end a bitter joke." He is *advised* to follow faithfully the admonitions and instructions of the surgeon and company commander. This little—thank God!—book abounds in flat and childish ob-

servations. For the rest, the men would have no opportunity to practice the advice and instructions in chapter 1. What the medicomilitary authorities cannot accomplish for the health and well being of the men does not have to be taught by such a volume, however natty and convenient in its khaki binding. It never would be missed. Whatever is pertinent and valuable has been already mastered by medical officers in training, and is applied for the benefit of the whole personnel.

*The Diagnosis and Treatment of Heart Disease. Practical Points for Students and Practitioners.* By E. M. BROCKBANK, M. D., F. R. C. P., Hon. Physician, Royal Infirmary, Manchester; Clinical Lecturer on Diseases of the Heart; Dean of Clinical Instruction, University of Manchester. Third edition, with illustrations. New York: Paul B. Hoeber, 1917. Pp. viii-147. (Price \$1.50.)

With the addition of a chapter on General Physical Signs and Symptoms of Heart Disease came the change of title of a small manual on *Heart Sounds and Murmurs, Their Causation and Differentiation*, first edition, to *Diagnosis and Treatment of Heart Disease* of a third edition. We cannot help but feel that the present title promises more than the book has to offer, much as it gives. It covers concisely and clearly, just what the original title presented. The new chapter reviews almost in outline form in eighteen pages the general signs and symptoms of heart disease and nothing else, while the chapter on Practical Points in Treatment of Cardiac Disease contains an elementary discussion of the subject in twelve pages. This little book is intended to present only the elements of cardiac auscultation and a summary of the treatment, in no detail, for students. It seems to cover the subject with these limitations; is well founded, and scientifically presented. Its frequent cross references and reference to larger works add to its value.

## Births, Marriages, and Deaths.

### Married.

BACON-BUTTERFIELD.—In New York, on Saturday, June 29th, Dr. Gorham Bacon and Miss Margaret Butterfield.  
DURGIN-WHITE.—In Newtonville, Mass., on Monday, June 10th, Lieutenant Edward Chase Durgin, Medical Reserve Corps, U. S. Army, and Miss M. Violet White.

JOSLIN-KANE.—In Fredericksburg, Va., on Saturday, June 22d, Dr. Royal Knight Joslin and Miss Beryl Higbee Kane.

LYLE-DE SABLÉ.—In New York, on Friday, June 28th, Dr. William Gordon Lyle and Miss Leontine de Sablé.

PIGGOTT-BELL.—In Fort Oglethorpe, Ga., on Tuesday, June 18th, Major John Burr Piggott, Medical Reserve Corps, U. S. Army, and Miss Alice Frances Bell.

SPRUNCE-WHITTLE.—In Santa Ana, Cal., on Wednesday, June 12th, Assistant Surgeon H. E. Sprunce, U. S. Navy, and Miss Elise Johnson Whittle.

### Died.

BENNETT.—In Pawtucket, R. I., on Tuesday, June 4th, Dr. John Hillman Bennett, aged forty-eight years.

DEATON.—In Toledo, Ohio, on Friday, May 31st, Dr. U. S. Grant Deaton, aged fifty years.

DE ROALDES.—In New Orleans, La., on Thursday, June 13th, Dr. Arthur Washington de Roaldes, aged sixty-nine years.

DILLON.—In Brooklyn, N. Y., on Wednesday, June 26th, Dr. William Dillon, aged sixty-one years.

HENDRICK.—In Dunellen, N. J., on Wednesday, June 26th, Dr. Charles C. Hendrick, aged fifty-five years.

HOPKINS.—In Richmond, Ind., on Thursday, May 30th, Dr. Robert R. Hopkins, aged seventy-three years.

MACDONALD.—In Binghamton, N. Y., on Thursday, June 20th, Dr. Jeremiah MacDonald, aged fifty-nine years.

MATTINGLY.—In Johnstown, Ohio, on Tuesday, June 4th, Dr. Joseph Henry Mattingly, aged fifty-eight years.

MILLER.—In Albion, Ind., on Friday, May 31st, Dr. Benjamin E. Miller, aged seventy-two years.

NICHOLS.—In Saranac Lake, N. Y., on Monday, June 17th, Dr. Joseph Longworth Nichols.

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## Original Communications

### SOME RELATIONS OF DIET TO DISEASE.\*

BY LAFAYETTE B. MENDEL, M. D.,

New Haven, Conn.,

Professor of Physiological Chemistry, Yale University.

The expression "malnutrition," once a favorite term to cloak our ignorance of the underlying cause of ill health, by describing an obvious manifestation of it, has lost its popularity. It is gradually being replaced by more specific designations which give a nearer insight into the pathogenesis of whatever is being observed. Diabetes leads to malnutrition; so do hyperthyroidism and hypothyroidism, osteomalacia, various neuroses, and a host of other equally unrelated diseases. By "malnutrition" it is usually intended to imply the outcome of an undesirable performance on the part of the organism—possibly in ultimate analysis a defect of metabolism.

More recently the term "deficiency disease" has come into vogue. By this still somewhat loosely employed designation emphasis is placed upon pathological states of the body due to deficiencies primarily in the diet rather than in the organism. My justification for discussing the subject here lies in its comparative novelty. The most recent volume on nutrition and clinical dietetics that I have been able to consult devotes almost as much space to the diet of speakers, singers, brain workers and athletes as to the important clinical subject of deficiency diseases.

In the conventional conception of an adequate diet as it was formulated only a few years ago emphasis was placed essentially upon a sufficient content of energy and upon the presence of sufficient protein. This is well illustrated by a quotation from a popular textbook published as recently as 1905, in which the author wrote:

"In a healthy adult the main objects of a diet are to furnish sufficient nitrogenous and nonnitrogenous foodstuffs, salts, and water to maintain the body in equilibrium of material and of energy—that is, the diet must furnish the material for the regeneration of tissue, and the material for the heat produced and the muscular work done. Nutritional experiments prove that this object may be accomplished by proteid food alone together with salts and water. It is doubtful, however, whether, in the case of man, such a diet could be continued for long periods without causing some nutritional disturbance, di-

rectly or indirectly. It will be remembered that a pure meat diet is not entirely proteid, since all flesh contains some fats and carbohydrates (glycogen). The functions of a diet are accomplished more easily and more economically when it is composed of proteids and fats, or proteids and carbohydrates, or, as is almost universally the case, of proteids, fats, and carbohydrates. The experience of mankind shows that such a mixed diet is most beneficial to the body and most satisfying to that valuable regulating mechanism of nutrition, the appetite. The proportions in which the proteids, fats, and carbohydrates are mixed in a diet vary greatly among different nations and individuals. So far as the fats and carbohydrates are concerned, their use is mainly that of fuel to supply energy, and from this standpoint we ought to be able to exchange them in the diet in the ratio of their heat values."

At that period the difference of opinion involved for the most part the quantities of protein and energy requisite. Now, it is not impossible to test the efficacy of diets prepared from this standpoint. Smaller animals, such as rats and mice, serving as experimental subjects, have been placed upon rations made up of purified foodstuffs: proteins, fats, carbohydrates and inorganic salts. The outcome of feeding trials with such "synthetic diets" has almost invariably been complete nutritive failure. Studies in this field have led to the demonstration that something more than energy, something more than these long recognized foodstuffs, is necessary, and this is found in many of the naturally occurring foods, but is often lost when the proximate principles are removed from them. These hitherto unrecognized and unidentified indispensable components have been termed "vitamines."

At least two types of these are at present believed to be essential, along with the more familiar factors for perfect nutrition. One is found in tissues containing active cells. It occurs in the embryonic parts of plants, in cells like the yeast, in milk, in the egg and in many active animal cells such as glandular epithelium. Thus, in the cereals, this water soluble vitamine is found in the embryo rather than the endosperm or storage parts. The other type of vitamine, the need of which is particularly conspicuous during growth, is found in certain naturally occurring fats: milk fat (cream and butter), egg yolk fat, codliver oil, the oil of other animal glandular tissues; and it is said to occur in some of the edible green parts of plants.

\*Read before the Connecticut State Medical Society, at Hartford, May 16, 1918.



The symptoms of animals kept on rations that are restricted in respect to their vitamin content suggest analogies in the domain of clinical medicine. For example, if a rat or mouse receives a diet consisting of a purified protein such as the casein from milk or the globulin from a seed, along with starch, sugar, fat and a mixture of inorganic salts made up to resemble those of milk, the animal may eat the mixture for a time and be maintained or even grow somewhat; but before long there will be a cessation of growth, a decline in appetite and body weight, and ultimately death will follow unless a change is made. If such an experimental animal is given a few milligrams of brewer's yeast or wheat embryo or corn germ—quantities too small to have any significance as sources of energy—the entire sequence is changed. This cannot be a matter of flavor of the diet; for the adjuvant may be administered by itself, like a medicine, and bring this prompt restoration of appetite and nutritive well being. Any one who has never seen this remarkable response to what corresponds to a therapeutic dose of active cell material can scarcely realize the unique efficacy of this addition. A scrawny, lethargic animal, rapidly dwindling in size, with unsleek coat and evident malnutrition, will completely change its appearance and responses in a few days at most on a diet unchanged except for a tiny bit of yeast. What can thus be brought about with yeast can also be accomplished with other substances. Their vitamin yielding portions are usually incorporated with nutrients so that the result is not so striking, in a quantitative way, as the simple experiment just cited. When extracted meat forms the protein basis of a ration such as has been described, nutritive failure likewise occurs; it can be averted by addition of a small amount of glandular tissue, like liver or kidney, to the otherwise unchanged diet. Highly milled, that is, embryo free, cereals are inadequate when there is no added source of water soluble vitamin present; the unmilled grain, on the other hand, may permit good nutrition. Many of the vegetables—I may mention potatoes and cabbage from my own experience—serve as sources of this vitamin and thus make an otherwise inadequate diet adequate.

What has just been described is merely one type of vitamin deficiency. Peripheral neuritis may be one of its manifestations. If, in the ration of protein, starch, sugar, salts, fat, and yeast, or cereal germ, the fat is lard or some vegetable oil like olive or cottonseed oil, or fat is missing, a nutritive decline will presently ensue even when these other factors seem adequate. The body weight may fall rapidly, the eyes may show a peculiar diseased condition, and autopsy may show extensive calculi in the urinary tract. All of this can be prevented or remedied by the inclusion of butter fat, egg yolk fat, or codliver oil—and perhaps certain leafy vegetables—in place of part of the fat used. These adjuvants are the carriers of a fat soluble vitamin that is evidently indispensable to the organism. Like magic a few meals of the same diet containing butter fat in place of lard or cottonseed oil will cure a xerophthalmia which no amount of antiseptic treatment would otherwise cause to disappear.

The manifestations of pellagra have been described tersely as consisting of diarrhea, dermatitis, delirium and death. Practically all of these can be induced in dogs, as experience in our laboratory has shown, by an exclusive diet of peas, cracker meal and cottonseed oil. This is not the outcome of restricted feeding as such; for dogs can be maintained for months on an unvaried diet of meat and other foods. In the list quoted we are presumably dealing with a definite deficiency which Underhill and I are at present investigating.

A guinea pig put upon a diet which is seemingly adequate for rats may soon show signs of experimental scurvy. They can be averted by the inclusion of a few grams of cabbage in the diet. Such are some of the phenomena of the laboratory. They cannot be explained in terms of energy or the familiar nutrients.

Cattle kept on a so called "balanced" ration derived entirely from wheat will die, whereas they thrive when corn and oats are included. There are subtle dietary combinations to be taken into account here, and modern methods of investigation have opened the way to unravel them.

Milk contains both types of vitamins. The newest experience of Osborne and myself indicates that it is not as rich in the water soluble vitamin as many assume; hence liberal quantities must be used. This is a matter of importance in infant nutrition, particularly in relation to the dilution of cow's milk for feeding. Further, there is some evidence that vitamins are transmitted from the mother to the milk, without being formed to any extent in the body. Hence the necessity of including sufficient vitamins in the diet of the mother is brought into prominence.

I cannot here unfold further the manifold possibilities which the recognition of these dietary deficiencies and their pathological manifestations has suggested. Obviously we are dealing with a new order of phenomena. With a liberal widely varied diet the danger of deficiencies in the unrecognized dietary essentials is minimized; but where wide latitude in choice is impossible, for geographic, economic, or personal reasons, *i. e.*, wherever restrictions are enforced, the danger exists. Hence we need not be surprised to read that in the siege of Kut-al-Amara so late as 1916, beriberi broke out among the British troops while they were on their normal ration of white wheat flour, and it cleared up when they were obliged to share in the more coarsely milled (and doubtless germ containing) grain of their Indian fellow soldiers; or that xerophthalmia has lately occurred with some frequency among Scandinavian children fed upon cereals and fat free (skimmed) milk, the disease being cured by the use of cream or codliver oil rich in vitamin; or that war edema is a manifestation of a very onesided diet in sorely stricken Roumania; or that scurvy (if it is indeed a deficiency disease) has become appallingly frequent in the stricken districts of Russia; or that pellagra can be averted in our Southern States by following Goldberger's admonitions regarding greater diversity in diet.

The student of nutrition and dietetics finds num-

erous questions raised by these considerations. He inquires about the distribution and stability of the vitamins; the relation of infection to deficiency diseases; the sequences of the symptoms and their true interrelationship; more familiar deficiencies in proteins and salts, which have not been touched upon here because they are somewhat better known. My main purpose will have been accomplished if I have succeeded in leading readers to evaluate more seriously the possible rôle of newly ascertained factors in a variety of clinical manifestations.

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## PITUITRIN AND ADRENALIN INJECTIONS IN HAY FEVER.

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In a former paper dealing with this subject (1) I published favorable results obtained in hay fever patients subjected to a course of subcutaneous injections of pituitrin and adrenalin. While certain clinical symptoms arising from a weakened circulation were observed, it was of interest to watch for similar manifestations in similar instances of that disease. The following case histories seem significant from the diagnostic standpoint as well as from the point of view of treatment. Although all unnecessary detail is avoided, some observations made during the course of injections must be included.

CASE I.—Miss I. M. E., age twenty-seven years, had a sister suffering from violent asthmatic attacks, while

occasionally present. No constipation or irregularities in menstruation were recorded. The patient weighed at examination 128 pounds; height, five feet five inches. She was seen early in September, 1915, while complaining for the past three weeks of violent attacks of hay fever, which occurred chiefly at night.

Physical findings were as follows: Congestion of the mucous membranes of the nose and throat. Hemoglobin, 70 per cent. Lungs: Supraclavicular fossæ and supra-scapular regions on both sides well marked by retraction, impaired percussion sound, harsh granular breathing, numerous crepitant râles over the right apex and bronchophony. Threshold percussion and auscultatory findings of the heart, and blood pressure findings are summarized in table below.

The patient showed marked flushing of the skin and excessive dermatography; besides a moderate slowing of the pulse rate during bulbous pressure, the pulse becoming very indistinct, hardly perceptible. The urine examination showed high specific gravity, 1030, trace of albumin, high acidity, and excess of indican and urobilin reaction. Examination of the feces, beyond mucus and impaired meat digestion, did not show anything abnormal. Very soon after the first injection of pituitrin and adrenalin the patient's heart became smaller and the heart sounds returned to normal. Subjectively, the patient observed less discharge from her nose, less burning sensation in her eyes, and less sneezing. This improvement became more noticeable, the shortness of breath on exertion disappeared, and patient felt very well. At first four injections were given, then for two weeks the heart was further observed, but no attacks of hay fever or asthma were noticed by the patient. There was still noticeable an acceleration of the pulse during and after exercise and in order to keep that symptom down, digalen, minims, seven, three times a day, was tried. Patient had taken an acute cold recently but this did not seriously affect her improved general health condition. The cough and sneezing had entirely disappeared. Shortly before her last call, she underwent another examination of the heart. As recorded on the table from which we note the size of the heart was more nearly normal, the action of the organ much better, the pulse rate slower. It was a hard trial

Date	September 29	September 30	October 5	October 8	October 12	October 15	October 19	October 23	October 29	November 9	November 30
Injection, c. c.:											
Adrenalin .....	0.5	0.3	0.5	0.4	...	...	...	0.6	0.5	...	0.5
Pituitrin .....	0.8	1.0	0.7	0.8	...	...	...	0.5	0.5	...	1.0
Heart before injection was given:											
Apex .....	V in. sp.	V									
To L. M. S. L. ....	3½ in.	3¼								3¼	
To R. M. S. L. ....	7½ in.										
Transverse diameter .....	4¾ in.	3¾								3¾	
Height .....	2½ in.	2¼								2½	
Oblique diameter .....	4½ in.	4								4½	
Triangular surface .....	5.56 sq. in.	4.218								4.68	
Pulse .....	92	99	105	76	94	102	90	75	81	78	78
Systolic pressure .....	118	108	126	118	114	112	118	116	120	106	108
Diastolic pressure .....	86	76	80	76	80	68	68	78	76	72	78
Pulse pressure .....	36	32	46	42	34	44	50	38	44	34	30
Mm. Hg. in one minute .....	18.768	18.216	21.630	13.964	18.236	18.360	16.740	14.550	15.876	13.884	14.508
Heart sounds:											
Mitralis: 1st, split; 2d, indistinct .....		normal								n.	
Tricuspid: 1st, accented .....		normal								n.	
Aortic: normal .....		normal								n.	
Pulmonalis: 2d, split and accentuated .....		normal								2 acc'd	

another sister, one brother, and the parents enjoyed perfect health. Malaria and typhoid fever excepted, the patient had most of the children's diseases. Asthmatic attacks, called "hay fever" began in the summer of 1914 and continued throughout the entire year, but are most marked during July and August. Goldenrod and asters were mentioned as the exciting causes. A nose operation—resection of the septum—performed a year ago, as well as all kinds of medical treatment, local and general, failed absolutely in relieving the patient. The symptoms were chiefly: itching of the nose and eyelids; fullness in the head; stuffed up nose; sneezing spells; free watery discharge from the nose; slight cough; impaired voice; and heaviness after meals. Belching and vomiting were

for the patient to abstain from sports and exercise, which were always attended by a higher pulse rate. About one year later the patient's mother reported that her daughter had been doing considerably better and that the attacks of dyspnea had not returned, but occasionally normal sneezing was noticed.

CASE II.—Miss B. S., age twenty-seven years, had a negative family history. Previous diseases: mumps, whooping cough, and measles. Asthmatic attacks were recorded for the past three years, lasting from the end of August to September. Sojourn in the mountains or on the sea coast had no curative or prophylactic influence upon the nature or duration of these attacks, which were attended by much sneezing, watery discharge from the

nose, eyes, sore throat, and general tired feeling. Local and general treatment, sprays, etc., brought no apparent relief. Patient did not know of any influence of flowers as the cause of the hay fever symptoms. There were no suggestive signs of indigestion and no indication of idiosyncrasy to certain articles of food were noticed. Moderate constipation was admitted. The patient who was accustomed to a fair amount of physical exercise, felt particularly tired during the period of these attacks which lasted from four to six weeks and longer. She perspired easily and profusely. History as regards mental activity, menstruation, etc., negative.

The pertinent physical findings were as follows: The patient was very slender and delicate, weight ninety-one pounds. Tonsils were enlarged, nose slightly depressed, chest expansion moderate; there were moderate retraction of right apex anteriorly and posteriorly, impaired percussion note, granular inspiration, prolonged expiration, and a few crepitant râles. Examination of the heart revealed the following facts: Relative dullness overlapped right sternal border and reached lower border of third rib; transverse diameter, 4½ inches; height, 3¼ inches, oblique diameter 5 inches, cardiac triangle 7.515 square inches; double indistinct first mitralis sound; second aortic and pulmonic sounds were accentuated. Pulse 76, fairly regular, of medium volume; systolic pressure, 104 millimetres, diastolic pressure, 74; pulse pressure, thirty millimetres, or 13.528 millimetres Hg pressure in one minute. Urine was cloudy; specific gravity, 1.017; faint trace of albumin; marked icteruria and moderate urobilin reaction. Feces, fetid; greenish in aspect; digestion of meat and starch fair; much neutral fat; absence of blood and parasites. Stomach content after Leube-Riegel meal, three hours after intake; free HCl, forty-two per cent., total acid, 98 per cent. The changes in blood pressure, pulse rate, etc., are given in the following table as well as the dose of pituitrin and adrenalin injection:

Dose Injection, c. c.	May 1	May 12	May 18	May 19	May 22	May 26	May 30	June 3
Adrenalin .....	3/4	1.0	0.5	...	0.2	...	...	...
Pituitrin .....	...	0.2	0.7	...	0.8	1.0	...	...
<i>Before injection was given:</i>								
Pulse .....	76	72	72	75	84	78	75	75
Systolic pressure .....	104	98	100	110	110	104	106	112
Diastolic pressure .....	74	76	70	66	64	76	64	70
Pulse .....	30	22	20	14	40	28	42	42
Mm. Hg. in one minute .....	13.528	12.528	12.240	13.210	14.716	14.040	12.750	13.650

\*After dancing.

After May 22, the patient, being unable to return regularly for the injections, was given the following prescription: Extract ergot; tincture of belladonna; tincture of gentian mixed in equal quantities in the dose of three minims thrice daily. The small pulse pressure on May 26th after dancing suggested one more injection of one c. c. pituitrin; the drops were increased to seven minims thrice daily and without any further pituitrin medication the figures on May 30th and June 3d were obtained. The heart findings on June 3d were interesting; namely, reduction in the size of the cardiac dullness; transverse diameter three inches; height 2½ inches; oblique diameter 3½ inches; corresponding to cardiac triangle of 3.75 square inches compared to 7.515 square inches noticed on May 1st. The first mitral sound had become strong, accentuated, the split sound had disappeared. The urinary examination presented a very weak reaction for indican and also for urobilin.

From June 3d patient lived in Atlantic City, reporting perfect health until September 8th, when she came to the office with the following report: She had a slight cold in June but without any consequences. About August 17th she noticed a slight tickling of throat and a dry cough, with no dyspnea, but no distinct attack of hay fever as in former years. The eyes were watery for one day; slight sneezing was noticed at her visit. Pulse full and regular; systolic pressure, 104; diastolic pressure, 78; pulse pressure, 26, or 14.288 millimetres Hg pressure in one minute. The weather being very damp and warm, the patient was advised to report at the office if the symptoms should become more manifest. On September 8th there appeared a sensation of stuffed up nose, difficulty

in breathing, some sneezing, dry sensation of throat, and moderate mucoid expectoration; pulse was found at 99, easily depressible. Injection of pituitrin 0.8 and of adrenalin 0.4 c. c. was given. Patient went to a dance the same evening, could not sleep very well, and the following day had a spell of sneezing with difficult breathing through the nose. Seen on the following day she felt better, similar symptoms as recorded were present in the morning, though to a lesser extent; the pulse rate was found at 87, systolic pressure, 104; diastolic pressure, 78 millimetres, leaving a pulse pressure of 26 millimetres, or 15.834 millimetres Hg in one minute. No further medication or injection was given. The patient interviewed a few weeks later reported perfect health and stated that in her opinion the hay fever symptoms this year had become unusually attenuated.

In this patient, whose nutrition and circulation was below par, the physical findings showed improvement and a better pulse pressure. With five injections of pituitrin and partially of adrenalin, extending over four months, a cure, apparently could not be obtained, but a striking attenuation of the morbid symptoms was noted. Probably undernourished, delicate patients with habitual low pulse pressure must be told to abstain from prolonged straining exercise, which evidently interferes with the normal circulatory function, particularly in cases where asthmatic or hay fever attacks are noted in the history.

CASE III.—C. F. B., age thirty-eight years, married, no children, musician. His mother died at age of sixty-five years from heart failure. He had measles and whooping cough when a child; gastroenteritis when nine or ten years old; scarlet fever at age of eleven years, which was very severe infection, lasting six weeks; and a Neisser infection when twenty-one years old, which seems to be cured. His present illness dated back to 1890, twenty-five years ago, when, about August 14th, the attacks of hay fever started, lasting till frost. Sometimes this was preceded by an early June "rose cold." The primary irritants, to the knowledge of the patient, are pollen from the golden rod, ragweed, and certain midsummer grasses. As secondary irritants were mentioned, rust, heavy atmosphere, rainy days, strong sunlight, certain exposures to wind, humidity, perhaps susceptibility to nervous or other influences upon the nasal and bronchial tracts. The asthmatic attacks for several years became milder, usually happening during sleeping hours when body in prone position, only one small cushion being used. Certain kinds of food, too much meat in the diet, fruit acids—tomatoes—according to patient's report, were thought of importance.

Course of the attacks: On awakening, even though quiet, quickening of the pulse and sneezing in spasms of about twenty minutes duration or more occurred. During the morning and late afternoon the patient again had sneezing attacks and irritation of the eyes, and another sneezing spell at the time of retiring to bed. Itching of the eyes, much irritation, sight being slightly impaired, puffiness and blurred sensation were reported. On anointing the nasal tubes with camphor vaseline or another oily base, the sneezing stopped and sleep followed. Occasionally with such a treatment bronchial irritation arose during the night, and was relieved by sipping sherry, drop by drop. Previous treatments resulted only in temporary alleviation. For instance, during nasal treatment, according to the patient, the bronchial reaction was worse; asthma, bronchial secretion, wheezing, and sensation of oppression were much more severe than without any therapeutic interference at all. He seemed to have tried all possible treatments—nasal, pharyngeal, and throat treatment for years, and climatic changes—Europe, Adirondacks, White Mountains, Blue Mountains, and Blue Ridge Mountains—without result. Seashore rendered his condition much worse. One summer he left Baltimore at the beginning of the hay fever season for Lake Champlain; all sneezing stopped, but, instead, a bronchitis started, and a severe eruption of the skin about the ears, with watery discharge from little ulcers were noticed.

Other manifestations in the respiratory tract outside the period of attacks: Patient had occasionally some



mucous discharge from the posterior pharynx. No particular circulatory disorders except rapid pulse, sometimes preceding the hay fever attacks. Digestive functions: At the present time occasionally some gas and belching occurred after eating certain foods, as starch, potatoes, onions, etc.; meat digestion is good. Bowels regular; movements not very copious. Genitourinary functions: Patient passed about three pints of urine daily, got up once during night, particularly after drinking greater amounts of water on the preceding evening. Absolutely negative to other symptoms. Sexual functions seemed to be normal and satisfactory; no relation was observed between this function and the character, intensity, or duration of the hay fever symptoms. He worked about eleven hours a day during eight months of the year, and for four months about four hours while up in the mountains. He slept well. For the past four days the patient had been sneezing a good deal in the morning without having a cold. He was exposed to wind and dust a good deal lately.

Physical examination showed a well nourished individual, rather stout. Teeth were in good condition; throat moderately congested and dry; tonsils of medium size, surface irregular. The chest was very well developed; rather emphysematous; full percussion note obtained throughout. Over both apices and in front, granular breathing, harsh expiration, numerous sibilant râles, a few râles posteriorly over the apices and lower parts of the lungs, nowhere bronchophony obtained. Heart: Apex beat in sixth interspace,  $4\frac{1}{2}$  inches outside of midsternal line, indistinct in character. Absolute cardiac dullness upper part of third interspace to the left sternal border; extended to the right sternal border in the fifth interspace. Relative dullness: outside of mammillary line,  $4\frac{1}{4}$  inches to the left;  $1\frac{1}{2}$  inches to the right from the midsternal line, overlapping the right sternal margin for  $\frac{3}{4}$  inch; upper border of relative dullness found in second interspace. Diameters of the heart: transverse diameter,  $4\frac{3}{4}$  inches to  $4\frac{1}{4}$  inches in height;  $6\frac{1}{4}$  inches in oblique diameter. Content of cardiac triangle, 12,218 square inches. Heart sounds were not very distinct, embryocardia over mitralis, first and tricuspid first sound hardly audible, accentuation of second aortic and pulmonic sounds, no murmurs heard. Pulse rate, 78; not well sustained, slight irregularity. Systolic blood pressure, 122; diastolic, 92; pulse pressure, 30 Hg; pressure for one minute, 16,692 millimetres Hg. The liver was enlarged, overlapped right costal margin, and extended two and one half inches to the left from the midline. Findings of the abdomen were otherwise negative. Urine: specific gravity, 1.022; dark amber color; faint trace of albumin found; no casts; sugar, negative; excessive amount of indican present; urobilin reaction present. Stomach content after Leube-Riegel test meal, removed after four hours: moderate amount of gastric juice obtained; free HCl, seventeen per cent.; total acidity, twenty-eight per cent. As seen from the following table, the patient was also given the combined treatment of pituitrin, adrenalin, and atropine.

Date	June 1, 1915	June 2, 1915	June 3, 1915	June 4, 1915	June 5, 1915*	June 8, 1915
Injection, c. c.:						
Pituitrin .....	0.8	1.0	1.0	1.0	1.0	1.0
Adrenalin .....	0.8	0.5	0.5	0.5	0.5	0.5
Heart before injection:						
Apex, in. sp. ....	VI	V	V	V	V	
To L. M. S. L. ....	$4\frac{1}{4}$ "	$1\frac{1}{2}$ "	$4\frac{1}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	$4\frac{1}{2}$ "
To R. M. S. L. ....	$5\frac{1}{4}$ "	$4\frac{1}{2}$ "	$5\frac{1}{4}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "
Transverse diameter .....	$4\frac{1}{4}$ "	$3\frac{1}{4}$ "	$4\frac{1}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	$4\frac{1}{2}$ "
Height .....	$6\frac{1}{4}$ "	$5\frac{1}{4}$ "	$6\frac{1}{4}$ "	$5\frac{1}{4}$ "	$5\frac{1}{4}$ "	$6\frac{1}{4}$ "
Oblique diameter .....	$12.218$	$8.75$	$6.906$	$5.156$	$4.469$	$6.75$
Triangular surface .....	78	75	69	72	75	78
Pulse .....	122	118	122	124	122	114
Systolic pressure .....	72	72	70	86	82	78
Diastolic pressure .....	30	46	52	38	40	36
Pulse pressure .....	16.692	14.250	13.662	15.120	15.750	14.386
Mm. Hg. in one minute .....						
Heart sounds:						
Mitralis .....	embryo-					
cardia						
Tricuspid .....	1st better					
faint sustained						
Pulmonalis .....	adac-					
centuated						
Aortic .....	adac-					
centuated						
					medication	
					see below	

\*Went to the mountains.

Date	June 27, 1915	July 14, 1915	September 16, 1915	September 17, 1915	September 18, 1915	September 21, 1915	September 22, 1915
Injection, c. c.:							
Pituitrin .....	1.0	1.0	1.0	...	...	1.0	...
Adrenalin .....	0.2	0.2	0.3	...	...	...	...
Heart before examina-							
tion:							
Apex, in. sp. ....	V	V	V	...	V	V	V
To L. M. S. L. ....	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	...	$2\frac{3}{4}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "
To R. M. S. L. ....	$7\frac{1}{2}$ "	$1\frac{1}{2}$ "	$1\frac{1}{2}$ "	...	$3\frac{1}{2}$ "	$4\frac{1}{2}$ "	$3\frac{1}{2}$ "
Transverse diameter .....	$3\frac{3}{4}$ "	$4\frac{1}{4}$ "	$4\frac{1}{4}$ "	...	$3\frac{1}{4}$ "	$4\frac{1}{4}$ "	$3\frac{1}{4}$ "
Height .....	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	...	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "
Oblique diameter .....	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "	$5\frac{1}{4}$ "	...	$3\frac{3}{4}$ "	$4\frac{1}{2}$ "	$5\frac{1}{4}$ "
Triangular surface .....	5.25	6.185	7.327	...	2.437	6.25	4.375
Pulse .....	78	75	72	78	70	66	72
Systolic pressure .....	122	122	118	122	124	116	122
Diastolic pressure .....	85	74	92	78	70	76	72
Pulse pressure .....	37	48	26	44	54	40	50
Mm. Hg. in one minute .....	16.146	14.700	15.120	15.600	13.580	12.672	13.968
Heart sounds:							
Mitralis .....			first		accen-	well	normal
					tuated	sustained	
Tricuspid .....			indistinct				
normal							
Aortic .....			adac-		normal		normal
centuated							
Pulmonalis .....			1st split		normal		normal

The first injection consisted of 0.8 c. c. of pituitrin and 0.8 c. c. of adrenalin solution 1:1,000. The patient did not feel the slightest discomfort and on the following day the indistinct first mitralis sound had become better sustained, the heart had diminished about 44.7 per cent. of its former size, while the liver had lost  $\frac{3}{4}$  inch in the transverse diameter of its left lobe. The second, third, fourth, fifth, sixth, and seventh injection the dose of pituitrin was one c. c., the dose of adrenalin was 0.5 c. c., given subcutaneously. From May 4th the patient received in addition the following prescription:

R Atropin sulph. .... gr. 1/40;  
Aq. menth. piperit. .... 5ii.  
One drop thrice daily.

At the same time a trial was made with digalen ten drops thrice daily. The heart sounds became very regular and vigorous. The patient had left the city and went to the Blue Ridge Mountains, and after June 5th reported only at irregular intervals at the office. The moisture over the lungs had cleared up considerably; only occasionally in the morning while it was cold, the patient noticed very slight, hardly pronounced sneezing. On June 27th and July 14th the heart examination showed a better condition, and the patient felt very well, having experienced no serious attack as in previous years. As a precaution, the patient was given calcium chloride ten grains, thrice daily after June 20th, while the digalen medication was gradually diminished and ceased. On September 16th the following report was made: One moderate sneezing spell on August 7th lasting for three quarters of an hour, shortly after breakfast. On the 18th, during the blooming season of ragweed, goldenrod, and horseweed, following a rapid change in temperature, he contracted a cold, attended by cough, but no dyspnea in any form was noticed, nor were there any other complaints or manifestations. Digalen and calcium chloride medications continued during that time did not seem to help the patient. On October 10th he noticed a tendency to sneezing spells followed by relief after local application of carbolated vaseline ointment. The physical findings on August 16th and the days following were of interest as seen in the table above; especially interesting was the enlarged heart, the high diastolic blood pressure, the low pulse pressure, and the weakened heart sounds over the mitral and pulmonic areas. The urinary findings revealed marked indicanuria and urobilinuria, which was considerably improved by the administration of Bacillus bulgaricus in five grain tablets, one twice daily. When reexamined, pronounced demography and considerable slowing and change in pulse were found during bulbous pressure. The sneezing spells after the pituitrin and adrenalin injections became shorter and less intense; dry sensation in nose and throat was absent, and less moisture was found over the lungs. With the improvement of the

circulation, the vasomotor phenomena subsided entirely and the patient reported normal health conditions.

This case is of special interest as it seems to suggest that with a weakened circulation the hay fever symptoms are more likely to occur. The administration of pituitrin and adrenalin can secure relief in the intense attacks in aiding the circulation, but it is not desirable to allow too long intervals between the injections. The patient should be kept under close supervision while treatment is given, the physician should be within easy reach to give the injections and the treatment. A reason why in this instance no absolute cure, but only relief of symptoms, could be secured cannot be given. It appears plausible, however, that the patient would have obtained better results with more regular treatment.

CASE IV.—Mr. H. L. M., reporter, age forty years, had one aunt suffering from asthma; father died at forty-two years of age of nephritis. The patient had measles at age of six years; pleurisy in 1899; several attacks of grippe since 1904, with distinct tubercular manifestation of apices; and several attacks of rheumatism during 1910 to 1914. Present illness: Attacks of hay fever since 1911 recurred regularly in the latter part of August, lasting with very marked intensity from four to eight weeks. The symptoms were typical of hay fever, involving the mucous membranes of the eyes, nose, throat, bronchi, and they assumed such a character that for several weeks in succession the formerly very active patient was simply unable to attend to his literary work. All kinds of treatments so far advised by numerous doctors in the past four years were absolutely resultless with the exception of the locally used adrenalin spray to the nose, which secured a few hours of relief. The patient, five feet 8 3/4 inches in height; weight, 197 pounds; was an inveterate user of tobacco in any form, and complained lately of precordial pain. Except for the symptoms referring to hay fever, which, according to patient's own observation, were favored by inhalation of pollen from ragweed and asters and dust, no other complaints were made. Patient was fond of heavy eating, and favored free consumption of beer, etc.; he observed no signs of idiosyncrasy to any kind of food; bowels were constipated. An examination of the physical status made on September 23d was of interest: Patient heavy built; male; weighed now 180 pounds; flushed appearance of face; eyelids reddened; bloodvessels of conjunctiva pink; swelling of mucous membrane of nose; deviation of nasal septum and congestion of its vessels; same condition held for tongue, palate, and pharynx. Chest emphysematous; slight diffuse wheezing sounds on breathing over bases; harsh breathing over right apex anteriorly and posteriorly; no local activity present. The size of the heart, as examined preceding and following the treatment, could be estimated from the following table:

Date	September 25, 1915	September 27, 1915	September 28, 1915	October 1, 1915	October 8, 1915	October 19, 1915	June 26, 1916	June 28, 1916	July 1, 1916	July 5, 1916	July 7, 1916	July 8, 1916	July 11, 1916
Dose c. c.:													
Adrenalin .....	0.5												
Pituitrin .....	0.8												
Examination before treatment:													
Apex:	V	V	V	V	V	V	V	V	V	V	V	V	normal
To L. M. S. L. ....	4 7/8"	3 3/4"	3 1/4"	3 1/2"	4 1/16"	3 1/2"	3 1/2"	5"	5"	5"	5"	5"	
To R. M. S. L. ....	1"	1 1/4"	1 1/2"	3/8"	3/4"	1 1/2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	
Transverse diameter ..	5 3/8"	5 1/4"	4 3/4"	3 3/4"	4 13/16"	4 1/2"	4 1/2"	6 1/2"	6 1/2"	4 3/8"	4 3/8"	4 3/8"	
Height .....	4 1/2"	4 1/2"	4 1/2"	3 3/4"	2 7/8"	3 1/2"	3 1/2"	4"	4"	3 1/2"	3 1/2"	3 1/2"	
Oblique diameter .....	6 1/2"	5 1/2"	4 3/4"	5 1/4"	5 1/8"	6 3/4"	5 3/8"	6 3/4"	6 3/4"	5 1/4"	5 1/4"	5 1/4"	
Triangular surface .....	12.48	10.25	6.0	6.54	6.91	6.88	8.15	12.5	8.00	8.03	8.03	8.03	
Pulse .....	78	74	80	75	75	66	75	81	75	78	78	78	
Systolic pressure .....	118	120	110	124	130	122	122	118	132	126	116	122	124
Diastolic pressure .....	86	80	84	80	86	84	80	86	82	88	82	78	82
Pulse pressure .....	32	40	26	44	44	38	42	22	50	38	54	44	42
Mm. Hg in one minute ..	15.912	14.800	15.620	15.300	16.200	13.806	15.150	15.714	16.050	16.692	17.302	15.600	15.150
Heart sounds:													
Mitral 1st .....	very weak	better	accentuated	normal	normal	normal	doubled	single, accentuated	single, accentuated	single, accentuated	single, accentuated	single, accentuated	sounds well sustained
Pulmonalis 2d .....	blurred weak	better	accentuated				doubled	doubled	doubled	doubled	doubled	doubled	

Besides the cardiovascular changes recorded, this case presented a marked and long lasting dermatography, the pulse rate before bulbous pressure was 78, fairly regular and full in quality, and during the bulbous pressure it dropped to 66, so weak that the pulse waves became hardly perceptible. The inspiratory pulse rate before bulbous pressure was two; during expiration, three; under bulbous pressure the inspiratory and expiratory rates were equal, three.

The urinary findings on August 18th revealed a slight trace of albumin. Phenolsulphonphthalein test elimination in first hour, fifty per cent; in second hour, twenty per cent; total, seventy per cent. On September 24th, there was present a considerable urobilin and indican reaction besides albumin and a reduction of Fehling's solution, the specific gravity being 1017. On September 30th the total urinary output was in twenty-four hours 1,700 c. c.; specific gravity, 1013; 2.2 decinormal NaOH solution pro ten c. c., again trace of albumin with the reduction produced by Fehling's; no casts found in the sediment, but few epithelial cells and leucocytes. With the improvement of the patient's condition the albumin diminished, and the indican and urobilin tests were hardly noticeable; the specific gravity was found at 1015; the acidity amounted to 2.7 c. c. decinormal NaOH pro ten c. c. of fluid. Gastric analysis made on August 18th gave free HCl, twelve per cent; combined HCl, twenty-six per cent; total acid, thirty-eight per cent; absence of lactic acid. On August 28th, gave free HCl, eight per cent; total acid, twenty-six per cent; no mucus. Feces examined on September 26th, very fetid odor; coarse looking masses; fair amount of mucus; meat digestion incomplete; many blue starch granules and fatty acids; few globules of neutral fats; absence of parasites and blood; hydrobilirubin reaction moderate. Hemoglobin, 114 per cent; white blood cells, 18,680; negative Wassermann.

The patient, when examined on September 24th, presented an enlarged liver. In the right mamillary line it was found in height 5 1/4 inches; in median line, three inches; left lobe extended three inches to left of median line. After pituitrin, on September 25th, it measured 4 1/2 inches in height; one inch in median line; left lobe extended 1 1/2 inches to left of median line. On October 8th the measurements read 4 3/4 inches, 1 1/2 inches, and 1 1/2 inches.

The day after pituitrin medication was started, the moisture over the lungs noticed at first cleared up within a few days, and with it the sneezing spells and the headache, which before was very marked, were checked. The sensation of dryness and stiffness of the nose vanished, and so did the marked vasomotor signs. With the improved function of the heart, the diminished size of the organ, a higher pulse pressure will be noticed. The anginoid oppression in the cardiac region disappeared entirely. The patient succeeded in reducing his weight between seven and eight pounds in four weeks by restrictions in his diet. As seen from the table in the first period of observation, Sep-

tember to October, 1916, only two injections of pituitrin and adrenalin were given, besides atropine medication which consisted in

Atropine sulph., .....grs. 1/60.  
Aq. menth pipérit., .....ad. dr. i.  
Min. II, t. i. d., p. c.

Once the heart sounds and the size of the heart had become normal, it was of interest to watch the duration of the therapeutic results so far secured. We noticed a tendency to gradual enlargement, but still the pulse pressure remained above the low figures recorded before. On the same date a few moist râles were noticed over the bases. The patient, thinking he was well, indulged in a heavy evening meal and, after some cardiac distress and oppression, vomited his food several hours after his meal. Considering the marked indicanuria, an attempt was made to determine whether by the administration of Bacilli bulgarici lactic acid tablets, one tablet twice a day, this symptom of abnormal intestinal absorption could not be brought to disappear. The urine analysis made at a later date showed the correctness of our therapeutic calculations. Although no more injections were given, the patient, notwithstanding the late, murky, and hot season, had no attacks of hay fever or any suggestive symptoms. There was still present the tendency to an enlarged heart. The patient had lost nine and one half pounds in twenty-five days, and was given greater liberty in the selection of his food.

This case is particularly instructive as one year later it could be watched. Based upon former findings of a nasal obstruction by a much deviated septum, the submucous resection of this defect was made in May, 1916. The patient did very well, making an uneventful recovery and was kept under the impression that he should be immune against any recurrence of hay fever attacks. On June 26, 1916, patient returned to me with the following history:

Three weeks ago he contracted a "rose cold," marked cardiac oppression, dyspnea, stuffy feeling in nose and throat, tickling of eyes, constipation and alternating diarrhea. He had begun smoking and chewing again. He weighed four pounds more than in 1915, being about twenty pounds overweight. He was unable to work, complaining of general lassitude, and giving, in short, a history of hay fever manifestation. According to the patient's impression, these symptoms were much milder in character than those of the past year prior to the pituitrin adrenalin injections. The table contains the result of the cardiovascular examination, when we noticed the striking results: Considerable enlargement of the heart, with a cardiac triangle of similar size when patient was first seen; duplicated heart sounds; exceedingly low pulse pressure; high diastolic blood pressure; a higher pulse rate; dirotic pulse; marked indicanuria; faint trace of albumin. The result of one pituitrin adrenalin injection is recorded in the table. Furthermore, subjectively the patient noticed immediate disappearance of the tedious spells of sneezing; also the cardiac oppression and hypersensitiveness had entirely subsided. Considering the renewed presence of marked vasomotor signs, dermatography, and Ashner's bulbous phenomenon, it was of interest to know whether the subcutaneous administration of pituitrin and adrenalin could not be substituted by the intake of appropriate vasoconstrictor remedies. This seemed the more justified since the patient, editor of a magazine, had to leave the city for several days in succession, and office treatment could not be kept up regularly. The medication consisted in:

Tr. strophant., }  
Tr. belladon., } .....ãã dr. ss;  
Extract fluid ergot, }  
Elix. gentian comp., .....dr. iiii.  
Min. V, t. i. d.

Three days later, the patient being in the meantime exceedingly active, and weather conditions very unfavorable, heat and high humidity, circulation was not so good. Disregarding medical counsel, he had indulged in heavy dinners and paid with precordial nightly oppressions, which he described as a feeling of swelling and tightening of

the heart. After coitus the disagreeable sensation in the heart seemed to subside temporarily, but returned later. Having omitted the drops, he had a sneezing attack. After that report an increase of the drops to seven minims three times a day was tried. No particular symptoms were recorded until seen two days later, when the quality of the pulse was not so good, so another pituitrin injection was given. On July 10, 1916, a very disagreeable, moist and warm day, with no relief during night, the patient noticed one slight sneezing spell and, except for the tight precordial sensation, no other symptoms were reported. Seen on July 11th, a lower pulse pressure was recorded and, although the heart sounds seemed normal, the same dose of 0.8 c. c. pituitrin and 0.4 c. c. adrenalin was administered subcutaneously. This was the last dose given by myself. Later information from the patient, received on September 26, 1916, is of interest, as he experienced in August a very marked hay fever attack. After vaccination had demonstrated a sensitiveness to ragweed and aster pollen—not golden rod—a regular course of seven injections of ragweed and aster pollen was started, extending over a period of twenty-eight days. The first four injections were attended by very marked symptoms; severe general malaise, asthma, much coughing, and lack of sleep; but, three weeks later, the symptoms suddenly abated. Occasional sneezing spells were still noticed, but otherwise the patient felt well. The intelligent patient noticed that before the pituitrin treatment the heart symptoms were always much in the foreground, but after being injected with pituitrin these symptoms from the circulatory apparatus disappeared.

This case is of particular interest since it illustrates the value of the vaccination treatment, which, when pituitrin could not be given, proved of considerable value to the patient. As shown in some of my cases, pituitrin injections should be given over a longer period, and the patient should be watched carefully for the indications of cardiovascular manifestations which require treatment. It is probable that Case III would derive better results from a treatment with vaccine and cardiovascular stimulation combined, this being indicated particularly in cases of severe character and long standing. The present and former study of the symptomatology and treatment of hay fever seems to me interesting and deserving of short recapitulation and discussion of the facts.

As regards the physical findings, in all instances we meet signs of a cardiac dilatation, controlled by successive and later examinations. The enlarged heart, revealed by threshold percussion, was present in cases I, II (1) and I, II, III, IV, chiefly demonstrating an enlargement of the right heart. In a few instances the enlargement may also include the left heart—II and IV. As regards the auscultatory findings the first mitral sound may be weak—II (1), IV; indistinct—I (1), II; distant; split—I, II; or roughened—I (1), while the second mitral sound, though weak, was less frequently involved. Over the tricuspid area the first sound was weak—II (1), III—while faint and distant first aortic sounds were noticed in one case only—I (1). More frequently however accentuation of the second aortic sound was noticed—II (1), II, III. As regards the pulmonary area weak sounds existed—I (1), IV; re-duplicated second sounds were noticed—II, IV; and accentuation of the same in three instances—I (1), III, and IV.

In comparing the pulse rates, referring to the male patients—I (1), II, IV—no particular acceleration of the pulse is found. Female patients present a rapid pulse—II (1), I—of over ninety. In judging the work of the heart we pay more attention



to the blood pressure readings, and it is advisable to consider the age and sex of the patient according to standards recommended by Faught. According to this author, for a male aged twenty years the systolic pressure of 120 millimetres is considered normal, while for every additional two years of life one millimetre is added; for female patients of the same age ten millimetres less are admitted. Applying this rule to our male cases, we find that the systolic blood pressure is several millimetres below the normal; the difference in Case I (1) is twenty-two millimetres; in Case IV, twelve millimetres; in Case III, seven millimetres below normal. As regards Case I (1) it must be remembered that a reading could be obtained only by the palpatory method, the sounds being too weak to be heard by auscultation. Among the female patients we encounter in Case I a slight increase of 4.5 millimetres, while in the other two cases the systolic pressure was found below normal—in Case II (1), 17.5, and in Case II, 9.5 millimetres below normal. As regards the diastolic blood pressure, among three male patients we notice in Case III one high reading of ninety-two; in another instance—IV—eighty-six; in the next instance—I (1)—seventy-six millimetres. Examining the pulse pressure, supposed to be one half of the diastolic blood pressure, we likewise notice a diminution from normal values, especially in Case III with sixteen, Case IV with eleven, Case I (1) with eight points below the expected figure. Among the female patients the diastolic blood pressure is found not so far above the expected normal figures; in Case I eighty-six millimetres; in Case II (1) eighty-two, in Case II seventy-four millimetres were recorded. The pulse pressure was below the normal mark; in Case II (1) fifteen, case I eleven, and Case II, seven points below the expected figure.

In the study of heart cases, the relation between the pulse rate and the sum of the systolic and diastolic pressure combined, seemed to me of practical value, as an expression of the work of the heart furnished in one minute. It appeared difficult to ascertain the normal cardiac action of a dilated heart; a way to overcome this obstacle was the comparison of the size of the heart, when under treatment, it had reached its minimum size, ascertained by threshold percussion. The results of such a comparison are given as follows: In Case I (1) the initial figure of 14,720 millimetres was found to be 5,360 millimetres below the optimum, while in the other male patients an overexertion of the cardiac activity was suggested, namely, in Case III the initial figure was 942 to 3,112 millimetres and in Case IV only a slight excess of 292 millimetres were recorded. Among the female patients excess cardiac activity was noticed, namely Case II (1) ranged 3,822 millimetres, Case II with 1,288 millimetres, the least, Case I, with 552 millimetres being obtained.

When I began studying hay fever little attention was paid to the vasomotor disturbances, while in the progress of the observations these phenomena were included in the clinical report. In all instances a marked dermatography, with long lasting vasodilatation and flushing of the skin could be elicited. The Ashner bulbous phenomenon was equally encountered,

not so pronounced in Case II, but markedly present in cases I, III, and IV, where a distinct slowing of the pulse prevailed, which even became hardly perceptible. The clinical symptoms and findings enumerated above may be observed in other hay fever cases subjected to close observation; a decision as to their importance to and correlation with the hay fever attacks may appear hasty at present, but whether primary or secondary to the hay fever attacks, they should be considered in the treatment of such cases.

In all my cases the immediate response of the heart to the pituitrin adrenalin injection could be noticed, as evidenced by the decrease in size, the improvement in heart sounds, and the increase of a formerly low pulse pressure. When is it advisable to give the next injection and how many doses are sufficient for a therapeutic result? To decide these points we had better keep watching the pulse rate, the blood pressure figures, the heart sounds, and the extent of the percussion outlines of the heart.

As shown in the above tables an injection was repeated when there was evidence of a lowered systolic and a low pulse pressure and the result justified such a procedure. The dose of pituitrin was in the average of cases from 0.8 to one c. c. In a few instances the dose was reduced to 0.25 c. c.; the result observed in Case II (1), however, was not as favorable. The dose of adrenalin varied from 0.5 to 0.2 c. c., the higher dose being given first, then gradually reduced.

Another important point should be mentioned. The patient should be cautioned against excessive exercise while under the action of the drug, advice whose importance was observed over and over again, especially in Case II. A larger dose of adrenalin than that mentioned is not desirable. Frequently the patients complain of persistent pain at the site of injection. In substituting the pituitrin by other cardiac stimulants, such as digalen, the effect observed is not uniform; in some instances the pulse rate may be kept down and the tendency toward cardiac dilatation may be checked, but not in all instances averted. This seems to me important and to a certain extent a reason why in some instances with home treatment in the absence of the physician, the attacks, though milder in their clinical manifestations, could not be entirely warded off. Atropine medication used in some of my cases seemed to check the pulse rate, but such an action could not be obtained in all cases. Among the remedies promoting vasoconstriction the use of extract of ergot may be considered; cases II and IV, among others, suggest that a rise of the diastolic and systolic blood pressure may occur as well without material change in the pulse pressure, an undesirable result. The influence of physical exercise upon female patients could be likewise studied, the comparison of pulse pressure and heart findings showing that these patients react very quickly upon unphysiological exercise by changes in vascular cardiac functions.

From the therapeutic standpoint it may be suggested that hay fever patients should be treated individually according to the variety and intensity of their symptoms. As can be learned from my previous communication (1) and the present study of cases, the cardiovascular stimulation may in some

cases be sufficient to discard the severe symptoms for several consecutive seasons. In all cases so far studied, an attenuation of the attacks can be secured, provided that the proposed injections with pituitrin and adrenalin are given in the proper doses and at not too long intervals. As Case IV teaches us a certain reserve as to the final results, it must be admitted that vaccine treatment gives the best results in severe cases. Perhaps further investigation will teach us to separate genuine cases of hay fever from milder forms with similar clinical manifestations which are not based on a primary irritation from the pollen of a definite character, but are the result of endogenous or exogenous toxins or a combination of both.

Not so much emphasis has been laid in the present study upon pulmonary manifestations. Suspicion of tuberculosis was justified in several instances. The objective and subjective respiratory symptoms were found in close relation with the heart function; when heart function was improved, the moisture would disappear promptly. Present studies of asthmatic tuberculous individuals in my clinical service suggest at least the possibility that the disintegrating proteins from the lung tissue may frequently cause the marked vasomotor disturbances evidenced on the surface of the body and the cardiovascular functions as well. Why in the process of breaking down lung tissue should not histidin or similar chemical bases be formed which lead to an anaphylactic reaction with pulmonary symptoms? The answer to this question is approached experimentally in our laboratory.<sup>1</sup>

In discussing details in the administration of pituitrin and adrenalin injections, the cardiovascular changes seem to me of chief interest. As one point of importance I would allude briefly to the means of dealing with other abnormal findings in my series of cases. It will be seen that in the female patients a tendency to a marked increase in the output of free HCl was noted, while the male patients suggested a low output of free HCl. As the indicanuria which was present may depend upon a defective gastric or intestinal digestion, such a relation should be considered, since clinical and experimental observation tends to prove an intimate relation between gastrointestinal absorption, a marked indicanuria, and defective cardiovascular function. Therefore in the presence of digestive disorders and anomalies in the gastric secretion the use of diluted hydrochloric acid in hypoacidity, and the use of alkalies after or before meals in cases of hypersecretion have proved advantageous. Since a full stomach is inclined to empty itself slowly, light evening repasts should be recommended.

In all of my cases, so far examined, a striking indicanuria, alone or with urobilinuria, was noticeable, particularly in cases where the liver shared in the symptoms of weak cardiac function. During the course of treatment these vasomotor symptoms became less noticeable and finally disappeared. The favorable effect of Bulgarian bacilli lactic acid tablets upon the marked indicanuria could frequently be observed coincident with a more regular

function of the sluggish intestinal tract. From the asthma literature of last year we find the frequency of indicanuria in such cases confirmed, so a study of Allan Eustis (2), who in a series of 178 patients found this symptom absent only in 1.7 per cent. cases. The rôle of decomposition products from putrefaction of proteins, amino bodies similar to cadaverin and putrescin, as irritating upon the bronchial tract, and the experiments of Banger and Dale, with the ergot base, betamidazolyethylamine, also the split products derived from histidin and its amidoacids as evidenced by Kehrer's experiments, throw an interesting light upon the possibility of faulty digestion as a possible cause of asthma.

We all admit an individual, functional power for the elimination of waste products which, as life goes on, is likely to lessen, a stage being reached at which the cells, especially those of the liver, if not of other organs, have diminished or lost their function to disintegrate certain products of disturbed and lowered metabolism, which retained in the body predispose or cause the clinical symptoms of asthma and hay fever. For the differential diagnosis of hay fever and asthma as well as for successful treatment it will be necessary to distinguish between the different proteins originating from animal, plant, or bacterial proteins, the inhalation or ingestion of which may be the cause of the symptoms ascribed to hay fever or asthma respectively (3). I shall not attempt to review the interesting literature on the subject of sensitization, but shall refer the reader to some of the many valuable contributions. Although the primary results obtained by pollen vaccination treatment were very encouraging, with more clinical evidence at hand (4) we cannot expect everything from such an immunization treatment; further therapeutic means must be considered. With the aim of securing an immunization the recommendation of Blair (5) may be tested to accustom oneself to the pollens by frequent exposure and contact with the plants before their blooming season has started. Just as the injection of blood serum has given good results in asthma treatment (6) the method may be applied in hay fever cases with a possibility, by introduction of fresh serum protein, of stimulating the organism to overcome the impaired cell functions.

Considering the favorable results obtained by treatment with vaccines derived from streptococci and other bacteria (7) and those obtained by pollen vaccination combined with treatment (8), with a vaccine prepared from a culture from the nasopharynx at the time of attacks, is there any discrepancy between the etiological factors such as pollen from plants and the consequences of former bacterial infections? Further experiments bearing upon the subject will help decide that question.

Personally I believe that with increase of knowledge of the split products from bacteria and toxins resulting from protein decomposition, their individual action upon the human system may be better understood. Perhaps the hay fever and asthma attacks simply express the inability of certain individuals to eliminate or disintegrate certain endogenous or exogenous waste products. The frequency of vasomotor disturbance in most in-

<sup>1</sup>Percy Shields Memorial Laboratory and Cincinnati Municipal Sanitarium.







with a "psychic effect of electricity." The symptom here, then, is related to a human agent, who effects in it a change. Is this change one which is solely to be further placed in a series of unconscious determinism; are we here to view it only as it has usually been seen in relation to hidden motivations, or can one also trace the work of the human agency in a more or less conscious transformation? As to the first alternative, this amounts to nothing more than has been firmly established as to the adaptation of the symptom to unconscious formations. The symptom is a production of the unconscious in part, as all our analyses define. Yet there remain the conditions for its appearance. Is the explanation of the symptom solely to be found in the imputed presence of very deep or firm fixations, or are we to believe that the essential conditioning factor rests in something like that which we have expressed in a nonconfrontation? Weight is given to the latter, both because it is suggested as a constant at the point of the break and because thus one better understands the effect of a powerful personality in persuading toward a confrontation, and the ease with which a current of electricity appears to dissolve a mutism, or phobia, or paralysis which, adaptively, would no longer be of service as a substitute confrontation after the patient had seized the critical expression of his unconscious, brought near the surface by the psychic factors of the shock. On the other hand, we are aware, in an operating agency of personality as effecting the erasure of a symptom, that there is suggested something much like a transference; only this appears to be made extraordinarily rapidly; none of the usual resistances function for the usual space of time. Granting the mechanism of transference as presenting, with the symptom erasure initiated by this, as in any psychoneurotic, how can one explain the rapidity and the completeness of the transference so far as it is to be read in the instant removal of symptoms? Suggestion cannot enter, for it is only again a relative of transference, and by itself is of little use; it has, indeed, been tried and discarded with its congener, hypnosis. The persuasion here seems also as a word to be chosen as bearing a different connotation as suggestion. All analysts reckon upon the resistances of transference; many enormously emphasize in this its importance especially among the Freudians. And it is peculiarly important for them in their lacking anything beyond a reductive basis; any ameliorism, such as is contained in the prospective mode of Jung, must be supplied by the analyst in his conscious direction of the patient with the artifices of sublimation.

The new factor emerging in the series we are having to do with is that of confrontation. Is the arrival at a transference peculiarly easy because of the initial effort toward such a confrontation, both in the harsh, impinging environment with its psychic factor, and in the instant handling of the case with the persuasion? We relate transference now to this conscious interference which is expected in the shell shocks. In transference we realize that it depends upon the analyst arriving at a point, hitherto jealously guarded by the patient, wherein a relation may be shifted over to him which had hitherto maintained for itself a prim-

ative object. It often seems as though this required an intrusion, and one backward by the analyst; as though, indeed, he were stepping back or down to primitive levels in order that through him the patient might pass outward. If this has been achieved by the persuader it has been a remarkably brief short cut; yet it is possible that something becomes effective in bringing forward the fixation, achieving a quicker transference and thus erasing more rapidly the symptoms. Is it the confrontation which does this, under the peculiar drive of the reality and treatment? We are carried further along this line when we consider the established fact that the shell shock cases rarely recovered after they had been for long far back in the quiet retreat where they were at first treated. On this native heath of the psychoneurotic they have presented all the difficulties inherent to this group. If this issue or termination be accurately reported, there can be no reason for distinguishing these shell cases from the other members of this class, solely on the basis of a definitely determined conditioning factor. Indeed, whatever is fruitful would seem to lie along a line defined in the question as to whether in all psychoneurotics the same type of break does not occur, with a rapid appearance of symptoms, which display an immediate adaptation to something more than to a hidden motivation, to something conscious, not unconscious.

At the moment, we have one point only distinguished definitely in the shock cases, that of outcome. This has been strikingly favorable and rapid under a set of circumstances which we have subjected to a kind of analysis; unfavorable in an antithetical setting. The psychic factor of a shock, however, we have described more accurately in a single case of shock, with a suggested relationship here of symptoms to other factors rather different to that usually presented by psychoanalysis. The therapeutic agency we have related both to transference, out of the items afforded by the shell shock case, as well as to the confrontation phenomena presenting in the railroad accident. So far as the prevailing Freudian modes of analytic treatment are concerned, the dependence upon transference, with a reduction of symptoms, is the chiefest. The matter of resistance is, of course, only related to this. Jung's prospective method, however, offers many points of contact with what we have considered in relation to confrontation. It has seemed to us that both the transference and the confrontation had been probably effective in the shell shocks. But our chiefest interest has been to explain, if possible, the instant results in a type of case where months usually ensue in analysis before cure. We are, of course, accepting the proof of cure here in the test of a return to the trenches; equally definitely we have rejected the notion of these results being gained by so shallow an effect as suggestion, which we have seen as a pallid shadow of transference.

It now seems obvious that if the transference has been so slow in effecting results in the ordinary reduction of the psychoneurotic symptoms, certain conditions must have supervened to render its working here more rapid and efficient. We be-

lieve a certain justification presents for the assumption that something much like a confrontation has been achieved because of a peculiar acceleration afforded by reality phenomena of a violent kind. That is, here certainly, reasons present for a clearer precipitation of this apparently significant therapeutic need. At least, it looks to be the added factor, that which here is easy to discern in its origin and in its effect. Yet can we assume, only because of the slow working of the usual analyses, that it does not also present there; or may we suggest that it has been overlooked in the larger movement of the reduction of the symptom, to which a considerable accent has been given from a preponderant emphasis upon the unconscious relationships of the symptoms, for the resolution of which only that operating through the unconscious seemed to be effective. Similarly, in the matter of transference the consideration has been of much the same kind. One must, so to speak, enter the unconscious to approximate the site of fixation; the prevailing relationship to the analyst is to be one necessarily upon this primitive level.

Yet if there has been a transference here, suggested in the importance of the personality of the medical officer, obviously it has not been gained by the slow plodding approximation to the fixation site from which the transference emerges in the usual analytic procedure. Is it possible that the confrontation has effected the transference at a level which we can best describe by making it one defined by the adaptation, imputed to be served in the sudden appearance of the symptom, as a partial confrontation? That is, instead of pursuing, through reduction, the symptom back to its primitive site to achieve there a transference and later release it, it has been used in its immediate adaptive presentation, following the break as a point d'appui, for a transference at a site where it might more rapidly yield to the persuasion for a confrontation with none of the disability of the usual infantile stage of transference issuing at the point of fixation. If the symptom, then, is an adaptation both to the site of fixation and to the prospective movement of the unconscious, what issues in the persuasion, directed in the shell shock, seems to be the utilization of the second form, in which there is brought about so effective a confrontation with the directive movement that the arrest at the primitive site seems instantly to be overcome. Again, the issue seems directly related to the confrontation.

If, however, the psychological value of confrontation be what it appears here, how may one explain its apparent absence as a mode in the general work of psychoanalysis? It is not exact to speak of it as absent, for it has been touched upon in one way or another by many workers. Jung, as we have seen, has defined in his constructive method the prospective element which emerges, and with which he supplemented the reductive work of Freud and Adler. Deeper than this, he has seen the need of an individual philosophy built up by the patient. Adler and his disciples long ago expressed vividly the need of a surrender of fictitious goals in order to arrive at a fair balance. Freud, undoubtedly, in his sublimation, aimed at much the same end.

Yet, in all this, and indeed in all analytic procedure, such an attempt had a place only after a long reductive procedure. As an integral part of the initiation of analytic treatment it has been absent. When we consider, however, the exigencies of the problem before the therapist the matter is easier to understand. After all, the work of analysis has grown from an intensely practical application to a distinct presentation of symptoms. The symptom had been both the initial point of attack and the problem, which Freud had stated for him. The answer to it he found, apparently, in the unconscious motivations. It is here that his work had led analysis in the purely reductive mode. Nowhere, however, has he been able to distinguish, psychologically, what peculiarly operates to make the psychoneurotic as distinguished from the so called normal individual. All his mechanisms are universals. The determinism is, of course, traced and retraced in each case analysis, and discovered by him in the collective unconscious of the myth or tradition or savage ritual. He has, to be sure, in "Das Kleine Hans," subjected a child to analysis, and in its origins reveals his peculiar causæ. Yet the peculiar conditioning factors leading to the psychoneurosis are not substantially distinguished. It appears as though, again, the course traversed from what we speak of as the point of break to where the symptom appears, has been slurred over. But, more than this, if our hypothesis be true as to the symptom representing a substitute confrontation, then, the longer these symptoms be interfered with, the more effectively is the patient aided in avoiding that confrontation which the symptom draws upon itself. It is much like giving aid and comfort to an alien or enemy. Hence, not only has the exigency of the symptom necessarily determined this as the point of entrance, but in the accent thus directed at the symptom, emphasis has been instantly diverted from the confrontation. Moreover, aside from the menace, well defined by Jung, in the mechanistic handling of man with a total indifference to any movement in him toward a constructive goal, we must realize the imputation seized by the patient in the connotation of a single unconscious origin of his disabilities as revealing a total irresponsibility for them. They are of his unconscious, representing deep desires of which he has no knowledge. Even any resistance created by him is almost unconscious, and of a kind solely to be dissolved by the analyst. Thus, in the usual initiation of treatment, it seems as though the direction were almost antithetical to that which has appeared to be most effective in the cases of shell shock, which we have used as possible paradigm of what the attachment in the conditioning factor of confrontation might represent.

Aside, however, from these observations, the matter of the practical application of this mode to the usual psychoneurotic comes up. At first sight it might seem that in the shell shock series one was having to do with a clean initial break, one which had not stood and suffered integration for years in its symptom formation. Yet Wolfsohn, in his tabulation, recites a long antecedent history of psychoneurotic symptoms in a considerable proportion of his cases. This can mean only that there have been



previous breaks, in well defined episodes, making them no different to our usual material. Yet it may well be argued that in the shell cases there is a definition and localization which is unusual. It is probable, however, that an almost equal distinctness might be gained by a proper attention to the point of break, such as Adler and Jung have suggested. Undoubtedly, however, the extraordinary value of the environment has been of a kind to bring forward that critical and constructive movement in a way which other situations perhaps less well effect. Yet it is here that we believe an omission is defined in the over consideration of what external the patient has refused to meet, the omission being intensified by a failure to insist upon a confrontation and coincidence with the critical and constructive line which is brought sufficiently far forward to be realized. Reality is played too much for itself and much too little for that which it demands of a deeper adjustment to self. It is not simply maintaining the patient well to the front and near the conditions precipitating the break, but a persuasion is effected here which, to us, has seemed to define nothing less than something like this confrontation.

It is certain, however, that in the usual psychoneurotic one is placed in no such advantageous relation to an emerging constructive movement as seems to be the case with shock. Indeed, a slow presentation of symptoms is so much more in the usual line of evolution of the malady that one reads from this a lack of the exigency which features the former. It is, indeed, this gradual interposition of symptoms which subtly effects so complete a dual adaptation that the recovery for confrontation of the sequestered trend is much less easy. Yet the symptom formation here may be attacked, not so preponderantly on its adaptive function to the early fixation, but rather with the accent placed upon its adaptation, as a partial confrontation, to that directive movement which only thus far and thus disguised is met. The analysis of the symptoms thus may be no less searching, but instead of a sheer reduction to an expression of fixation, it remains at a level where the progression has carried it. One here interfering with it makes it utilizable as a further emergence of what is constructive. The adaptation is pursued and made larger by the access created with an increasing confrontation. The extraordinary resistance to this is vested almost entirely in the symptom; and until this latter may be used as a finger post to the proper direction, it may not disappear. Its existence is coterminous with its function. Of course, the reductive method does do away with the symptom in the psychoneurotic, although it has succeeded less amply in any complete restoration of the psychotic, where especially the sequestration of the directive trend has been most profound. Yet it appears to have missed in its pure reduction any view of the initial conditioning factors through a complete submergence of interest in the unconscious mechanism appearing to produce the symptoms. It has admirably described this mechanism as a universal, without the vision necessary to explain its single disorganizing effect in producing the maladjustment of a particular, the neurotic, where, as an agency, it

is postulated as operative as a universal. Nor can this be answered save by the examination of that early part of the neurotic route with which we have occupied ourselves in the consideration of the problem of confrontation, in the paradigm of the railroad shock case and the inferred data from the shell cases beginning now to be reported. That it illuminates the problem of the psychoneurotic seems clear. How far it may be incorporated as procedure is less definite. That it contains certain wholesome elements, demanding a conscious coincidence and occupation, may appear as a further exemplification of that taking stock of self, which to a greater or less degree is certain to issue within the oncoming future. That it coincides with the curious experience of man, embalmed in notions of punishment, perhaps no less sustains it than by itself it would seem to clarify tradition and authority to the end that what punishment really sought, yet never dared relate, was a confrontation of self, and not merely of outer reality. The extent to which society ventured was to punish others, and not itself; to impose external morals rather than develop or condition the development of that type which may issue only from confrontation. Yet, in this left handed method there is to be read at least a substitution for confrontation, as is the symptom. Taken thus, one may possibly conceive a justification for an approach to a psychological problem from the point of view of morals, where a universality permits the consideration of a Saul of Tarsus, or a soldier from the trenches, as defining in their reactions the psychic factor of shock.

34 EAST EIGHTY-FIRST STREET.

## ADRENOPATHIC HYPERCHLORHYDRIAS.

### *An Endocrine Therapeutic Study.*

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and

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This is only a preliminary communication, as we do not want to give lengthy notes of the theories involved in the study of the internal secretions as applied to constitutional medicine, but just the results in a few isolated cases treated, and to all intents cured. In another article the principles will be expounded as we see them, together with a new method of analysis and a procedure for designating and successfully treating properly selected cases with the various endocrine products.

CASE I.—Mr. D. S. V. W., age sixty-three years, married, had two children; one died of diphtheria. Patient is second child of four. Had measles at six, and later whooping cough. Attended school and was of average intelligence, and preferred mathematics to other school subjects. At sixteen he obtained a position as a machine shop assistant, where he worked up to his twenty-first year, then until twenty-six travelling extensively over the world as a sailor and never complaining of anything. From then until thirty he served as an engineer, and about that time married. One year later a girl was born, three years later a boy, who died of diphtheria when eighteen months old. Up to his thirty-eighth year he was variously occupied in



South America, where he contracted yellow fever; he claimed the attack lasted only twenty-four hours, being cured by castor oil and as much whiskey as he could swallow. He said that on the following day he was strong enough to resume work. He continued to work in South America as an engineer, where, when forty-three, he contracted a violent diarrhea. He suffered two collapses in one day, had from eighteen to twenty bowel movements in twenty-four hours, and came near dying. At no time did he have pain with his intestinal trouble. This ailment lasted for about seven months, during which time he lost a great part of his strength and came down from 136 to 94 pounds in weight. During this period of illness he could do absolutely nothing, and decided to return to North America. While still an invalid he undertook the trip to New York, where he spent the last four months of his illness.

He believed the sea voyage did him great good, so that he substantially recuperated, enabling him to resume work. About that time he noticed the gradual appearance of a rupture in his right inguinal region, which, however, gave him no concern. In 1911, when fifty-eight, he had a fall, and from that time on until now the hernia began to bother him, and also increased in size so that it is now about as big as a goose egg. Otherwise the patient was able to perform his duties as an engineer, complaining of nothing. In the spring of 1915 he noted a gradual disappearance of appetite, together with a sour and disagreeable taste in his mouth. The latter two phenomena occurred particularly after eating. No matter what he would eat, the discomfort would always assert itself and last from two to three hours after meals. Lobster and other shell food would provoke a particularly distressing sour taste. The bad taste was invariably accompanied by a griping feeling in the pit of the stomach, and during one year he vomited six times, bringing up very sour tasting material, containing the food eaten, together with much foamy mucoid substance. After a vomiting spell he would feel better. Unable to digest his food, he steadily lost in weight and strength so that he had to quit work three times during that year. He lost his sexual power at that time also. For ten months previous to consulting me (May, 1916) he was treated by several physicians, but obtained relief from none, or at most for a few days only. For the last six years the patient had suffered from a dry, hacking cough, particularly distressing at night, often keeping him awake for hours, and culminating in an expectoration of glary and stringy tough mucus. He often could not lie down to sleep, as this would provoke a cough, so that not infrequently he would pass the night in a Morris chair. This state of affairs prevailed for a period of three weeks before the patient presented himself for treatment.

Upon examination May, 1916, he shows shallow chest, a grayish, cadaveric complexion, and large veins on wrists and arms. He is five feet ten inches in height, weighs 110 pounds, with hardly any panniculus adiposus. He has gray hair in normal quantity for his age, none on chest, very little on shins, and a normal amount on his face. He shows a capillary girdle across chest two inches below xiphoid, right inguinal hernia goose egg size, on both scapulae pin head size pigment deposits, two telangiectatic spots on back. He has only six teeth left, four upper incisors and two lower. The eyes are blue, with marked arcus senilis. Pulse 96, cardiac action normal, with poor muscular sounds and no accentuation of ostial sounds. Vasomotor reaction shows a sluggish pink line with white borders; the pink lasts only one and one half minutes. Blood pressure, 180 systolic.

May 12, 1916.—Was given one half grain of suprarenal extract once a day for one week.

May 13, 1916.—Slept much better, could lie down, and did not cough so much. Appetite markedly changed, had a hearty breakfast and a good lunch.

May 14, 1916.—Slept still better, coughed much less.

May 16, 1916.—Slept very well, woke up only once dur-

ing the night to cough, but brought up phlegm with ease. Had gained four pounds.

May 23, 1916.—Strength increased every day. Appetite wonderfully improved. Still had slight sourness in mouth after eating, otherwise no other discomfort after meals. Slept very well, did not awake more than once a night, coughed very little, and mucus was brought up with ease. Mind clearer, not so much forgetfulness as before. Gained one more pound since last week, and physical condition (subjective) better than for the past two years.

June 6, 1916.—Sourness from stomach entirely gone, appetite and sleep very good. Coughed only once during last week, and brought up some phlegm. Although he rarely dreamed before, he had a dream as if he were fighting somebody. Patient said his hernia was much harder than before and it felt tougher.

Sexual power returned. Digestion perfect. Can do more work now than ten years ago. Sleeps, with no cough and no awakening. Discharged, but told to report every month.

Continued well until December, 1916, when he had some canned food, and was taken ill with symptoms of ptomaine poisoning. Was treated during the emergency by another physician, and given castor oil and other drugs, and when seen by me a few days later, showed a very pronounced facies of prostration, had ten to fifteen bowel movements in twenty-four hours, could not sleep, and his cough returned. All drugs were stopped, diet regulated, and four days after the beginning of his present trouble he was given one dose of one-third grain suprarenal. Next day he was a little stronger, and slept better. Did not cough so much. In one week of guarded suprarenal therapy of one-third grain once a day, he was able to go home, and resumed work the Monday following, having been ill in all ten days, and lost nine pounds in weight.

February 7, 1917.—Is capable of performing the duties of engineer in the boiler room alone (his assistant having left him), and does not feel in the least bit disturbed by the additional work. Eats everything, sleeps without interruption, and has gained another one and one half pounds during the last week.

LABORATORY FINDINGS.		
	Initial.	Final.
<i>Blood—</i>		
Hbg. ....	68%	88%
R. B. C. ....	4,664,000	4,860,000
W. B. C. ....	8,200	9,400
Differential ..	Normal	Normal
Mild form hemoglobinemic degeneration.		
<i>Urine—</i>		
1028, acid, normal		Normal
<i>Feces—</i>		
Mild carbohydrate fermentation		Still present
<i>Gastric contents—</i>		
Ewald meal:		
Total acidity .....	108	84
	40	40
Free HCl.....	74	42
	40	40
Microscopic normal.		

CASE II.—Mr. T., age twenty-nine years, pharmacist, single. The fourth child of six. Diphtheria at four. Was bright at school. Is capable of doing hard work for long hours. Complained of pain in right inguinal region and poor digestion for six years. Had terrible heartburn after meals, which came on about one half hour after eating and caused great discomfort for about two hours. Used to take bicarbonate of soda and magnesia usta regularly, but had only temporary relief. At times pain was so great that he could not attend to business. Later he

suffered from occipital headaches of a throbbing nature. He had been constipated for the last four years. At times he had a pain in his anus from a small hemorrhoid which bled occasionally. When the hemorrhoid bled he felt better. He lost twenty-two pounds in one year.

Physical examination showed a man five feet six inches in height, with a sallow complexion, a dark, bright eye, eyebrows that met over the bridge of the nose, raven black hair, abundant over the head, with an implant of hair low over the forehead. He found it necessary to shave each day. Teeth showed yellow spots on grinding surfaces, molars intact, canines sharp and long. No pathological spacing. Tongue large and bright colored, the mucous membranes normal. There was a large amount of long, black hair over his entire chest. On his back were three small and one pea-sized brown birth marks. Vasomotor reaction was first white, then a diffuse red with a white centre. It was slow in appearing (fifty seconds) then disappeared in five minutes. Reflexes were normal although lively. Heart sounds showed normal ostia and a vigorous musculature with accentuation of the second aortic sound; there was no enlargement. The abdominal contents showed no abnormality except a slight tenderness at the xiphoid. The abdomen was covered with an abundance of dark hair. In the inguinal region on the right side could be felt when he coughed a distinct impulse against the examining finger. The left testicle was two inches lower than the right. The legs and arms showed an abundant hairy growth and a few discrete pigment deposits, and were normal in so far as structure and function were concerned.

#### LABORATORY FINDINGS.

##### Urine—

1022 s. gr., and in all other respects normal.

##### Blood—

Three per cent. eosinophiles. Rest normal.

##### Gastric contents—

104 total.

82 free HCl.

##### Feces—

Hard scybæ, and a moderate amount of fermentation.  $2\frac{1}{2}$  c. c. gas in twenty-four hours' incubation.

The futility of the so called standard drugs used for such a well defined condition brought about a mental status bordering on despondency. Being a pharmacist and having a large acquaintance among physicians, he gradually lost confidence, so that when he presented himself to me it was a difficult task to make him enter into an agreement to help along his cause. He was told to take one small dose of suprarenal (one fourth grain) and present himself a week later, keeping close observation on anything that might happen in the meantime. He returned with an evident expression of satisfaction and related the following:

After taking the tablet of suprarenal he felt a sensation of warmth in his epigastrium, and a slight feeling of tightness in his head. The food eaten that day gave him no distress, a condition not experienced for years. The following three days were also free from distress after eating, but on the fourth the trouble returned, although in a much less violent form. His physical condition, particularly the vasomotor response, was unchanged; he

was given one quarter grain of suprarenal every second day and told to report in two weeks. The following visit showed an entire absence of gastrointestinal trouble; no pain, regular bowel movements, and no throbbing headaches. The second aortic sound was accentuated. The vasomotor reaction was first pink (appearing in ten seconds) then spread, assuming a white diffuse border, then faded away in fifteen minutes. He was advised to take only one tablet a week and keep note as to his condition. A month later he was entirely free from all complaints, and at the time of writing (eight months after the first visit), he had not taken any drug, including suprarenal, nor any of this five months.

The chief laboratory improvement, as in the previous case, was the diminished acid excess, particularly in so far as the free HCl is concerned.

CASE III.—Mr. E. F., age thirty-nine, married. Had one child, which was operated on at six weeks of age for pyloric obstruction. Patient had always been well until eight years ago, and did not recall any children's diseases, but had been told that during childhood he was scrofulous. There had been a tendency to constipation all his life, but no suffering from the effects. No history of lues or gonorrhea. Patient does not drink, but is a heavy smoker. For eight years had been troubled with his stomach; an acid taste, belching, pain after eating, feeling of pressure, and his constipation had been worse for those eight years. He never noticed blood in his stools and never had vomiting. The patient's father died of apoplexy, but otherwise his family history was negative. Seven months ago, while drinking water, he suddenly had a spasm in his throat so that the water would not go down. Since then he had been afraid to drink; it seemed to him that fluids would not go down. By holding his nose, with a mouthful of fluids, he was able after a while to swallow. Fluids other than water, such as milk or soup, seemed easier to swallow, and solids passed down quite readily. Since the onset of this difficulty in swallowing he had complained more of a burning sensation and a heaviness in his epigastric region, and also of a pain coming on from one to two hours after eating. This pain was worse after starchy food. He also complained of loss of weight, belching, and great nervousness.

On examination the patient presents himself as a slight man, weighing  $129\frac{1}{2}$  pounds, rather poorly nourished, and having a decided stoop. He has a high forehead, very little hair on his head, but rather heavy eyebrows thinned at the outer third. His chest is well covered with hair, he has a curvature of the spine. The abdomen is flat and drawn in at the epigastric region. There is no pain on pressure. Splashing could be heard within a hand's breadth of the symphysis. Heart: sounds are clear, accentuated second pulmonic, no murmurs. Lungs: negative.

A sound passed through the esophagus passed without any obstruction and a test meal obtained after an Ewald Boas test breakfast in forty-five minutes showed free HCl thirty-six, total of seventy. (Normal amount of food.) Microscopical examination was normal; there were no sarcinæ nor yeast fungi.

Impressions: Spasm of esophagus and relative hyperchlorhydria suggested possibility of a duodenal ulcer. He was put on an anticonstipation diet and atropine and bismuth subnitrate with magnesia usta.

September 3, 1913. Stomach symptoms better, could swallow easier, had less pain and gas. He was told to continue with the above régime and

come in from time to time. While he improved slightly from week to week, he would go back and at times all his symptoms would come on in the same degree as at first. Various medications, such as bromide of strontium and mild catharsis would relieve him of his most distressing symptoms temporarily. He would have periods when his swallowing became almost normal, yet under nervous excitement would become worse again. With all this his weight slowly increased by two pounds in the course of four weeks.

During November of the same year, about six weeks after he first presented himself, I put him on daily lavage of the stomach, which eased up his stomach symptoms somewhat until he contracted a bronchitis during the second week of December. Under proper medication this cleared up, and when he again came to the office on the 7th of January, 1914, he had entirely recovered from his bronchitis; his stomach symptoms, such as pain, belching, etc., were gone, but he again found swallowing very difficult. This trouble decided him in May to go to Europe for a complete rest. After an absence of two years he returned to consult me, and told me that his stomach had behaved quite well, the esophageal symptoms had left him soon after he got on the steamer, and by the time he arrived in Europe he felt quite well. He gained in weight, his bowels were regular, and he felt less nervous.

April 10, 1916. He came to see me and said that for four months he had again been troubled with pains after eating, belching, and constipation. He had been under the care of a "stomach specialist" was treated and given antacid medicine, but was losing weight steadily; was afraid to eat on account of pains, and felt very nervous. His weight had gone down to 129. Examination of the patient revealed the same findings, though no analysis of the stomach contents was made. He received one half grain of suprarenal gland in the office and was told to report in five days. He was told to eat everything, simply avoiding extremes. On the 15th of April he reported that he could eat without any distress. His pain was gone the next day, and had not returned. The bowels were less constipated. He was still nervous. No medicine given.

April 22, 1916. Had complained of slight pain for two days. His bowels were more regular and he had gained four pounds. Suprarenal gland one half grain daily ordered until pain should go.

May 1, 1916. Patient felt well after two doses of suprarenal. Could eat everything without distress and had gained another  $1\frac{1}{2}$  pound. He was seen by me at various times for colds, etc., from then until October 20, 1916, his last call. During this time he only complained of stomach pains once or twice, which were immediately relieved by one half grain dose of suprarenal. He has gained in weight so that he now weighs 138 pounds, and can eat almost everything; his bowels are quite regular.

The above cases are only a selected few of the many that show markings of an endocrine importance, and these will be used in a later communication to elucidate the method of analyzing endocrine situations when we shall point out the relationship between the subjective and objective symptomatology and the underlying endocrine causes. Suffice it for the present to state that many cases of suspected ulcer and even frank ulcer of stomach and intestines could be treated with great benefit and lasting results to the patient by a proper endocrine understanding of the case. It seems to us that in treating these adrenopathic hyperchlorhydrias we shall eliminate or correct the cause that produces them, and in view of the close relationship between excessive acid and tendency to the formation of ulcer in the gastrointestinal tract, we know we have minimized opportunities for the development of this serious disease.

## A POST MORTEM ON TWILIGHT SLEEP.\*

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Every new method of treatment is subject to all the dangers to which a first and only child is exposed. It is spoiled by too much praise and killed with kindness. The fond parent of a new method, naturally proud of his creation, believes that the child of his imagination is most wonderful and most accomplished. His child can do things no other child can do. Then come a host of aunts and cousins, the young enthusiasts in medicine, and spread the story of the new wonder broadcast. New qualities are attributed to it that were not detected even by the watchful parent and discoverer. It is said to do things that make the conservative physician and scientist gasp with astonishment and incredulity. Nobody is as enthusiastic about a new discovery as the young specialist. In every branch of medicine there are young and ambitious specialists who are anxious to bring themselves into prominence before the medical profession. As most of the "old" subjects are pretty thoroughly exhausted, and the average physician is tired of listening to "rehashes," these young men are always on the lookout for something new, something radical, something striking. As soon as a new treatment appears they pounce upon it. They try it out in perhaps a half a dozen cases, nearly always with "the most excellent results," and immediately they write an essay or a book on the subject. Of course, the majority of these men are dreadfully afraid lest their name accidentally get into the lay press. You cannot blame them. Competition is keen, and it is only on a new treatment that the young specialist can openly claim that his opinion is as good as that of the old and experienced man. He is also afraid to wait until he has given the treatment a real test in a sufficient number of cases lest the other fellow get there first. This is all human, but is it a wonder that so many real discoveries have died in their infancy, to be rediscovered later?

I do not wish to take time to go into the history of twilight sleep. I only wish to give my present opinion on the use of scopolamine and morphine in obstetrics, based on personal observation and experience. I have had the privilege of watching Doctor Shlesink give twilight sleep in the first series of cases in this country on the service of Doctor Rongy at the Lebanon Hospital. I have also watched

\*Read before the Bronx County Medical Society, February 20, 1918.



a larger and more successful series on the same service under the care of Doctor Rongy and myself. I have read nearly everything published on the subject, not excluding the *New York Journal*, the *New York Times*, the *Ladies Home Journal*, etc., etc.

What is wrong with twilight sleep? What has happened to the enthusiasts, who hailed it as the greatest discovery since Mother Eve tasted the forbidden fruit? Why have the men who have proclaimed the wonders of twilight sleep from every housetop suddenly grown mute? Why has it gone into practical oblivion after such a short life? My opinion is that twilight sleep died a sudden death, not through lack of real merit, but because it has failed to live up to a false reputation. Physicians expected too much from the use of scopolamine and morphine and, as a result, were disappointed and discouraged. Patients were promised too much and, as a result, felt themselves cheated. No man who has watched the administration in a series of obstetrical cases could help being impressed by its real usefulness and many advantages. Let me point out some of the universally recognized advantages and drawbacks of twilight sleep.

**Advantages.**—1. It unquestionably shortens the first stage of labor. The reason for this seems to me as follows: As you will recall, there are three elements in the mechanism of the dilatation of the cervix: (1), the mechanical stretching by the bag of membranes, or, if the membranes are ruptured, by the presenting part of the fetus; (2), the contraction of the longitudinal fibres of the uterus which end spirally in the cervix like a rubber tobacco pouch, or perhaps more like the leaves of the diaphragm of a camera; by their contraction, the cervix uteri is opened and shortened; (3), the physiological relaxation of the circular fibres of the cervix, which usually takes place in conjunction with the contraction of the uterus. This action is similar to the action of the sphincter of the bladder and rectum during micturition and defecation. This relaxation is frequently interfered with or entirely obstructed by a spasmodic contraction of these fibres. An antispasmodic such as scopolamine or morphine overcomes the spasm and the cervix dilates rapidly. 2. The actual perception of pain in labor is either entirely obliterated or markedly diminished. 3. The duration of the labor pain is shortened without any apparent shortening of the length of the uterine contraction. A patient in labor can usually feel the coming of the next pain for a variable period before the actual contraction takes place. Again, for a variable period of time after the contraction, the patient generally suffers from the aftereffect of the last pain. Under the influence of the drugs, however, one can usually see the contraction of the uterus before the patient begins to show signs that she is conscious of the pain. Again, as soon as the contraction is over, the patient immediately relaxes. If she has had her arms and legs bent while bearing down, the arms relax, the legs drop, and she either lies perfectly still or goes into a light sleep. 4. The patient gets periods of complete rest between the pains. 5. There is an entire absence of the agonized cries, which always exhaust the patient and physician and often lead the physician to interfere when no interference is necessary. 6. There is

comparative absence of postpartum exhaustion and shock. Immediately after delivery, the patient usually goes into a deep sleep and, when she awakens, she usually feels well enough to get up.

**Drawbacks.**—1. Repeated doses of scopolamine are dangerous. Those who have had any experience with hyosine medication know what a dangerous and unreliable drug it is. 2. An experienced physician and nurse must be constantly at the bedside. This excludes the general practitioner who does most of the obstetrical work of the community, it interferes with the obstetrician's other work, and, it makes the expense of a confinement prohibitive to all except the well to do. 3. It prolongs the second stage of labor. 4. The effect of the drug and the prolonged second stage of labor on the baby is evidenced by the increased number of oligopneic and partly asphyxiated children born under twilight sleep. 5. One more drawback is its absolute failure in a certain number of cases. In order to overcome the disadvantages and make use of the advantages, I have administered scopolamine and morphine during labor according to the following method. I do not believe I can claim anything new or original. It is only for fear that in our disappointment over the so called twilight sleep we might discard a very valuable drug, that I take the liberty of presenting this subject. When a patient comes to engage me for her confinement, I make no promises of twilight sleep and the absolute freedom from pain which a woman usually expects from such a promise. During the prenatal period I have the patient come to my office regularly and I make all the necessary external and internal examinations, take all the measurements of the pelvic inlet and outlet, approximate measurements of fetus, etc., so that by the time the woman is ready to go into labor I have a very definite idea as to the presentation, position, size, and shape of the pelvis, size of the baby, and the probable character of the expected labor. When a patient goes into labor I visit the patient and make another abdominal and rectal examination. I make no vaginal examinations during labor unless there is an indication for it, such as an unsatisfactory rectal examination or the suspicion of a prolapsed cord or placenta prævia. The patient is shaved and prepared as for a major operation.

Every woman expects to have a certain amount of pain during childbirth. During the greater part of the first stage, when the pains are comparatively of short duration and the intervals of rest are long, the great majority bear the pains cheerfully and rarely complain. However, toward the end of the first stage, when the pains increase in frequency and length, the patient's attitude changes. The woman who has been sociably and cheerfully chatting in the intervals of rest gradually becomes morose. Her entire attention becomes centered on her pains, and soon after she begins to inform her nurse, physician, friend, or any one who happens to be present, that she cannot stand the pain any longer. It is my opinion that at this stage it is the duty of every physician to give the woman some relief, if possible. If you cannot give scopolamine and morphine you can usually give morphine. I have no patience with the doctor who sits calmly by and lets a woman suffer the agonies of hell.

"Not interfering with nature" is often a camouflage for our ignorance or our indifference to suffering. The doctor who proudly boasts that he never gives morphine in the first stage nor chloroform or ether in the second is worse than a midwife.

To return to my subject: I instruct the nurse that as soon as the patient begins to complain bitterly of pain, she is to be put to bed in a quiet room. The bed is draped with a sterile sheet and the patient is covered with another sterile sheet. She is then to receive, hypodermically, 0.25 of a grain of morphine and 1/150 of scopolamine stable, or 1/6 of morphine and 0.005 of scopolamine stable, depending upon her physique and constitution. The nurse then reports to me. By the time I arrive again, the patient is rapidly going under the effect of the narcotics and the os uteri is usually fully dilated, and I remain until after the delivery. However, if I think the labor is going to take some time, I leave the patient, after instructions that in case the effects of the first injection wear off, the medication is to be repeated once only, and half of the original dose. In this way I do not spend any more time at the bedside than is usually necessary. The absence of crying and moaning, on the other hand, add greatly to my own comfort and that of the nurse and the patient's family, thus removing one of the most objectionable features in obstetrical practice.

To one who has never given scopolamine and morphine in obstetrics, it must be a striking picture to enter a delivery room and find absolute quiet, the patient apparently asleep and the doctor and nurse sitting quietly by the bedside. During a pain, the patient automatically draws up her legs and strains and is encouraged by the doctor and nurse to bear down harder. Every now and then the patient will arouse sufficiently to inquire whether the baby is born, or to inform you, as if it were a matter of surprise, that she still has some pains. As soon as the pain is over the patient's arms and legs drop and she either lies perfectly still or goes off into a "soft snoring" sleep. When the occiput presents at the vulva, I always let my patients have a whiff of chloroform or ether with every pain. Under scopolamine and morphine I occasionally find it necessary at this stage to pin the patient's wrists to the mattress so as to prevent her from subconsciously reaching down the perineum and apparently trying to remove something which annoys her.

To show the complete mental relaxation and detachment of the patient I relate one experience: At about 2 a. m. December 24th last, I was quietly sitting at a bedside watching a patient under scopolamine and morphine in the second stage of labor, when I was suddenly startled by a piercing shriek of "Fire!" by a woman in the hallway of the same apartment. There was considerable excitement for a while. I watched my patient's face very carefully for signs of alarm or fear, but her expression remained absolutely calm. The next morning I asked her whether she knew that there was a fire in the house and she replied: "Yes, I heard them yell fire, but I did not care." This brings out a point I wish to emphasize. I do not try to get complete amnesia. This patient remembered the fire. The main object of my treatment is not to obtain com-

plete amnesia, but to give the patient relief I rarely find it necessary to give a second dose. Every now and then I come across a case where it seems to have no effect whatever, but, as I have not promised the patient a painless labor I have not lost her confidence and, as the drugs nearly always shorten the first stage of labor I have gained that much.

#### CONCLUSIONS.

1. Scopolamine and morphine have a distinct and merited place in the practice of obstetrics.

2. By its administration, the first stage of labor is shortened; the perception of labor pains is either shortened or entirely obliterated; the patient gets periods of complete rest between the pains; there is an absence of crying and moaning with comparative absence of postpartum exhaustion and shock.

3. By following this technic the drug can and should be used in nearly every case because the dose is never large enough to be dangerous; it does not require the constant presence of a specially trained attendant; it can be used by every physician; the second stage of labor is not prolonged sufficiently to be dangerous to either mother or child, and, as the physician and patient do not expect painless labor, they will not be disappointed if the drugs do not have any effect.

355 EAST 149TH STREET.

#### A SURVEY OF EAR CONDITIONS IN SCHOOL CHILDREN.

By E. WILLIS KOBLER, M. D.,  
New York,

Instructor in Laryngology and Otology, Columbia University;  
Assistant Aural Surgeon, Manhattan Eye, Ear,  
and Throat Hospital.

A survey of the ears of 500 school children in the public schools of New York City was completed by me in the early part of 1917, a work performed in connection with my duties as medical school inspector in the health department.

This special study of ear conditions in school children relative to defective hearing included history of previous ear discharge; abnormal conditions of the external ear, malformations, etc.; relative degree of impairment of hearing; relative amount of cerumen present; existence of present discharge from the ears; presence of marked associated defects bearing upon the hearing. The study was based upon inspection and examination of the ears of 500 school children; 250 girls and 250 boys, including 150 boys in Truant School P. S. No. 120. The ages of the girls ranged from nine to fifteen years; the boys six to fifteen. All the children were white.

Children in the upper classes were selected, because more reliable histories and tests were thus obtainable. They were taken in small groups into the inspector's office under quiet surroundings. No attempt was made to select individual cases; the pupils were taken in routine examination order. Class, age, sex, history, and color were recorded and general tests for hearing were made separately in each ear with voice and watch, eyes closed. Lesions of external auditory canal and adjacent structures—skin conditions, malformations, etc.—

were noted. Examination of each ear was made separately for relative amount of cerumen present by means of head mirror, aural specula, and reflected light. There was no attempt at instrumentation otherwise. The existence of any present discharge was noted, and its present history. Throat and nose were examined for marked associated defects bearing upon condition of hearing, also the general condition, malnutrition, etc.

## SUMMARY.

Of 500 children examined, 1,000 ears, sixty-four gave history of some previous ear discharge; nine had skin lesions, malformations, etc., of the external auditory canal and adjacent structures; 152 showed relative degrees of impaired hearing; 285 had cerumen in relative degree of excess over normal; eight had a present ear discharge, and fifty-nine exhibited marked associated defects bearing relatively upon the condition of hearing.

## CONCLUSIONS.

Discharge from the ears of young school children is more prevalent than is generally supposed and is usually considered to be of relatively slight importance. It is, however, of vast importance as bearing upon acuteness of hearing in later school life; note tables showing relative degree of impaired hearing, in cases where a previous discharge existed. The number of cases of impaired hearing is relatively small in later school life, evidently and apparently because of the treatment or removal of tonsil and adenoid defects in the younger children, as accomplished through the regular, repeated, routine medical inspection and treatment carried on by the medical examination from the kindergarten classes up. Many cases of defective hearing, however, exist among the older children which may be accounted for by: neglect and refusal by parents to remedy tonsil and adenoid defects; deformity of the nasal septum, which cannot be corrected in early age; abnormal collection and deposit of cerumen coupled with uncleanness; catarrhal conditions of the nasopharynx coupled with incomplete and insufficient instruction in oral and nasal hygiene; lack of, or inadequate instruction in aural hygiene. So called "common earaches" are always treated with harmful home remedies and adjuncts.

Abnormal collection of cerumen in the ears of school children is far more prevalent than should be, which is due largely to lack of complete instruction in aural cleanliness. Inspissated or impacted cerumen is etiologically of vast importance to the hearing and definite pathological aural conditions both present and future. Cases of present ear discharge are comparatively few in number. All such cases show improvement because of persistent supervision by the school medical inspector and nurse. Cases of associated defects, as marked hypertrophy of tonsils, defective nasal breathing, including adenoids, etc., are relatively small in number. All are under treatment where advisable and possible. Objection of parents to operation and treatment is the principal factor responsible for these persistent existing defects.

A special extended survey and examination of the ears of school children should be made with reference to the above conditions.

## RESULTS

	Boys				Girls			
	Right ear only	Left ear only	Both ears	None or normal	Right ear only	Left ear only	Both ears	None or normal
PREVIOUS DISCHARGE								
Gave history of previous discharge	20	13	9	208	42	10	8	228
MALFORMATIONS, SKIN CONDITIONS OF EXTERNAL EAR				6				3
IMPAIRMENT OF HEARING								
Slight impairment	12	23	14		49	14	20	6
Marked impairment	19	7	13		39	8	9	0
Marked impairment in one ear and slight impairment in other				4				3
TOTAL WITH IMPAIRED HEARING				92				60
Normal hearing in both ears				158				190
CERUMEN								
Slight excess, over normal and ear not clean	28	21	36		27	36	24	
Moderate and ear noticeably unclean				6	8	12		
Impacted or inspissated	14	12	3		8	5	4	
Moderate in one ear and impacted in other				3				4
Cerumen in one or both				156				129
PRESENT DISCHARGE				94				121
Normal	5	1	1		7	0	1	0
ASSOCIATED DEFECTS								
Children showing marked defects probably relating to impairment of hearing				41				18
Individual defects								
Hypertrophied tonsils				21				11
Defective nasal breathing. Abnormal septum—and one congenital nasal deformity								5
Perforated tympanic membrane				13				4
General malnutrition				4				1
Old mastoid operation				1				0
Chronic otitis media purulenta (one double in one boy)				7				1
Complete Totals								
Previous discharge				42				22
Malformation, skin, etc.				6				3
Impaired hearing				92				60
Cerumen				156				129
Present discharge				7				1
Associated defects				41				18

## RESULTS IN TRUANT SCHOOL

150 boys examined (300 ears), ages 8 to 16 years, all white

	Boys			
	Right ear only	Left ear only	Both ears	None or normal
PREVIOUS DISCHARGE				
Gave history of previous ear discharge	16	6	6	122
MALFORMATIONS, SKIN CONDITIONS OF EXTERNAL EAR				4
IMPAIRMENT OF HEARING				
Slight impairment	10	10	10	30
Marked impairment	15	5	12	32
Marked in one ear and slight in other				2
Total with impaired hearing				64
Total with normal hearing in both ears				86
CERUMEN				
Slight excess over normal and ear not clean	19	11	26	56
Moderate and ear noticeably unclean	6	5	12	23
Impacted or inspissated	2	2	1	5
Moderate in one ear and impacted in other				3
Total with cerumen in one or both				104
Total normal				46
PRESENT DISCHARGE	4	0	1	5
ASSOCIATED DEFECTS				
Boys showing marked defects, probably relating to impairment in hearing				32
Individual defects				
Hypertrophied tonsils				14
Defective nasal breathing (abnormal septum)				14
Perforation of tympanic membrane				10
General malnutrition				0
Old mastoid operation				0
Chronic otitis media purulenta (1 double)				7
Totals				
Previous discharge				28
Malformations, skin conditions, external ear				4
Impaired hearing				64
Cerumen				104
Present discharge				5
Associated defects				32

171 WEST EIGHTY-FIRST STREET.



## SCARLET FEVER AND EPILEPSY.

BY HERMAN FRIEDEL, M. D.,  
Stapleton, S. I.

Ovaritis is one of the recognized possible complications in mumps. The following case seems to indicate that any of the infectious diseases may affect the ovaries. So, while the acute degenerative change in the kidneys is the best known complication of scarlet fever, there is no reason why almost any tissue of the body should escape being the seat of inflammation.

CASE.—S. O., a girl, thirteen years of age. Family history was negative except that father weighed 280 pounds, was extremely nervous, and had taken treatment at Carlsbad for his nervousness. Personal history showed that the patient was born normally, was breast fed till two years of age, began walking at sixteen months, and had convulsions with every tooth. In infancy she had measles, chicken pox, whooping cough, cervical gland abscess running for two years. She was, at the time of examination, five feet three inches in height, and weighed 165 pounds; scanty hair, small breasts. At fourteen years of age she was in grade 5 B. At the age of eleven years she had a severe attack of scarlet fever, but made an uneventful recovery. Shortly afterward her mother noticed that she wet her bed at intervals. Then followed what they called "slight spells." The girl would appear tired, yawn all day, complain of dizziness, and have a slight convulsion. Gradually these attacks became more frequent and usually lasted longer. It happened at school and at her home. A six months' vacation from school did not improve matters. Bromide medication at clinics did very little good. This condition lasted for two years, when the girl came again under my care. Now she would be unconscious for a whole day, with nine to twelve convulsions. The attack was really a series of short attacks. I gave her corpora lutea, five grains, and anterior pituitary gland; menstruation began and she was free from any attacks for three months. On the advice of neighbors, she stopped the medication, and the attacks returned. On resuming the treatment, she once more became free of attacks. I have now lost track of her for some time.

My reason for giving anterior lobe pituitary was that the experiments of Cushing have shown that the removal of the anterior lobe leads to retardation of growth, failure of development of secondary sex characters, sluggishness, and tendency to excessive obesity. As can be seen, this patient had the excessive obesity, sluggishness, and marked failure of development of secondary sex characters. The absence of menstruation and the periodic attacks induced me to give her corpora lutea, with the good results noted above. Those who believe that epilepsy is more frequently due to heredity than any other single factor will note the facts given concerning the father. It is also important to remember that she went through a very difficult dentition. This shows a neuropathic predisposition. Spratling states that convulsions in infancy are very apt to recur at one of the physiological epochs—puberty, maternity, menopause, or senescence. I have noted that the patient began to wet her bed soon after having scarlet fever. Nocturnal enuresis represents an abortive or unnoticed attack of epilepsy. The question remains, was this case just such a one as Spratling mentions and the scarlet fever merely a coincidence, or did the scarlet fever cause ovaritis, and this in turn absence of menstruation and epilepsy?

Lebedinsky and others, from observation of

changes in ovaries after death from scarlatina, state that the Graafian follicles suffer from a parenchymatous inflammation, and that the degeneration of such a number of follicles must result in more or less impairment of the function. It seems probable that the pelvic organs are more or less affected in almost all cases of infectious disease, and, should the disturbance be of a serious nature, it will mean the beginning of a subacute or chronic ovaritis. What does ovaritis mean? Fraenkel has shown that the chief function of the corpus luteum is to elaborate a secretion which regulates the blood supply of the uterus, and thus controls the process of menstruation. Beyond doubt, menstruation is a function of a normal ovary. If, however, the ovary is the seat of a chronic or subacute inflammation it cannot function properly. Now, we know that at the time of the menopause the ovaries begin to atrophy, and the Graafian follicles begin to disappear. The result is that they begin to function irregularly, and we have irregular menstruation and a disturbance of the vasomotor and central nervous systems. The patient becomes more or less neurasthenic. So we see that the nervous system is disturbed when the ovaries are not normal. We have seen that scarlet fever may cause degeneration of the Graafian follicles, and the menopause causes the Graafian follicles to disappear. Where is the difference as far as function is concerned? Thus we are justified in assuming that an individual with a neuropathic predisposition who suffers from a chronic or subacute ovaritis, instead of being merely nervous, may be subject to epileptic convulsions. Therefore, in this case the epilepsy was caused by the ovaritis, which was due to scarlet fever, and the inheritance was a secondary cause.

The menstrual function should, of course, occur painlessly and with perfect periodicity. Yet some observers report that seventy-five per cent. of girls give a history of painful menstruation. How much of this is due to the infectious diseases? A woman's usefulness and wellbeing are very largely dependent upon a normal condition of her menstrual function. If we want to materially decrease the number of those who have to go through life handicapped by nervous troubles and sterility we must make the infectious diseases of childhood as scarce as smallpox is today. The only remedy is prompt and complete isolation. This means that a susceptible child should not get into immediate contact with or be in the neighborhood of the sick child. To be effective this must be done early and continued for these diseases are generally infectious before they can be diagnosed and remain so after the patient has apparently recovered. The early symptoms are those commonly termed "a cold"; but a cold may mean the beginning of an infectious disease. Therefore, instead of waiting for a diagnosis we must exclude from school every child with a cold, and in this way the likelihood of schools being the means of conveying any of these diseases is immediately minimized. The statistical evidence in support of school attendance being responsible for the spread of infection is overwhelming.

932 VAN DUZER STREET.

# Medicine and Surgery in the Army and Navy

## EYE, EAR, NOSE, AND THROAT WORK AT THE RECRUITING DEPOT.\*

By CAPTAIN JOHN J. SMITH, M. R. C.,  
Fort McDowell, California.

(Published by Permission of the Surgeon General.)

The eye, ear, nose, and throat service of the Army covers a large field.

The following questions are often asked of me: "Of what does your examination consist?" and "What are the requirements demanded of an applicant in order that he may be accepted?" I was asked to prepare a paper for the society in which this ground would be covered, because only a few of the specialists not in the army are familiar with duties required of the specialist in the service.

It has been the practice to give the physician and surgeon who applies for an army commission a rigid examination, and, if he were accepted, to send him to the Army Medical School located at Washington, D. C. He remained at the school for three months, during which time he was given lectures covering the various branches of medicine and surgery, as well as army tactics and army paper work. At the end of the three months of intensive training he was again examined, and if not found wanting, was given a commission as a first lieutenant in the Medical Corps of the United States Army with a monthly salary of \$166.66 together with certain quarters or allowances which approximated \$50 more. A man so commissioned was supposed to be prepared to care for any kind of a medical or surgical case which might present itself, and in addition, he was required to do an endless amount of paper work. It will not be necessary to go into details or show that such a system would fall down under the stress of mobilization of troops for war purposes.

Great wisdom was shown by the Surgeon General and his advisory board in that they called in large numbers of reserve doctors and assigned them to the work in which they had been especially fitted, in so far as possible, obviously providing better care for the troops than possible under the former system. To be sure, at some of the general hospitals there have been stationed men who managed by persistent methods to become proficient in special lines of practice, but there were only a few general hospitals existent and of the 500 Regular Army Medical Officers, who were on duty at the time mobilization was begun, the number which could be classified as specialists was very small. It was a notable fact that when members of families of army officers required medical or surgical attention, the majority of them employed the services of civilian doctors. It naturally follows that we will expect that the Medical Department of the United States Army, will in the future consist of trained and able specialists. However, the younger men who are being commissioned in the Medical Reserve Corps are to be sent first to one of the officers' training camps, such as Fort Oglethorpe, where they are given an intensive course of training in military work. This will result in the turning out of a med-

ical officer who can command the respect and discipline of the corps and thus help to perfect a high standard of organized efficiency.

The eye, ear, nose and throat specialist who is located at one of the recruiting stations has duties which differ somewhat from those of his brother who is assigned to a base hospital. He helps to determine whether or not the applicant be physically fit to perform the duties of a soldier. He is given a set of instructions, General Orders No. 66, 1910, from which I have taken a few extracts. These regulations do not apply to the drafted men.

In regard to the eye, the visual requirements for the line of the army and for the signal corps are 20/40 for the right eye and 20/100 for the left, provided that no organic disease exists in either eye. A recruit may be accepted for the line of the army when unable to read correctly all of the letters on the 20/40 line provided that he is able to read some of the letters on the 20/30 line.

For the Ordnance Department and for the Hospital Corps 20/70 in each eye, correctable to 20/40 with glasses, provided that no organic disease exists in either eye. Candidates for appointment in the Medical Corps must have a visual acuity of 20/100 in either eye or better, and with the proper correction the visual acuity must not fall below 20/20 in either eye. Presbyopia is a cause for rejection, as is strabismus of any type, or color blindness for red, green, or violet. In addition to the requirements of visual acuity a number of conditions are listed which are a cause for rejection; briefly stated, they are diseases or results of disease. Many applicants have some form of strabismus or pterygia. Such defects may be corrected at the recruiting depot.

Concerning the ears: The hearing must be 20/20 in both ears, but here again we may obtain waivers for defects, providing no organic disease is present. Among the causes for rejection, we find the highest percentage of ear troubles attributable to chronic suppuration of the middle ear. It is needless to say that this condition is extremely serious, and it is impossible to lay too much stress upon its importance as cause for rejection.

Concerning the nose: Its condition is an important factor in the determination of a man's fitness for military service. Chronic sinusitis with polyp, hypertrophic rhinitis, chronic suppurative condition of sinuses, antra and ethmoid cells, also atrophic rhinitis with ozena are causes for rejection. Nasal obstruction due to septal deviation is not a cause for rejection if correctable by operation. The British army officers have tried to impress the examiners with the folly of sending into the field a man who has nasal obstruction, because they state that the man cannot perform ordinary duties without quickly becoming winded, also that other disorders of the respiratory tract develop early in such men who are on duty in the field. Correction of such defects is one of the duties which should be performed at the recruiting depot if the civilian doctor has overlooked it.

Regarding the mouth, pharynx, and larynx: The

\*Read before the County Medical Society, San Francisco, Cal., February 26, 1918.



most frequent causes for rejection are chronic pharyngitis, syphilis, and tuberculosis of the larynx. Many of the applicants have diseased or hypertrophied tonsils, and this is one of the most important findings that should be remedied at the recruiting depot. Furthermore, the condition of the teeth should receive careful attention.

Undoubtedly these instructions will be modified in the near future, as we are advised that changes are already in the course of preparation. Just as in the Medical Corps we have enlisted specialists, so also in the rank and file of the army we have enlisted a corps of artisans, and it has been justly and wisely decided that an engineer whose work would be the building of railroad lines or felling trees would not necessarily be handicapped if his vision was not up to that required of an aviator or an infantry man. The requirements for drafted men are as follows:

Ears: The hearing must be above 10/20 in both ears. Less than 10/20 in one ear or both, but more than 5/20 shall be accepted for special and limited military service providing no otitis media exists. The test consists of a low conversational voice, not a whisper. Perforation of the tympanum is not a cause for rejection unless a discharge is present.

Eyes: The sight must be 20/100 in one eye and 20/40 in the other eye, or 20/100 in each eye without glasses if correctable to 20/40 in either eye. For special or limited military service, 20/200 in one eye and 20/40 in the other, either right or left, without glasses, or 20/200 in each eye without glasses if correctable with glasses to 20/40 in either eye.

Among the defects which do not constitute a cause for rejection are slight nystagmus and slight conjunctivitis and trachoma.

Mouth, nose, fauces, pharynx, larynx, trachea, and esophagus: Causes for rejection are tuberculosis of the parts mentioned, malignant disease, stricture of the esophagus, syphilitic laryngitis if the ulceration is of such degree that the registrant has permanently lost power of talking so that he is understood, fully developed exophthalmic goitre when there is present thyroid enlargement, pulse rate above 120 and exophthalmos. Registrants with definite signs of myxedema, Hodgkin's disease, or lymphosarcoma.

In making our examinations a record is retained of each case. Naturally, many are very anxious to serve their country in this great war. Some who know that they have defects which would call for rejection try to conceal them. A story is told of one man having a glass eye, who went before the local exemption board for his examination. When his vision was tested he was told to place his hand over his left eye, which was the glass one. The vision of his right eye then being taken, he was told to place his other hand over his other eye, and to read the letters again. He was passed with normal vision in either eye, but when he reached the army camp and was again examined it was found that twice he had covered his glass eye, using his right and left hands as directed. The first examiner had not noticed the deception. Again, we find another class who are malingers, and various methods have been devised to detect them. Many

are admitted with defects of vision and hearing because their work does not call for a man perfectly developed. There is one branch of the service, however, which is composed of men who represent the flower of our manhood. They must have normal vision in each eye; if there is a nasal obstruction it must be corrected; if there are hypertrophied or diseased tonsils, they must be removed. The hearing must be normal in both ears. They must be mentally and physically fit to the last degree. These are the members of the Aviation Corps.

It is almost impossible to compile a set of figures which show the average per 1,000 of causes for rejection, for this reason: the recruiting detachment reject some who apply, and pass the others along to the recruiting depot, where the drafted men who were examined by the local boards are also sent, and here more rejections are made, hence a fair average is hard to obtain. During the nine months which I have been stationed at Fort McDowell we have rejected 11.8 per cent. of the men for various reasons. Many more would have been rejected had we not received special permission from the Adjutant General to enlist them. These various irregularities make it impossible to enumerate causes for rejection.

As the head of the eye, ear, nose and throat division, I have examined approximately 21,000 men, and have been able to procure this set of figures: Twenty-five per cent. had septal deviations, of which twelve per cent. were to the right and thirteen per cent. to the left. Some of these were mild deviations, others should have been operated. Twenty-eight per cent. had hypertrophied or diseased tonsils, or both; twenty-three per cent. needed throat operations; fifteen per cent. needed nasal operations; twenty-five per cent. needed both nasal and throat operations. A thing which surprised me greatly was the fact that twenty-five per cent. of them had contracted membrani tympani of both ears, and yet only a very few had defective hearing. The largest number of rejections in my division have been because of defective vision.

I have found a few anomalies. One man had apparently a normal ear, and his hearing was 20/20 in both ears, but he had no canal on the right side, simply bone structure normally covered, a congenital defect. Another man had vision in the left eye of 20/70, which was not improved with glasses. Examination revealed the fact that from the optic disc there protruded an artery directly toward the centre of the lens, but not touching it; near the posterior capsule it doubled back on itself and returned as a blue vein which was twisted several times around the artery; there were no branches. In addition to these two interesting cases a number of bifurcated uvulae have been seen.

It became evident early during the war that the larger number of hospital cases had disorders of the respiratory tract. It is my belief that men having nasal disorders, adenoids or diseased tonsils, etc., are liable to contract these diseases. At Fort McDowell it has been possible to make personal investigations along these lines, and findings confirmed my belief. These facts were presented to the surgeon, Colonel P. C. Fautleroy, and to Surgeon General Gorgas, and, it was gratifying to say, have



met with their approval. I have tried to correct as many abnormalities of the eye, ear, nose, and throat of the recruits as possible with limited equipment. We have now a new hospital building, and, as result, an operating room and a number of beds have been set aside for this work. Heretofore I have been using my own instruments, novocaine, adrenalin, etc., but supplies of this nature are now being sent, and in a short time we will have this branch second to none.

It is clearly evident that the slight expense incurred at the recruiting depot in giving a man such surgical attention as required to put his eyes, nose, throat and teeth in good shape is not to be considered when we thereby save the expense of caring for a man in the field who has become incapacitated because of tonsillitis, measles, pneumonia, rheumatism, diphtheria, scarlet fever, sinusitis, mastoiditis, or other diseases which are contracted in almost every case through the presence of diseased tonsils or obstructed nasal passages, or both, and facial neuralgias, toothaches, etc., which result from the presence of defective teeth. How much better to avoid this expense in the field, as far as possible, by adopting preventive measures at recruiting depots.

### THE AMERICAN WOMEN'S HOSPITALS

By ROSALIE S. MORTON, M. D.,  
New York,

The American Women's Hospitals was organized and put in operation in June, 1917, by the War Service Committee of the Medical Women's National Association. Dr. R. S. Morton was appointed chairman of the executive committee, and associated with her were Doctor Emily Dunning Barringer, vice chairman; Doctor Mary Merritt Crawford, corresponding secretary; Doctor Frances Cohen, recording secretary; Doctor Belle Thomas, associate corresponding secretary; Doctor Sue Radcliff, treasurer. This committee has been gradually increased as the need of the work demanded, and the following names have been added: Doctor Mathilda K. Wallin, second vice-chairman; Doctor Caroline M. Purnell, third vice-chairman; Doctor Marie L. Chard, assistant treasurer; Doctor Gertrude A. Walker, chairman of finance committee; Mrs. Conger, executive secretary, and Miss Bertha Rembaumt, counselor.

The plan of work, submitted to and approved by Surgeon General Gorgas and Doctor Richard Pearce, Director General of the department of military relief of the Red Cross, provided for some dozen committees and subcommittees, and four more were eventually formed. These committees mean that every interest of the allied armies are watched over.

The headquarters occupy three rooms at 637 Madison Avenue, donated for its use by Leo Schlesinger, Esq.

There has been great success in organizing the various states, in each of which there is a committee of the American Women's Hospitals, who are in constant correspondence with headquarters, and

in the last campaign contributed most generously to the fund. From the states alone came more than \$40,000 to swell the fund of \$260,789 which the campaign netted. To this fund several of the states have promised further contributions. Through Doctor Purnell, chairman of the committee for foreign service, civil and military, fifty-two doctors and seventeen technicians, members of the American Women's Hospitals, were recruited during the past year for the Red Cross. These doctors are scattered throughout the devastated region of France, on the border of Serbia, and in Palestine. Doctor Lucas, head of the medical division of the Red Cross in Paris, who has just returned from abroad, is loud in his praises of the work the members of the American Women's Hospitals have done in his department. Doctor Purnell has also assembled the personnel, consisting of five doctors and ten nurses, and other aids for the hospital this organization is sending to cooperate with the American Committee for Devastated France in the department of the Aisne.

The treasurer, Doctor Sue Radcliff, reports receipts of \$24,002.08, disbursements of \$17,196.77, with a balance in the treasury of \$6,805.31.

Doctor Kinney, chairman of the committee on dentists, reports seventy women dentists who have registered for war service, twenty-three for foreign service, twenty-two for service in the United States, thirty-six for work in their home towns. Seventy have offered to serve one hour a day for soldiers.

Doctor Van Slyke, of the reciprocity committee, reports \$5,573 contributed through her and many donations of clothing, food and books.

The campaign of which Doctor Gertrude Walker was chairman, and Doctor Mathilda Wallin, treasurer, yielded between \$250,000 and \$300,000, which will be used to establish hospitals in Europe.

The Committee on Laboratory and Sanitation, Doctor Wollstein, chairman, has been especially active and has accomplished excellent results. A medical laboratory course for war service was offered to college women with the necessary preliminary training in science and scientific methods, in cooperation with Doctor Park and Doctor Williams, of the Health Department, and Doctor Elsie L'Esperance, of Cornell Medical College. Twenty students entered the first class on November 1st. At the end of the course, five of the class were appointed as laboratory technicians in the Army Medical School in Washington. This is the first time that women have been admitted there. Others received appointments as bacteriological technicians in base hospitals in this country. One went to Palestine with a Red Cross unit. The demand for a repetition of the course became so urgent that on April 1 the second class was organized with thirty members. These will probably have no difficulty in obtaining army appointments when they finish the course in July. Medical women were registered as sanitarians and as laboratory workers in pathology and bacteriology. Twenty-six have been recommended to the Bureau of Sanitary Service for work in the cantonnements. Doctor Welton has registered and classified every woman physician in the United States who has had training in x ray work, so

that their qualifications are at the government's disposal for appointment at any time.

Doctor Vedin has classified a large number of anesthetists, and sent their qualifications to Washington.

Doctor Mary Almira Smith, chairman of the Committee on Women's Army Hospitals in the Home Zone, reports that the Lincoln Convalescent Hospital of Massachusetts is now being used for men in the navy and for the marine and radio courses, also that the Women's Relief Corps of the G. A. R. have equipped and named two wards for war service in the New England General Hospital. The following women's hospitals in Philadelphia will be available when required by the government: Woman's Hospital of Philadelphia, 185 beds; Hospital of Woman's Medical College, 96 beds; West Philadelphia Hospital for Women, 70 beds; Woman's Southern Homeopathic, 39 beds. Doctor Elizabeth Winter, of Conshohocken, Pa., and Doctor Octavia Krum, of Wernersville, Pa., would release their sanatoria.

Doctor Smart, chairman of the committee on substitution in hospital and clinical service, reports that twenty-eight young medical women have been recommended as interns, while four hospitals have applied for resident women physicians, substitute for men.

The American Women's Hospitals has effected an affiliation with the Red Cross; the former will finance their own administrative expenses in the United States, and will, when requested, organize personnel for hospital and dispensary units to serve in any country under the direction of the American Red Cross, who will equip, establish, and maintain all such medical units as it may call for, to be sent overseas at any time. The medical personnel will be recruited by the American Women's Hospitals, and will be submitted to and approved by the Medical Advisory Committee of the American Red Cross. The nurses, nurses' aids, and dietitians are to be recruited by the Department of Nursing of the American Red Cross. Nominations of nurses, nurses' aids, and dietitians may be made to the department of nursing of the American Red Cross, and such applicants will receive consideration.

Three types of regular meetings are held by the American Women's Hospitals throughout the year three times a week. The following are some who have spoken at these during the past season:

Captain Stoughton (Anzac); M. Gaston Liebert, French consul general in New York; Professor Pupin, professor of physics at Columbia; Father de Ville, of Belgium; Doctor Jane Kelly Sabin, Doctor Kim, of China; Mrs. St. Clair Stobart, of England, who commanded a division in the retreat of the Serbian army; Lady Davidson, wife of the former governor of Newfoundland; General Azgapepian; Mr. Vesnitch, Serbian high commissioner and former Serbian minister to France; Major Gibson, of the U. S. Army; Doctor William Palmer Lucas, of the medical department of the Red Cross in Paris.

Many of these were fresh from the other side, and gave illuminating talks regarding the needs of fighting men and the civilian population.

## MEDICAL NOTES FROM THE FRONT.

### *Combating Disease.*

GENEVA, June 14, 1918.

Vincent's angina appears to have assumed a considerable frequency since the beginning of the war. For example, in the contagious service at the Grenoble Military Hospital, out of a total of 255 patients admitted during one year with a diagnosis of "suspicious throat," twenty-one proved to be Vincent's angina, both clinically and bacteriologically. The subjects were usually young and had neglected the toilet of the mouth. This process was frequent in the spring, less so in summer, and rapidly disappeared in autumn. The onset is not marked by any marked symptom other than a sensation of fatigue and slight dysphagia, but that which often attracts the patient's attention is a painful and enlarged cervical lymph node. There is nothing new to relate as far as the lesions of the throat are concerned, but what is particularly striking is the tired look of the majority of these patients and a very pale face, corresponding to a certain degree of anemia made evident by blood counts. The prognosis is good in most cases, the affection undergoing its complete evolution in from two to three weeks. Occasionally, however, the fusospirillæ are associated with the bacillus of diphtheria, but it does not seem to influence the prognosis.

The diagnosis must be confirmed by a bacteriologist and, as to treatment, frequent swabbing of the lesions with a ten per cent. solution of methylene blue, often cleansing of the parts gives good results, likewise a solution of nitrate of silver. Salvarsan in powder or in a glycerin suspension has been used as local application, but it would appear that intravenous injections of this drug have a remarkably rapid action on the throat lesions in quite a number of cases. A single injection of thirty centigrams in two to three c. c. distilled water will produce an almost complete cicatrization in four to six days, even when the ulcers are quite deep. A second similar injection, repeated four days later, will result in a clinical and bacteriological recovery in a week or ten days.

This salvarsan treatment is interesting in its results on account of its control of certain obstinate cases which would otherwise drag along for several weeks, in spite of an intense local treatment.

Let me refer briefly to the results obtained by antityphoid vaccination in the French army. After vaccination of the troops in 1914 and the early part of 1915, there was an early autumn epidemic, but relatively mild in character, but especially due to the paratyphoid organisms. During February, 1915, the antityphoid laboratory of the Val de Grâce sent over 5,500,000 doses of vaccine to the front and since then the French army has been in a remarkably good sanitary condition. For the past two years and a half the mortality from typhoid in 100,000 men has been so low that it has to be figured at a fraction of a unit.

During the winter 1914-1915 the monthly mortality from typhoid was high. There were for each 100,000 men 678.6 cases with 98.6 deaths. With these figures as a basis, and supposing that four to

five million men have passed the front, it may be admitted that without antityphoid vaccination the number of cases would have by the present time reached one million!

At present and taking as a term of comparison the sanitary condition of the French army before the war (1911) it is evident that typhoid diseases observed in the troops at the front are about seven times less frequent and the mortality eight and a half times less than in peace time. Certainly, a remarkable result and should do away with all squabbling over the question of antityphoid vaccination.

Blood transfusion, as done by the older methods of artery to vein, has the great drawback in that the artery of the donor and the vein of the recipient are sacrificed. Likewise it is a blind method, because the quantity of blood given cannot be estimated, neither can we know if even any is given. The procedure recently advised by Jeanbrau, namely, the injection of citrated blood with Kimpton's tube, offers the same disadvantages, in that the vessels of the donor and recipient are destroyed functionally.

Generally speaking, all procedures which mutilate the vessels reduce the number of donors and limit the number of possible transfusions in the same subject. The ideal transfusion would be to collect blood by venous puncture in the donor and then to inject it intravenously in the recipient, but the difficulty lies in the fact that enough blood cannot be drawn by puncture, and secondly, to maintain it in a state of incoagulability.

A sufficient amount of blood can be withdrawn if venous puncture is made with a needle of a type similar to that devised by Queyrat and not with the needles usually offered on the market. In a normal subject a Queyrat needle will withdraw from 300 to 500 c. c. of blood. Now, since blood can be made incoagulable by citration, it can be reinjected without danger and the following method, based on these principles, has been devised by Doctor Ameuille, of the Surgical Auto No. 2:

First, the vein of the donor is punctured with a Queyrat needle (it is painless), and when it is withdrawn the subject does not experience any after effects. Secondly, as the blood flows, it is collected in a sterile glass on sodium citrate, about ten centigrams of the salt for each 100 c. c. of blood collected. An excess of the salt will do no harm. There is no objection to having the salt in a hypertonic solution. It is first sterilized in a dry state and the condensation vapor of the sterilizer will produce a sufficient commencement of dissolution. During the withdrawal of the blood from the donor, the receiving glass should be continually shaken. Thirdly, the blood is injected with an ordinary serum apparatus the pressure being controlled by means of a hand rubber bulb, just the same as used in intravenous injections of normal salt solution. The great advantage of this technic is that the blood may be kept some little time before it is injected, even as much as four days if the container is kept in an autoclave at an even 37° C. By this means quite a little stock of citrated blood was kept at the ambulance when a large number of wounded were expected to arrive. By this procedure a more extended use of blood transfusion

seems possible, not only in posthemorrhagic anemia, but also in medical anemias, as well as in infectious processes.

CHARLES GREENE CUMSTON.

## MEDICAL NEWS FROM WASHINGTON.

*More Medical Officers Allowed the Navy.—New Surgeons in Naval Medical School.—Naval Health Conditions.—Treatment of Returned Soldiers.—Contract Surgeons in the Army.—Mobile X Ray Outfits and School for Röntgenologists.—Army Medical Campaign Against Flies and Mosquitoes.*

WASHINGTON, D. C., July 8, 1918.

Many additional medical officers are allowed the Medical Corps of the Navy as a result of the increase of the authorized permanent enlisted strength of the navy to 131,485 by the new naval appropriation act, the corps being increased from 843 to 1,120 officers. Included in the additional allowance are two medical directors with the rank of rear admiral, twenty medical directors with the rank of captain, and forty medical inspectors with the rank of commander.

The vacancies in the grades of medical director and medical inspector will be filled by selection, upon recommendations of a board of high ranking medical officers, yet to be appointed, who will examine the records of all officers eligible for advancement, and promotions in the lower grades will be with "running mates" in the line in accordance with past practice.

The promotions now in prospect will be temporary until the vacancies in the lower grades are filled by permanent officers, many vacancies now being taken care of by those temporarily in the service.

\* \* \* \* \*

A new class of sixty-seven newly appointed assistant surgeons commenced a course of eight weeks of intensive training at the Naval Medical School at Washington on July 3. Surgeon General William C. Braisted made a short address to the class, explaining in brief the duties of medical officers in the navy, what their aspirations should be, and the high standard of professional proficiency and personal conduct they should strive to attain, and he was followed by a short talk by Medical Director Edward R. Stitt, president of the school. After completing the course at the school, the members of the class will be given a short course of further instruction at naval hospitals before being assigned to duty.

\* \* \* \* \*

Sanitary conditions in the navy continue most satisfactory, according to the latest reports received by the Surgeon General from medical officers afloat and ashore. The death rate from disease is below 1.8 per thousand. There has been a steady decline in the disease death rate in the naval service since April, when the figures were somewhat above normal, due to a considerable amount of fatal illness at some of the training stations. When it is considered that the reports are based upon the entire naval personnel, including the retired list, it will be seen that the health of the fighting force in the fleet is in excellent condition.

The weekly percentages are based on reports from places all over the world where naval and



marine corps personnel is stationed as they are received at Washington; and, of course, they do not give an absolutely exact record of the health of the service for a given week, as necessarily there is a fluctuation due to the nonreceipt or delays in receiving reports from distant stations.

\* \* \* \* \*

Some interesting calculations have been made in the Office of the Surgeon General of the Army of the number of sick and wounded soldiers to be brought back from France for whom accommodations will be needed in this country.

From figures based on the experience of the Allies, it is thought to be a conservative estimate that fewer than fifteen per cent. of those disabled by wounds will be returned to this country for treatment. The other eighty-five per cent. will be treated over there, and after recuperation will return to duty.

The sick and wounded will be held in hospitals until they are fit to be discharged, preceding reconstruction treatment up to the point of vocational training. It is expected that many will so far recover as to be able to take up their former occupations, and those that are badly disabled will be sent to the vocational schools. The tuberculous patients will be sent to sanatoria, and, of course, every effort will be made to restore them to health.

\* \* \* \* \*

Contract surgeons are being appointed to the army in considerable numbers, particularly for duty at remote points where small detachments are stationed and for special work under conditions where not all of the time of the appointees is required for army service, and for duty as specialists. The services of many specialists in eye, ear, throat, stomach, heart, and head have been thus obtained, as well as some for service as anesthetists, etc. Several women physicians have been appointed contract surgeons, mainly for service as anesthetists.

Contract surgeons differ in status from the commissioned personnel of the Medical Department, in that they are not given commissions, but render service under contract. There are two forms of contract—a standard, which is based on pay of \$1,800 a year, and a substandard, which provides for \$75 a month—with subsistence, mileage, etc.

The new uniform regulations provide for uniforms for contract surgeons, which will be the same as worn by officers, except that there will be no shoulder or other rank marks. The insignia worn on the collar will be the letters "CS" superimposed on the caduceus, the distinguishing mark of the Medical Department. Contract surgeons wore a similar uniform until 1916, when the national defence act, passed in that year, failed to provide a special attire for them.

\* \* \* \* \*

New x ray outfits, of the mobile type, are under examination by officials of the Surgeon General's Office. The new outfit is packed on one motor-truck, and it can be opened and set up quickly. It consists of one large operating dark tent, in which the operating table is placed, a box containing the mechanism of the apparatus, and all the usual paraphernalia. Outside of the tent is a tank for develop-

ment of the plates. The power is obtained from a dynamo under the truck.

A number of these outfits have been ordered for use abroad, although it is not thought that many of them will be required, the main use for x ray apparatus being at the base hospitals, where they are set up permanently. The British and French allot two mobile x ray outfits to each army corps.

A school of military roentgenology has been established at the medical officer's training camp at Fort Oglethorpe, Ga., and it supplements the schools that have been conducted at universities, hospitals, and elsewhere in different parts of the country for training selected members of the medical personnel in x ray work. The course at the school at Fort Oglethorpe will cover a period of twelve weeks, and about fifty officers and 100 enlisted men will be under instruction at a time. It will cover x ray physics, operation of all types of x ray apparatus used in the army, thorough instruction in localizing foreign bodies, and other special instruction in the practical application of this valuable aid to the surgeon.

French experience has shown that about 600 roentgenologists are needed for every million troops in the field, and each of these officers requires two x ray manipulators as assistants.

Major Willis F. Manges, Medical Reserve Corps, is director of the school.

\* \* \* \* \*

To guard troops stationed in camps and cantonments from diseases carried by mosquitoes and flies, the Medical Department of the army has installed a system of prevention that is safeguarding not only the soldiers, but also civilians living in the neighborhoods of training camps.

There is attached to each camp a division surgeon, who is responsible for the health of the camp. Assisting him is a sanitary inspector, who has the assistance of a sanitary engineer and from 100 to 200 enlisted men, who are employed continually in work designed to protect the health of the soldiers.

Special attention is being given at all camps to cleaning up spots where mosquitoes and flies breed. Thorough drainage is installed, and spraying is done at all places in the camp where there is the slightest possibility of the breeding of flies and mosquitoes.

Arrangements have been made with the Public Health Service to carry out a similar program in the territory adjacent to the camps. This service has agreed to fill bogs, open streams, drain swamps, and continue the oil spraying for a distance of one mile around all camps.

\* \* \* \* \*

With the approach of the fly season, orders were sent to all division surgeons and other health officers to take all necessary steps to prevent the breeding of flies. Instructions were given on the disposal of materials that were likely to become breeding spots, and arrangements were made to protect all food from flies. With this end in view, all buildings in which food is stored, prepared, and served were screened, and the entrances to the buildings have been vestibuled. An added guard is the placing of fly traps in all buildings. An average of 6,000 such traps have been placed in each camp, and more than 22,700,000 square feet of screening has been used.

# Editorial Notes and Comments

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### THE EPIDEMIC IN SPAIN.

The fragmentary reports which are to be found in recent British and French medical journals give evidence of a serious epidemic of an acute catarrhal affection of the respiratory tract which has been raging throughout a large part of Spain since early in May. The disease is clearly both epidemic and readily transmitted if, as reported, in Madrid alone there have been more than one hundred thousand cases. The clinical character of the disease closely resembles that of influenza, but the symptoms seem so far to have been confined almost exclusively to the respiratory tract. The attack develops quite suddenly without premonitory symptoms and is characterized by severe headache for a few hours, high fever, irritation of the throat, dry cough, and slight bronchitis. There are total loss of appetite, slight gastric disturbance, general weakness, and muscular and joint pains. By the second day there is profuse sweating and the fever decreases, to disappear by the third or fourth day. The cough is somewhat looser and productive after the second

day. Relapses are very common and many are attacked twice within a few days. The disease seems to affect men especially, women less, and scarcely affects children at all. The death rate from it is quite low. No statements are available as to the after effects and the duration of convalescence, but the implication is that recovery is both prompt and complete.

Such bacteriological investigations as have been made have failed to disclose the occurrence of the influenza bacillus, but have shown the frequent presence of an organism resembling the meningococcus. The clinical picture of the disease, its very great epidemicity, and the absence of involvement of the nervous system make it very improbable that the disease is of meningococcal origin. It has been suggested that the organism is the parameningococcus, but even this does not seem plausible. A year or more ago we had an epidemic over a large part of this country which resembled gripe quite closely, but which was marked by more severe symptoms than this Spanish outbreak. Very careful bacteriological investigations of the American epidemic showed the absence of the influenza bacillus, but seems to indicate that the condition was due to a mixed infection of the respiratory tract in which the streptococcus played a very important rôle. Whatever may prove to be the true cause of the Spanish disease, it is evident that more thorough and painstaking bacteriological investigation must be made.

While awaiting fuller and more accurate reports concerning the epidemic, its military significance deserves mention. It is reported to have made its appearance in the German army, and even to have impaired its efficiency. The evident rapidity with which the disease spreads, its capacity for attacking very large numbers in a very brief period of time, and its predilection for the male adult would render its appearance among the Allied forces a matter of the gravest concern. Every effort should be made to learn its mode or modes of transmission in order to establish effective measures for checking its spread and keeping it confined to the region to which it is yet limited. What little evidence is at hand suggests that it is communicated from man to man, and possibly also through carriers. A thorough study of the conditions in Spain should be undertaken without the least delay as a purely military measure as well as for the relief of the victimized country.

## BOOKS TO WIN THE WAR.

A high place among the variety of things that "will win the war" must surely be given to books. They are food, and, in a sense, ammunition; they are constructive agents providing also constructive material; they are medicine both remedial and prophylactic. The American Library Association,<sup>1</sup> having realized these facts and put their convictions into execution, are emphasizing and establishing the truth of these contentions.

Modern enlargement of vision perceives the whole man interdependent; his welfare and efficiency in endurance and fighting depending on the mental attitude, mental digestive powers, and the sort of interest that is nourishing him through these. In its greater occupation with the details of all this interdependence it understands still more clearly the vast number of interests to be reached through the mental pabulum offered and the value of keeping these interests versatile, alert, and occupied. That is the reason why this association provides for magazine reading upon the troop train, libraries to circulate on the transports, in the navy, from the dreadnought to the scout patrol and the small tug, at the cantonments, in the Y. M. C. A. and K. of C. huts, at all recreation places, and at bases for training and for supply. In short, at every point of contact with the men who are separated from their ordinary surroundings to win the war, there books are sent. The rousing of interest that results through the use of books is a measure of healthful energy occupation to relieve the high tension of war service; it creates or restimulates an outflow of energy. It keeps alive many healthful channels of individual growth and progress which have been interrupted as our men have been withdrawn from business life, educational, or other intellectual pursuits. The wide range of the books which are collected and sent provides also material for definite study, some of it particularly along lines of military progress and efficiency in one form or another, offering, therefore, actual material, ammunition, for Government and Allied service.

Last, but not least, is the direct application of these library resources in the hospital service through books and the workers to place them judiciously. It is obvious enough how the tedious hours of convalescence, even those of acute suffering, may be lightened and hastened by the freshly presented interests of the book of whatever sort that makes its appeal. It is furthermore the stimulating power, perhaps even of the feel of a book in the pocket, to redirect interest away

from the self and from the overwhelming mental absorption which isolates too often the victim of "shell shock" from healthful contacts and prevents his return to duties.

It is far more than a matter of entertainment and provision for idle hours that the supplying of books, in well chosen variety, means to the army and navy and to the winning of the war. It is one of definite provision for definite interests and for the actual means of carrying them out in particular lines of service. It means the keeping alive and utilizing of a large amount of intellectual interest which would otherwise stagnate or be diverted from its natural course. But still more widely and generally it means the directing of energy in the pathways of external interest though perhaps only through amusement and "recreation," perhaps actually creating and re-creating wholesome and untrammelled energy outflow.

## A COMMUNITY HEALTH CONGRESS.

The fundamental purpose in the organization of a community for war service is to bring about methodical cooperation between the agencies with a view of eliminating all overlapping of effort, and to offer inducements to every individual in the community to become actively engaged in war work, to bring about, in the words of President Wilson, "A fusion of energies now too much scattered and at times somewhat confused, into one harmonious and effective power." This community work cannot be standardized, and the initial interest around which community war service will revolve will vary from place to place.

The idea of a Health Congress was presented by Dr. E. H. Lewinski-Corwin at a special meeting, convened at Osborne Hall, Bellevue Hospital, on May 29th, at which representatives of fifty-nine civic organizations were present. The plan was endorsed by the Community Clearing House and by the Public Health Committee of the New York Academy of Medicine for experimental purposes, and is now about to be tried out in the Gramercy-Bellevue district, which comprises an area of forty to fifty blocks.

Increased physical and nervous strain incident to the war, coupled with the staggering rise in the cost of living, the drafting of very large numbers of women into industrial and other exacting occupations, the departure of many bread winners from their families for war duty, create conditions predisposing to a lowered physical vitality. Coincident with this condition, which is bound to be aggravated as the war goes on, is a diminution by thousands of the available force of

<sup>1</sup>War Library Bulletin, April, 1918, published by the Library War Service, American Library Association, Washington, D. C.



physicians and nurses. Sympathetic interest and understanding on the part of the average citizen of the underlying principles and the aims of our administrative policy alone spell success.

In the Bellevue-Gramercy district, for instance, despite the efforts of the health authorities and the various social welfare and civic agencies, over one third of the children in the district suffer from marked malnutrition, and the five sanitary areas comprised within the district show an infant death rate of 112 per 1,000 born. The death rate for the city as a whole was eighty-nine per thousand births, while for the Gramercy-Bellevue area it was 112. In the Gas House district it was 154.9, and in the other sections it varied from 75.06 to 132.

When the people, and particularly the working people, realize the relation which health bears to our efficiency as a nation at war, they will see that what they contribute toward improving their individual and community health condition is a direct contribution toward the nation's war strength.

With this in view it is proposed to organize a specially constituted body which will meet at regular stated intervals and which is to be known as "The War Health Congress" of a district, the membership to be about equally divided between elected representatives of residents of the community and appointed representatives of the several city departments which deal with the individual citizens, also the State agencies such as the State Industrial Commission, the State Commission for the Blind, the State Military Training Commission, and others, and the Federal agencies such as the Food Administration, the Council of National Defense, the Department of Labor, and the Children's Bureau. This Health Congress will also include representatives of the social agencies working in the district, either exclusively or partially. The election of citizen representatives would be on a street or house basis.

The Congress will provide an opportunity for the citizens to meet all representatives of reform and stimulate collective endeavor in accomplishing the tasks set. There will be committees on the prevention of disease, the care of the sick, industrial hygiene, school children, cooperation between the existing health agencies, and so forth. A community bureau of information, with accurate information with regard to the various agencies in the city, will direct individual citizens to the proper agencies, maintain a file of all the families residing in the district, and keep in contact with the residents through a bureau representative in each house in the district, who would supply information. It is

the hope of the originators of the plan that the Health Congress might eventually become a body in which all questions of importance to the neighborhood would be taken up. It might, however, prove of advantage to organize in each district a separate congress dealing with other matters—economic, social, public service, etc. In any event, a representation from either one congress or of the two congresses could be established, which would go under the name of a Community Council, might be organized in each district and which would be in direct contact with the Borough Council, as contemplated in the larger plan.

From its very inception, the Congress might find out how every agency and every citizen may help to win the war and upbuild the community through such effort. A health survey of the district should be made and an inquiry as to what way all existing agencies might contribute to public health education, preventive medicine, the early diagnosis and treatment of disease, and the social service which is incidental to health service. There should be health forums in connection with various community centres, such as clubs, churches, etc., to arouse concern in improvement of modes of living, and in bettering home and workshop environment. The problems of malnutrition among children through "school lunches" and a better appreciation of food values should be solved, and in connection with Food Administration demonstration kitchens, teaching of the use and economic preparation of foods.

Effective cooperation with the agents of the Health Department will be established to achieve a one hundred per cent. efficiency in medical school inspection work while securing better playground facilities for the children. There will be cooperation with the food, police, fire, tenement house, and sanitary inspectors in the protection of food from contamination, in securing more sanitary conditions in the dwelling houses, backyards, and alleys, in preventing fires caused by accumulation of rubbish, in keeping streets clean, etc., to observe rules, particularly with regard to spitting, and by general oversight of conditions. Information with regard to hospital and dispensary facilities will be distributed, clinic facilities for the care and treatment of the teeth of children secured, and the services of volunteers enlisted in some branches of community health work to relieve professional workers.

This cooperation for health will be equally a cooperation for education, recreation, protection, moral training, and conservation of family, and it will develop a war morale capable of sustaining any hardships which may come.

## SOME ETIOLOGICAL FACTORS OF TRIGEMINAL NEURALGIA.

Modern medicine tends more and more to limit the rôle of symptomatic treatment and to increase that of the etiological, and, since both means are resorted to for the cure of trigeminal neuralgia, it is evident that there are both known and unknown causes of this dire affection.

Among the general causes, by far the most important, because the most frequent, is luetic infection, which should always be looked for in every case of neuralgia of the seventh cranial nerve.

In cases where doubt exists, there is a quite constant characteristic offered by syphilis, namely, an increase in the intensity of the pain during the early hours of the night, while if the neuralgia is bilateral it is probably due to a specific lesion at the base of the brain. Malaria is a potent source of facial neuralgia, but unfortunately far more obstinate to treatment than when syphilis is in play. It might seem as if the symptoms, when having a malarial basis, should offer an intermittent character in the majority of cases, but such is not the case. The pain is quite as much continued as paroxysmal, although we have a series of phenomena which will, perchance, facilitate the etiological diagnosis. We refer to the vasomotor disturbances, conjunctivitis, and epiphora.

Of chlorosis, the various neuroses, and diabetes, as etiological factors of facial neuralgia, little mention need be made, as the subject is generally fairly well known, and the same applies to gout, rheumatism, and various intoxications, particularly from nicotine and carbon oxide. Alcohol does not appear to be a direct factor in the causation of trigeminal neuralgia, but is undoubtedly often an adjuvant cause.

The local causes are numerous, but to diminish their influence all that is necessary is to place the patient in suitable hygienic surroundings, after which the local etiological factors are to be considered. After removal of teeth, the condensing periostitis arising in the empty alveolæ may include the nerve endings, and this neuralgia of edentates is rapidly done away with by resection of the alveolar borders. A badly fitting plate of teeth or a tooth with an exposed pulp, a badly fitting artificial eye in contact with the inflamed and painful ocular stump, and the various otitides are all causal factors which should never be ignored.

In other cases the causes will be more direct. Among them may be mentioned periostitis, or osteitis of the osseous canals existing along the

track of the nerve, resulting in compression of the trunk. Neoplasms and sinusitis occupy an important place in this respect, while less frequently the causal factor may be an irritation of Gasser's ganglion by an aneurysm of the internal carotid or a neoplasm at the cranial base.

## THE PHYSICAL EXAMINATION OF RECRUITS.

Under special regulation number 65, issued on June 5th, the same physical standards are established for the recruits for the regular as for the national army, and general order number 66, which laid down the physical requirements for entering the regular army, is abrogated. This regulation does away with the calling of the men to the colors who are subject to slight defects curable by operative treatment. Such men as are below the physical standards, but who may be improved by treatment, will, under the new regulation, be placed in a deferred class where they will be subject to call later on. In the meantime, they may have their disabilities removed by private treatment. The principle of physical classification is retained in the new regulations and these provide information which will enable the examining surgeon to determine whether the recruit is fitted for field service or for special limited service, this matter being left to the discretion of the examining boards and to that of the surgeons at the posts or cantonments.

## LOCAL MEDICAL MUSEUMS.

The splendid conception of a new Army Medical Museum at Washington, D. C., will surely soon be realized, and one way of adding to its interest will be to encourage the collecting of medical pictures, manuscripts, instruments, etc., into local museums so that they may be located and perhaps purchased later on. There are many doctors with a passion for collecting who gather in their homes medical curios, or who possess fine engraved portraits of doctors or first editions of their works, yet, when they die, their wives or sons, caring not at all for such things, preserve them for awhile out of respect for the dead, then relegate them to the attic or send them to the auctioneer along with other effects. We have in mind at this moment certain first editions of American medical books and models of surgical inventions which will surely vanish when their owners die. There are medical autograph letters in the possession of leading living doctors which would make a collector envious, but will the widow or son, wading through piles and piles of letters left unfiled by "poor papa," recognize their literary value? We sigh again, thinking of treasures to be destroyed. What a pity it is that no writ of search can be taken out by the local medical society to buy or make note of the contents of the dead doctor's study, then might its riches be gathered temporarily into the local museum or sent to the tender, appreciative care of Colonel McCulloch and Dr. Fielding H. Garrison, instead perhaps of enriching an English museum, as instanced in the recent presentation by Osler to the Royal Society of Medicine of Morton's original papers concerning anesthesia.

## News Items.

**Changes of Address.**—Dr. Edward Waitzfelder, to 118 West Seventy-seventh Street.

**Personal.**—Dr. Maximilian A. Ramirez, of New York, begs to announce that on account of his departure for service in France, Dr. J. J. Henna, 24 West Seventy-second Street, will take charge of his clientele temporarily.

**Columbia County Tuberculosis Hospital.**—Plans for the new tuberculosis hospital to be erected near Philmont, Columbia County, N. Y., have been approved by the State Department of Health, and the work of construction will be begun in the near future.

**Need of More Complete Casualty Lists.**—It has been suggested, that in addition to classifying the Navy and Marine Corps casualties, the Committee on Public Information should, in future, classify the army casualties as those of the Regular Army, the National Guard, and the National Army.

**One Control for Public Health Activities.**—All sanitary or health activities especially created for, or concerned in the prosecution of the war, are to be exercised under the supervision of the Secretary of the Treasury. This does not apply to those of military character nor to the investigations of the Bureau of Labor Statistics.

**Women Contract Surgeons.**—Dr. Loy McAfee, of New York, has been appointed a contract surgeon by the Surgeon General and assigned to duty as secretary to the Board of Publication of the Surgeon General's Office. Doctor McAfee, who is a graduate of the Indiana Medical College, is the second woman to be named as a contract surgeon since the war began.

**Twenty-five Thousand Student Nurses Wanted.**—The Council of National Defense finds that it has become necessary to call immediately for 25,000 student nurses for training in American hospitals. The enrolment will begin July 20, and those who register will thereby be subject to call for training in the Army nursing school or in the civilian hospitals until April 1, 1919.

**Twenty-five Thousand Nurses Needed by January 1st.**—The American Red Cross has been asked by the Army Medical Department to secure 25,000 nurses for the Army Nurse Corps by January 1, 1919. It is the duty of every trained nurse to come forward at this time. Appeal is made to married nurses to return to practice or at least to give a few hours or days each week to hospital or visiting nursing. The general public is urged to start a "save the nurse campaign" which will discourage the employment of individual nurses for single patients except in very serious cases. A course of instruction in home nursing has been arranged by the Red Cross at Rome, N. Y., to facilitate the freeing of the trained nurse for army service.

**Increase in the Medical Department of the Army.**—An amendment to the Army appropriation bill has been passed by the United States Senate which adds one major general and three brigadier generals to the commissioned personnel of the medical department of the regular army and permits the remaining officers from colonels down to be increased according to the provisions of the present law as the necessities of the case may require. The amendment also gives the President authority to commission four major generals and eight brigadier generals in the medical department for every million officers and enlisted men in the national army, the junior officers from lieutenants to colonels to be of the same ratio as at present provided for in the Navy.

**Industrial Training for Disabled Soldiers.**—Recently at the Red Cross Institute, 311 Fourth Avenue, New York, directors of industrial training for disabled soldiers were graduated, following a training course of study, reading, and research at the Red Cross Institute and a traveling school in Canada, four weeks in duration, under the direction of James C. Miller, a Canadian educator of wide practical experience in dealing with the crippled soldier. The Vocational Rehabilitation Bill has now become law, and the Federal Board for Vocational Training is charged with its administration. Mr. James P. Monroe hopes that these influences will reestablish initiative and a sense of individual responsibility in the returned soldier, so that through training the men will be returned to an independent status in the community.

**Women Laboratory Aids.**—Eighty women are now acting as laboratory assistants under the Army Medical Department, and more are still needed. Those attached to base hospitals will go overseas with the hospital to which they are attached.

**Women Health Officers for Duty in Munition Plants.**—Women health officers began an eight weeks' course of study, June 26, at Mount Holyoke College, Mass., under the direction of Dr. Kristine Mann, health supervisor of the women's branch of the Army Ordnance Department.

**British Doctors to Have Women Chauffeurs.**—Sir Watson Cheyne was asked in the British Parliament whether the chauffeurs of doctors might not be exempted from military duty, because doctors were very dependent on experienced drivers. The Parliamentary Secretary for the Ministry of National Services said that in exceptional cases time might be given to find a substitute, but men were too urgently needed to make the concession general and women would have to be used as drivers.

**The Decorating of Alexis Carrel.**—When Dr. Alexis Carrel recently received the cross of the Legion d'Honneur, M. Mourir, the Under Secretary of State, said the work done merited the Nobel prize. The ceremony was private, but the invited included MM. Millerand, former Minister of War, Professors Fozzi and Tuffier, and Doctor Hyde and Dr. J. M. T. Finney, of the Johns Hopkins Hospital. The Germans recognized the good work of Carrel by destroying his hospital with bombs.

**Work of the Army Dental Corps.**—The Surgeon General's Office announces that the Dental Corps now numbers 5,810 officers, which is a sufficient number to care for an army of more than 5,000,000 men. When the United States declared war, there were only fifty-eight officers in the corps. Commissions have been offered to 5,460 dentists, all but 271 of which were accepted. A school for dental instruction is in operation at Fort Oglethorpe, Ga., where eighty-five officers take a two months' course at a time, receiving instruction in general military matters as well as in professional topics. Dental infirmaries have been established in all the camps and cantonments and from 225,000 to 250,000 teeth have been filled every month, in addition to examinations, treatments, extractions, and bridge and crown work. A specialist in plastic dental surgery is attached to each of the base, the general, and the evacuation hospitals. No further additions will be made to the corps for at least six months.

**Civil Service Examinations.**—Among the positions for which the New York State Civil Service Commission will hold examinations on August 3, 1918, are the following:

Laboratory diagnostician, State Department of Health; \$2,400; open to men and women; minimum age, twenty-five years; preferred ages, thirty to forty years; and to nonresidents and citizens of other countries, except those at war with the United States. A degree in medicine or an education in a college maintaining a standard satisfactory to the commission, or training and experience in chemistry, is desirable but not essential. Applicants must have a thorough knowledge of bacteriology, immunity, and vaccine and serum therapy. They must have had at least two years' practical experience in laboratory diagnosis.

Medical officer and inspector, Department of Health Officer, Port of New York (City Island); \$1,200. This position requires a graduate in medicine and a licentiate for the State of New York. The appointee must reside at City Island and give part of his time to the inspection of vessels from foreign ports and the examination of passengers and crews for the detection of the quarantinable diseases, such as cholera, plague, typhus fever, yellow fever, smallpox, and leprosy.

Senior assistant physician, Rome State Custodial Asylum; salary, \$1,800 with maintenance. Examination open to men who are licensed medical practitioners in this State.

Resident physician, State Training School for Girls, Hudson; \$1,800 and maintenance; women only. Applicants must be physicians licensed to practice in New York State.

Application forms will not be sent out by mail after July 22, 1918. Applications received at the office of the commission after July 24, 1918, will not be accepted. For application form, address a postal card to State Civil Service Commission, Albany, N. Y.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### RECENT OBSERVATIONS IN DIGITALIS THERAPY.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 36.)

I have discussed in preceding issues the influence of digitalis in heart disorders associated with an increased rate, but without abnormality of rhythm. The fact that a marked increase of rate tends to impair the output of the heart and endanger its reserve power, and the apparent suitability of digitalis, through vagal slowing, for overcoming tachycardia and any resulting impairment of output, were referred to. Detailed inquiry into clinical observations showed, however, that while in certain varieties of tachycardia digitalis is beneficial, at least partly through its action on the rate *per se*, in others it is relatively or wholly useless. The latter are often cases in which the heart seems organically unimpaired; not only is direct strengthening of the cardiac contractions not the main indication to be met, but apparently the very nervous or toxic influence which, through the sympathetic accelerator mechanism, may be giving rise to the tachycardia, tends to prevent the customary action of digitalis on the vagi. Even an increased irritability associated with organic weakening of the heart muscle seems a possible cause of failure of digitalis to exert its usual slowing action on the heart, the action of the drug in increasing the already abnormal irritability tending to antagonize the vagal effect. Again, as recently suspected in the case of the soldier's irritable heart, disturbed function of the vagal system itself may interfere with its response to digitalis.

*Arrhythmia* comprises another group of heart disturbances, the effects of digitalis upon which have been strikingly elucidated by recent studies. Of the different types of irregularity paroxysmal tachycardia has already been referred to. In *auricular fibrillation* digitalis has proven so effectual as to be considered almost a specific. "When the ventricle beats irregularly at a rate surpassing 120 per minute," says Lewis, 1916, "the irregularity is almost always of this nature." "Ventricular rates which are maintained above 120, unless responsive to proper therapy," says Gordinier, 1918, "go on to gradual or speedy cardiac exhaustion." Hence the importance of the beneficial effect of digitalis in auricular fibrillation.

This disturbance occurs in rheumatic and non-rheumatic heart cases in about equal numbers (Lewis), and among each of these groups is met with most frequently in the presence of mitral stenosis—less often in pure myocardial degeneration, aortic, general arterial, or renal disease, etc. Normal impulse formation is replaced by stimulus production at multiple auricular foci; the impulses reaching the ventricle are rapid and haphazard, and result in gross irregularity of ventricular contrac-

tion, generally with a marked increase in rate. Mechanical conditions favorable to a sustained ventricular output are widely departed from under these circumstances. Many pulsations fail to reach the radial artery, and the pulse is completely disordered both as regards strength of successive beats and length of the intervening pauses. Where fibrillation is but imperfectly marked, electrocardiograms or polygrams are rather necessary for its detection, but in the average definite case, in which digitalis is so effectual, the practitioner can make an almost positive diagnosis of the condition without recording instruments upon observing a pulse deficit or discrepancy between the cardiac rate and that of the radial pulse, together with a tumultuous irregularity of the ventricular beats on precordial auscultation. Signs and symptoms of serious heart failure with a markedly increased rate are also suggestive of auricular fibrillation, and where the rate is not much accelerated Lewis lays stress on the results of moderate exertion, *e. g.*, several quick changes from recumbency to the sitting posture; in fibrillation the pulse shows increased irregularity as its rate becomes accelerated from the exertion, while in other arrhythmias, such as premature beats and partial heart block, the pulse is, on the contrary, steadied.

Benefit from digitalis in auricular fibrillation is usually striking, and the improvement seems directly parallel with the extent to which the drug is able to lower the rate of ventricular contraction by reducing conduction of the chaotic auricular impulses to the ventricles. In a few instances, according to Lewis, the drug fails to influence the rate; these are mainly nonrheumatic cases or cases in which the rate is not markedly excessive. As the heart rapidly weakens under continuous auricular fibrillation, the drug is doubtless valuable, in the average case with greatly increased rate, not only in lowering the rate but also in directly assisting restoration of the dilated heart muscle to its previous condition of normal tone.

Until recently the lowering of auriculoventricular impulse conduction by digitalis in auricular fibrillation had been thought always due to stimulation of the vagi; increased vagal activity is well known to lower intracardiac conduction. Cushny and his coworkers, however, have observed that clinically the effect of digitalis on the heart rate in auricular fibrillation is not prevented by complete paralysis of the vagi with atropine. They are led, therefore, to ascribe the effect instead to a direct action of the drug on the heart muscle, and by analogy with the results of experiments on excised mammalian hearts exhausted by prolonged perfusion with Ringier's solution, which likewise showed slowing under digitalis independently of any vagal influence, conclude that the occurrence of direct muscular slowing in clinical auricular fibrillation is due to the co-existing malnutrition of the heart muscle. Thus, apparently, the mode of production of one of the

best known of the actions of digitalis, viz., reduced conduction, may differ according to the condition of the heart at the time; the same, we may add, applies to the rate of impulse production at the normal pacemaker of the heart, Cushny having observed that in the perfused heart fewer impulses are emitted there under digitalis, independently of any action of the drug on the vagi.

The dosage of digitalis suitable for auricular fibrillation in adults is, according to Lewis, ten to fifteen minims of the tincture or one to one and a half drams of the infusion three or four times a day. When the desired reduction in heart rate has taken place, or toxic symptoms, and especially pulsus bigeminus, have appeared, the drug must be reduced or omitted. Halsey, 1918, advises such patients to continue the drug throughout life, just enough being taken to maintain the rate below seventy per minute when counted after a rest in the late afternoon.

(To be continued.)

### Surgical Shock and Some Related Problems.—

J. E. Sweet (*American Journal of the Medical Sciences*, May, 1918) defines shock as a gradual progressive fall of blood pressure due to a paresis or paralysis of the musculature of the arterioles. He agrees that the central vasomotor nervous system shows no evidence of failure, and that the heart shows no weakness, but believes in a primary failure of the musculature of the arterioles for the following reasons: They are the only parts of the vascular apparatus capable, so far as we know, of being paralyzed. The idea that the veins are dilated other than passively, implies a mechanism which has never been demonstrated. A dilatation of the arterioles would necessarily be expressed in the veins, because the pressure of the heart would, by this dilatation, be allowed to pass directly into these. There would be no congestion or stagnation in the arterioles because there must always, as long as there is any circulation at all, be a greater pressure in the arterial than in the venous side. In this connection the fact may be recalled that the arterial system is empty in the cadaver. The fact that physiologists find the vasomotor centres intact proves only that the centres are intact. The point where the controlling force of the vasomotor centre accomplishes work is in the arteriole. The centre is the dynamo, the nerves form the transmission system, the arteriole is the motor which transforms the energy produced by the dynamo into work. Shock is a toxic condition. He suspects that the toxins injure the adrenals, and these he believes to be concerned in the preservation of the tone of the muscle cells of the arterioles. The only way in which he has been able experimentally to produce anything like shock is by the removal of the adrenals. The relation between psychic shock and traumatic shock is compatible with these ideas. The relation between fear and anger and the adrenals is capable of experimental proof, and that between psychic shock and thyrotoxicosis is universally admitted. These ideas of shock are compatible with the best and latest in treatment. Porter advises a special position of the wounded so that the abdominal vessels shall be higher than the heart and brain; heat; intravenous

injections of saline solution; intravenous injections of epinephrin; transfusion of blood in certain cases, and the observation of the diastolic pressure every half hour as an index of the condition of the patient. Sweet believes that adrenalin produces a good effect not only because it raises the blood pressure, but because it supplies a something which is essential to life and in these cases is apparently lacking. The treatment of surgical shock must therefore consist, he thinks, in the continued administration of adrenalin plus efforts to remove the causative factor.

### Consideration of Local Processes of Disease and Repair in Treatment of Pulmonary Tuberculosis.—

H. Morriston Davies (*British Medical Journal*, April 6, 1918) points out the more or less generally accepted inadequacy of sanatorium treatment of pulmonary tuberculosis and emphasizes the necessity for considering the pathology of the disease and the factors which enter into the healing of its lesions if treatment is to be made satisfactory. The essential feature of the tuberculous lesion is the formation of ordinary granulation tissue about the tubercle bacilli for the purpose of walling them off and destroying them. The bacilli are of low general virulence and the reaction to them is in most persons chiefly local. The conditions essential to secure the conquest of tuberculous infection are: 1. Good general resistance. 2. A reasonably small dose of the organism. 3. Favorable local conditions at the site of the lodgement of the bacilli. If these requirements are not met, the granuloma fails as a protective mechanism and becomes a source of danger. The general resistance can be raised best by proper hygienic conditions and diet, both of which are provided by sanatorium care. The vast majority of persons have a high degree of general resistance as shown by the general occurrence of old healed lesions, and extraneous factors seem to have some tendency to reduce this resistance, but usually only to a relatively minor degree. Surgical tuberculosis teaches that the most important factor in successful treatment is the maintenance of absolute rest of the affected part to permit the full development of the granulation tissue. The same applies to the lung, and rest not only promotes the proper development of granulomas, but also prevents the secondary ill effects of movement such as bronchiectasis and cavitation. Rest of the lung can be secured in one of three ways: by nitrogen displacement, by rib mobilization, or by division of the phrenic nerve in the neck. Of these the first is the most applicable and it should be practiced at the earliest possible moment in all cases. The second is more effective, but since its effects are permanent it is not to be practiced except where the first fails or promises failure. The third method is available to diminish movement of the lower lobe when that is specially involved, to prevent aspiration of infective material from the upper lobe, and as a prophylactic against bronchiectasis. When the lung is effectively collapsed the patient can return to his work and is to a great extent made independent of those fluctuations in general health which normally occur and which otherwise impair his chances of recovery.



**Chronic Peripheral Facial Paralysis.**—William Sharpe (*Journal A. M. A.*, May 11, 1918) limits his discussion to those cases of facial paralysis of peripheral type in which diligent treatment by medical measures has not influenced the paralysis after one year. In such cases very satisfactory results can be obtained by nerve anastomosis, but the usual methods of performing this have left much to be desired. A simple and satisfactory method is to expose the main trunk of the facial nerve through an incision behind the angle of the lower jaw, isolate the nerve for at least half an inch as it crosses the styloid process, and divide it as close to the foramen as possible. Then the hypoglossal nerve is sought and exposed for an inch and a half. This is then incised longitudinally for at least one inch and at the lower end of the incision the posterior half is severed. This is then turned back and upward and anastomosed with the peripheral end of the cut facial. The remaining part of the hypoglossal nerve is slightly split above the transverse hemisection and a few fibers are freed to be sewed by a single stitch to the external margin of the distal cut surface. Throughout the operation there must be perfect hemostasis and no protecting membrane or tissue should be placed about the nerves. The wound is closed loosely to permit the escape of serum.

**Benzol in Leukemia and Other Disorders.**—Vaquez and Yacoel (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 7, 1918) report three cases of leukemia in which benzol treatment yielded pronounced benefit. From these and the other cases previously recorded by various authors they conclude that in all leukemias benzol improves the general condition, reduces the splenic enlargement and excess of leucocytes, and augments the erythrocytes. In cases of tuberculous lymphadenitis benzol had no effect other than, in some instances, to cause the lymph nodes to soften, ulcerate, and suppurate. In aleukemic lymphatic enlargements — nontuberculous — benzol often brought about reduction of the affected nodes. In erythemia or Vaquez's disease benzol in large doses was found capable of reducing the number of red cells, but at the same time caused a prohibitive leucopenia, the leucocytes dropping to 1,200. The leucolytic action of benzol is exerted in two ways, first, directly, the leucocytes, and especially pathological leucocytes, being destroyed in the blood stream and the overactive centres of leucocyte production inhibited; second, indirectly through an autoleucolysin or the leucolytic ferment formed as a result of repeated destruction of leucocytes. This second type of leucolysis persists in the intervals between courses of benzol treatment. Myelocytes are the most sensitive to benzol, though they do not disappear permanently. The leucocytes in normal subjects strongly resist benzol; in such a subject given benzol they were reduced only from 7,800 to 3,000, whereas as in a leukemic case the same doses led to a drop from 800,000 to 16,000. The authors begin with forty drops of benzol a day, increased progressively to 100 drops by the fifth day. The treatment is thus continued for the first twelve days in each month. The blood is examined weekly, and if the drop in leucocytes is too abrupt, the drug is

discontinued for two weeks. The treatment is kept up until the maximum of effect in the individual case has been attained. Albuminuria, hematuria, excessive gastric disturbance, and diarrhea are all indications for temporary suspension of the treatment. Chemically pure benzol in capsules, milk, or wine can be continued for months without difficulty. X ray treatments can be given at much longer intervals when alternated with benzol. The latter is effectual even where x ray therapy fails.

**Skin Grafting.**—J. C. Masson (*Journal A. M. A.*, June 1, 1918) discusses the subject of skin grafting with reference to the extension of its use and points out that isografting gives as good results as autografting. The important point in the use of isografts is the determination of the compatibility of the bloods of donor and recipient of the grafts, for skin from a donor whose blood corpuscles are agglutinated by the serum of the patient never "takes." In all cases the surface to be grafted must be in a healthy condition. In cases of chronic ulceration the surface should be prepared by hot fomentations of boric acid to improve the circulation, and possibly also by the use of scarlet red ointment to promote healthy granulations and start a pellicle of epithelial growth from the margins. Where the surface is infected it should be treated with hot saline solution, Dakin's solution or dichloramin-T until sterile, as shown by smears on three successive days. The grafts may then be applied direct or after rubbing off the granulations if exuberant and stopping all hemorrhage. The choice of the type of graft is of importance. The Wolfe graft gives the most normal looking skin with the best function, but it often fails to take. It should be used, however, for at least part of the surface in annular ulcers of the extremities, about joints, and for extensive areas. For removing the grafts either local or general anesthesia can be used. The method of cleansing the skin to be taken makes little difference in the results and cleaning with 1-1000 iodine in benzol, drying and painting with two coats of 3.5 per cent. iodine in alcohol is entirely satisfactory. If the skin whence the graft is to be taken is thick, a Thiersch graft can first be removed, followed by the removal of a second similar layer, or the removal of small island grafts. The wound from which the grafts have been taken, if at all large, should be reduced by cutting out an elliptical piece of the central subcutaneous tissues and suturing the edges together with silkworm gut. The tissue thus removed may be cut into small pieces and also used for grafting. When large pieces are placed as grafts they should be punctured to permit of the escape of serum. The dressing for Thiersch grafts should be the open air wire mesh protection with occasional removal of crusts and the application of dichloramin-T by atomizer. For areas only partly covered by grafts paraffin impregnated open mesh net should be applied first and for three days a wet dressing should be used over this, being changed every four hours without disturbing the mesh. The mesh net can be held in place by sutures or the application of soft paraffin about the edges. Open air treatment should then be substituted, combined with the use of hot dressings at night.



**Report on Arsenphenamin.**—Victor N. Meddis and William C. Stirling, Jr. (*Journal A. M. A.*, May 18, 1918), from an experience of 1,104 intravenous injections of four different preparations of American made arsenphenamin, especially the brand known as arsenobenzol, conclude that the arsenobenzol brand is nontoxic and quite as efficient as the original Ehrlich product; that it may be used in concentrated solution (thirty mils containing 0.6 gram); that the reactions may be controlled by the preliminary injection subcutaneously of 0.6 mil (ten min.) of 1:1000 epinephrine; and that the only reactions produced are slight headaches or, in some cases, diarrhea and slight malaise.

**Wounds of the Joints.**—L. Eloesser (*Boston Medical and Surgical Journal*, April 25, 1918) says that the four sources of infection and their treatment are: 1. Direct infection from without by a foreign body; remove the offending material as soon as possible. 2. Indirect infection from communicating bursae or joint fractures; treat the primary focus, resect if necessary, resect prophylactically if manifestly infected. 3. Secondary indirect infection from neighboring abscesses—rare; leave the joint alone unless sure it is involved. 4. Metastatic infection; evacuate the pus. Infections may be empyematous, when proper treatment will save the joint, or phlegmonous, when the joint will stiffen. Leaving a joint wide open is harmful, we should strive to preserve the synovia. Foreign bodies, especially lead, induce deforming arthritis, and should be removed.

**Plan of Rectal Feeding.**—Edward E. Cornwall (*Journal A. M. A.*, May 18, 1918) emphasizes the fact that the colon does not possess adequate digestive functions and that, therefore, the food administered through it must be predigested or such as is absorbed readily. Rectal feeding should also aim to provide an adequate protein ration in the form of the aminoacids in proper proportions, salts, the vitamins, and carbohydrate for fuel. Milk provides the protein constituents, a large proportion of the mineral salts, and some of the requisite vitamins. It should be peptonized and pancreatized completely before being used. Owing to its capacity of undergoing lactic acid fermentation it tends to prevent protein putrefaction and is of advantage on this account. Fruit juices provide the vitamins and other mineral salts, and glucose is the ideal carbohydrate. A satisfactory prescription for rectal feeding, based on these facts, is: Glucose, thirty grams (one ounce); strained juice of half an orange; sodium bicarbonate, two grams (thirty grains); a like amount of sodium chloride, and water to make 300 mils (ten ounces). This is to be given at 6 a. m., and at 8 a. m., 150 mils (five ounces) of peptonized and pancreatized skimmed milk are given. Then the same mixture as for 6 a. m. is repeated at 4 and 10 p. m., while the milk is repeated at noon, 6 p. m., and midnight. This diet provides twenty grams of protein and a fuel value of 700 calories. It may be altered as required by increase or decrease of the glucose, addition of glucose to the milk, addition of 0.3 gram (five grains) of calcium chloride to the glucose enemas, or by adding a culture of acidophilic bacteria to any

of the enemas. A second plan providing the same amount of fuel, but no protein, consists in the administration every four hours of the glucose mixture of the preceding. The enemas should be given at 100° F., injected slowly, and the patient's buttocks should be elevated while he lies on his right side during the injection. He should maintain this position for half an hour after the administration of each feeding. Every second day he should be given a colonic irrigation with physiologic salt solution.

**Treatment of Septic Wounds.**—R. Tanner Hewlett (*American Medicine*, May, 1918) points out that acridine dyes possess powerful bactericidal properties, especially in the presence of serum. Flavine, acting on bacillus coli for twenty-four hours killed in peptone water in a dilution of 1-1,000; in serum, in concentration of 1-100,000. Acting on staphylococcus for twenty-four hours it killed in peptone water in a concentration of 1-20,000; in serum, in 1-200,000. Flavine is relatively nontoxic and does not inhibit phagocytosis and is recommended in the strength of 1-1,000 to 1-10,000. Some workers find it has a powerful leucocidal action as leucocytes treated with flavine for five hours lose their phagocytic power. In the practical treatment of wounds a strength of 1-1,000 in saline was first used, but, later, equally good results were obtained if after the first dressing a solution of 1-5,000 was used. When the Carrel method of irrigation is used a solution of 1-10,000 is of sufficient strength. As a primary treatment of recent war wounds it has the following advantages: absence of all toxicity; prevention of suppuration and spreading sepsis; the primary dressing need not be changed for two or three days; the wounds are not inflamed or painful. It should not be used in later stages of wounds.

**Amputation of Epiglottitis for Tuberculosis.**—Lorenzo B. Lockard (*Colorado Medical*, April, 1918) draws upon the results of his own cases and the work of others respecting the amputation of the epiglottitis in tuberculosis and concludes that the operation is quite as safe as tonsillectomy, even in severely exhausted patients. In nine out of every ten cases the operation is performed solely as a palliative measure, mainly for the relief of pain. But even when a cure of the tuberculosis is possible it is not essential that all of the diseased tissue be removed, since following amputation the remaining lesions usually undergo rapid healing. Healing of the operation stump is usually very rapid and the operation causes very little discomfort. The relief of pain is usually immediate and very striking, and there is often a very marked subsequent improvement in the patient's general condition due both to this absence of pain and the resulting capacity to take more nourishment and to get more rest. The effect upon the pulmonary disease, though only secondary, is often marvelous. There is one, and only one, contraindication to the operation, namely when the tuberculous process is beginning to involve the base of the tongue of the pharyngoepiglottic fold. Here the process progresses so rapidly that the operation offers no prospect of arrest or relief of symptoms. The one great indication for the operation is pain.

**Replacement of Scalp on a Denuded Dry Skull.**

—T. C. Davison (*Journal A. M. A.*, May 11, 1918) reports a case in which there was a large area of the skull left dry and denuded as a result of a burn. There was no blood supply to the whole area and the outer table of the bone began to necrose. Noticing that small granulations sprang up from the parietal foramina and a suture line, the author drilled about fifty small holes through the dry calvarium at the corners of each square centimetre. These holes soon filled with healthy granulations and pinchgrafts were successfully applied to cover the entire area.

**Collosol Manganese in Furunculosis.**—Malcolm Morris (*British Medical Journal*, April 20, 1918) reports highly favorable results from the intramuscular or subcutaneous injection of 0.5 to 1.0 mil of collosol manganese in four cases of chronic furunculosis which had resisted all other forms of treatment. Usually not over four doses were required, marked improvement having begun within four or five days of the first injection. Coincident with the improvement in the furunculosis there was a very marked improvement in the patient's general health.

**Fatal Icterus Gravis Following Novarsenobillon.**—P. C. Fenwick, G. B. Sweet, and E. C. Lowe (*British Medical Journal*, April 20, 1918) report two cases of slowly fatal icterus gravis occurring one and two weeks, respectively, after a series of five doses of novarsenobillon. The symptoms were ushered in with mild jaundice which soon became severe; great reduction in the size of the liver, persistent vomiting, and progressive weakness. Death resulted twenty-one and forty days after the onset of symptoms and at necropsy the liver in each case was found in a peculiar condition of cirrhosis with atrophy and acute degeneration. Though no arsenic was found in the urines of these two patients the condition could not be attributed to any other cause than the action of the novarsenobillon. No similar cases have been discovered in several large series of hospital cases receiving the various salvarsan preparations.

**Trench Sanitation.**—C. E. Burt (*Boston Medical and Surgical Journal*, April 25) says that trench feet can be prevented to a large extent by the following precautions: 1. Boots and shoes should be at least a size too large, so that two pairs of socks may be worn. 2. Rubber hip boots should be furnished if there is standing water in the trenches. 3. Keep the body warm and dry. Wear waterproof clothing, especially in rains. 4. Every twenty-four hours the boots should be removed, the feet rubbed and dried, and dry socks put on. 5. Whale oil or antifrostbite grease should be thoroughly rubbed into the feet and legs. 6. If rubber boots are not worn, the boots should be well oiled or greased. 7. Drainage of trench, or dry standing provided. Avoid standing still as much as possible. 8. Keep the legs elevated while resting, and avoid the sitting posture while sleeping. 9. Avoid fatigue by keeping up the physical condition of the soldiers by proper nourishment and warmth. Frequent use of hot soups and rum fills the bill. 10. Puttees should be loosely applied.

**Indications for Mastoid Operation.**—William H. Huntington (*Medical Record*, May 18, 1918) summarizes conditions calling for the simple mastoid operation as follows: 1. Cases of acute mastoiditis with persistent pain on pressure over the tip of antrum; persistence of fever after a successful paracentesis or where there is sagging of the posterior superior meatal wall. 2. Cases of acute suppuration of the middle ear with dizziness, nausea, vomiting beginning facial paralysis or with signs of either intracranial or labyrinthine involvement. 3. Cases of long standing middle ear suppuration, which resist local measures, but which because of good hearing or other reasons do not require the radical operation. 4. Cases of persistent mastoid pain either with or without other symptoms which cannot be accounted for in other ways. 5. Cases of subperiosteal abscess.

**Spontaneous Deterioration of Atoxyl.**—François (*Bulletin de l'Académie de médecine*, March 19, 1918) points out after examination of samples of pure atoxyl kept three or four years in a tropical locality, that this agent is liable, at tropical temperatures, to spontaneous decomposition into highly toxic substances. The decomposition was complete in the samples examined; every 0.5 gram of atoxyl—a dose commonly given to trypanosomiasis—was changed into 0.03 gram of arsenous anhydride and 0.56 gram of sodium arsenate. This decomposition is analogous to that undergone by modern gunpowder, which, while relatively stable at the ordinary temperature of 15° C., shows rapid spontaneous decomposition at temperatures of 35° to 40° C., such as prevail in the tropics and in uncooled holds of seagoing vessels. Atoxyl should be examined in the locality where it is to be employed and analyzed before clinical use.

**The Baby That Cannot Take Milk.**—T. Wood Clarke (*New York State Journal of Medicine*, April, 1918) forcibly brings out the fact that cases falling under the above description are frequently encountered and points out the causes and their treatment. The first class comprises those cases in which the modification of the child's milk is unsuited to the individual. The chief factor lies in the use of too high a proportion of fat with the development of fat intolerance. The treatment is simple and consists in the use of a fat free or very low fat skim milk formula. The second class of cases includes those which have been either overfed or, more often, underfed. They show failure of gain in weight, vomiting, and constipation or diarrhea. Proper adjustment of the amount of feeding quickly cures the condition. The third class is uncommon and comprises those receiving unclean milk, especially after having had clean milk for some time. The treatment is obvious. The fourth class is that of protein hypersusceptibility and can usually be dealt with by first removing all cow's milk protein from the diet and then extremely slowly adding small amounts of cow's milk until a good tolerance is established. Pyloric stenosis accounts for the fifth class and its treatment is now well established as including a brief trial of repeated small feeds of citrated human milk or skimmed cow's milk.



# Miscellany from Home and Foreign Journals

**Röntgen Study of the Chest.**—E. L. Davis (*Journal A. M. A.*, May 25, 1918) reports his results of a röntgen study of 1,000 chests in cases referred with the diagnosis of probable pulmonary lesions in men of our new army. He summarizes his findings under three headings. Pulmonary tuberculosis could be demonstrated röntgenographically in its earliest stages and activity or inactivity could usually be determined. Soft, fuzzy, flaky shadows occurred in the areas usually occupied by the linear markings of the normal lungs in the early active cases. Also a soft mottling of the apices with peribronchial thickening was very characteristic of early active cases. Dense, nodular, well defined shadows with clean cut peribronchial thickening marked the healed or inactive cases. Intermediate appearances were found in other cases and proved difficult of interpretation with reference to activity. Lobar pneumonia was easily diagnosed even very early by röntgen signs. Linear shadows due to vascular-lymphatic congestion, enlarged heart, localized consolidation, and high diaphragm were the characteristic findings. These often occurred even before clinical evidences of consolidation, the first two being most characteristic. The enlargement of the heart was found even in the absence of the usual physical signs of pneumonia and was attributed to the toxic manifestations of the infection. It was also found to persist for one or two weeks after convalescence had set in. Bronchopneumonia was found to be unilateral more frequently than bilateral, the heart was not usually enlarged, and the localized consolidations showed as mottlings rather than as homogeneous shadows.

**The Emotional Constitution.**—Dupré (*Bulletin de l'Académie de médecine*, April 2, 1918) describes, under the appellation "constitution émotive," a special type of loss of nervous equilibrium characterized by diffuse erythism of general sensibility, sensory and psychic, and by insufficiency of motor inhibition, reflex as well as voluntary. A high degree of emotivity is normal in the nursing and frequent in childhood, but disappears in the adult owing to development of the inhibitory functions. Abnormal emotivity in adults, while generally inherited, may be acquired through the operation of infectious, toxic, and especially traumatic, influences. Repeated emotion may either thus sensitize the nervous system to subsequent emotions or create a species of emotional immunity. The physical signs of the emotional constitution comprise a diffuse exaggeration of the reflexes; sensory hyperesthesia, with sharp and prolonged motor reactions; a lack of motor equilibrium, manifested in visceral spasmodicity, *e. g.*, pharyngoesophagism, gastroenterospasm, cytospasm with pollakiuria, and palpitations; emotional tremor, shivering, stammering, tics, etc.; functional inhibitions, with temporary weakness of the lower limbs, mutism, and relaxation of the sphincters; disturbances of circulatory equilibrium, such as paroxysmal or permanent tachycardia, instability of the pulse, alternate peripheral vasoconstriction and vasodilatation, and dermatographism; lo-

cal variations in temperature, with subjective sensations of cold and heat, principally in the extremities; spontaneous or emotional variations in the rate of secretion of glands; disturbances in intervisceral reflex actions along the vagosympathetic or cerebrospinal nervous pathways. The psychic signs are abnormal impressionability, anxiety, and impulsive actions, more or less continuous or paroxysmal. Upon these as a foundation arise timidity, scruples, doubts, obsessions, phobias, simple or delirious states of anxiety, and psychosexual aberrations. In the most severe cases there appear attacks of anxious melancholia and chronic obsessional states passing into incurable deliria of autoaccusation, hypochondria, or negation. The condition as a whole frequently occurs in association with neurasthenia and hysteria, but must be clearly distinguished from them. An essential feature of the emotional constitution is that it represents, not organic lesions, but deficiencies of functional equilibrium. When clearly recognized by the physician in a given case it enables him to understand the patient's entire personality.

**Further Studies on the Properties of Pure Vaccine Virus Cultivated in Vivo.**—Hideyo Noguchi (*Journal of Experimental Medicine*, March, 1918) says that the virulence of vaccine virus for the testicular tissues increases until its maximum is finally reached. A prolonged passage through the testes does not diminish the activity in the skin. The testicular strain of vaccine virus is no more likely to localize in various organs than the ordinary skin strain, while both may localize in adjacent lymph nodes when introduced intravenously, subcutaneously, or intratesticularly, but other organs are not involved. Experiments to determine the viability and resistance of the testicular vaccine virus show that it is best preserved in Ringer's solution or 0.9 per cent. saline solution; in distilled water it is weaker. Low temperatures are necessary. At 18° or 37° C. the virus deteriorates. Phenol is less injurious than glycerol for the ripening process. Phenol in a concentration of 0.5 to 1 per cent. has almost no injurious effect, while glycerol is a powerful vaccinicide. Tests to ascertain whether a gradual deterioration of the vaccine virus could be delayed or prevented in different atmospheres indicate that in sealed ampules containing hydrogen, nitrogen, or ordinary air, it retained its virulence better than in an open receptacle, and that pure oxygen or carbon dioxide destroyed the virus completely at the same temperature. The effects of acids, alkalis, and germicides were also tried. The vaccine virus was completely destroyed by sodium hydroxide in a concentration greater than 1:200, and almost completely destroyed by hydrochloric acid in a like concentration. Iodine was a powerful disinfectant for the vaccine virus, but iodide salts did not reduce its virulence, even when mixed in vitro with a thirty per cent. solution and kept one hour at 37° C. Dessication has a destructive effect and does not exert any protective influence on the gradual deterioration due to age which takes place at all temperatures.



**Value of the Wassermann Reaction.**—John H. Larkin, I. J. Levy, and John A. Fordyce (*Journal A. M. A.*, June 1, 1918), in a reply to an article on the same subject by Symmers, Darlington, and Bittman, point out the fallacies of their deductions as to the unreliability of this reaction in the diagnosis of syphilis, and bring forth a large volume of evidence from their own researches to show that if the reaction is properly carried out it has a very high diagnostic value. They conclude that a positive reaction is the most constant symptom of syphilis; that the reaction is positive in practically 100 per cent. of cases of florid syphilis; that it is positive in about ninety-four per cent. of cases of active tertiary syphilis of the skin and bone, and in a like proportion of cases of syphilitic aortitis, proved post mortem, and that it is positive in the blood in about eighty per cent. of cases of syphilis of the central nervous system. If the reaction is properly carried out a negative response is accurate in at least ninety per cent. of instances. The technic of the reaction employed should be stated in reporting the results of any investigation of its value, for there are many modifications, not all of which give reasonably concordant results. In the present investigation the results are based upon the use of three methods: Plain alcoholic antigen with icebox fixation; the same with warm fixation, and cholesterin antigen with warm fixation.

**Intestinal Parasites Among Troops.**—De Vézeaux de Lavengne (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 7, 1918), in view of the now recognized frequency of amebic intestinal infection among troops engaged in trench warfare, sought to ascertain the rôle played by other intestinal parasites under the same conditions. Living in contact with the soil and exposed to geophagia, the soldiers might a priori be expected to show an increase in parasitic infestation. Among 200 stool specimens examined mostly from healthy subjects, none showed ankylostoma ova. Of 100 men living in the trenches, however, seventy-three showed trichocephalus infestation; eight, ascaris, and seven, both trichocephalus and ascaris. Thus, eighty-eight per cent. of the men had parasites—a percentage comparing rather closely with analogous figures reported as regards miners. Among men quartered in cantonments and in other localities apart from the trenches, sixty-three per cent. showed trichocephalus and none, ascaris. The number of adult trichocephalus parasites harbored in each individual was estimated to range from five to fifty. Eosinophilia was never found in trichocephalus infestation but was always present, varying from four to nine per cent., in the ascaris carriers. The pathogenic rôle of the parasites seemed relatively slight. In ten cases of afebrile diarrhea without dysentery bacilli or amebae, parasitic ova were very numerous, and improvement followed the use of thymol, calomel, and santonin. Two additional cases appeared to belong to the group recognized by Chauffard under the term "lumbrocrosis of the typhoid type." In a few cases with backache and remittent fever numerous trichocephalus eggs were found and thymol seemed beneficial.

**Alkali Reserve of the Blood Serum in Wound Cases.**—E. Zunz (*Paris médical*, March 23, 1918) asserts that the alkali reserve, estimated by Marriott's method, remains normal in wound cases provided there is no fever nor pronounced infection. As soon, however, as there occurs an extensive infection, marked respiratory difficulty owing to insufficient oxygenation, or a severe intoxication of intestinal origin, the alkali reserve diminishes. The streptococcus and the *B. perfringens* are almost always present where infection engenders acidosis. A moderate degree of acidosis is often met with in hemothorax, and a marked one where there is intestinal perforation or obstruction as well as in many cases of circulatory collapse. The extent of alkali reserve in the serum affords useful prognostic indications in wound cases.

**Influenzal Sinus Disease.**—H. E. Robertson (*Journal A. M. A.*, May 25, 1918) calls attention to the fact that the relation of influenzal infection of the cranial sinuses to influenza is not generally recognized, or, when it is found is regarded as a rare complication. A study of a number of fatal cases of influenza, as well as of several cases dying of other conditions, showed that the sinuses were infected in almost every case harboring the influenzal organisms. Such infections were also demonstrated in living patients by the application of cocaine and epinephrine to the interior of the nose, which led to the drainage of pus from one or more of the sinuses. The sinus infections were thought to account for the frequent severe headaches and also for the occurrence of many of the fatalities from influenza. The infection also made the patients carriers of the disease.

**Toxicity of Certain Widely Used Antiseptics.**—Herbert D. Taylor, M. D., and J. Harold Austin, M. D. (*Journal of Experimental Medicine*, May, 1918), in order to test the toxicity of various antiseptics, injected increasing doses into mice intraperitoneally, and into guineapigs subcutaneously and intraperitoneally, the amount injected being determined by the weight of the animal. Of the substances tested, eucalyptol and brilliant green were the most toxic, the lethal dose of each being 0.1 milligram per 100 grams of body weight. Then came mercurphen, mercuric chloride, and chloramine-T with a lethal dose of one milligram per 100 grams of body weight, followed by dichloramine-T, proflavine, hypochlorite, Dakin's hypochlorite, Javelle water, and magnesium hypochlorite, with a lethal dose of ten to fifteen milligrams per 100 grams of body weight. The least toxic chemicals were iodine and phenol, with lethal doses of about fifty milligrams per 100 grams of body weight. The toxicity of these chemicals for the guineapigs and mice follows about the same order. As careful surgeons do not approve of injecting solutions of iodine and phenol into closed body cavities, the authors think it would be advisable not to use any of the antiseptics discussed for that purpose, as they all have a greater toxicity than the two above. It is also recommended that the use of eucalyptol as a vehicle for dichloramine-T be discarded, since Dakin's bland solvent, chlorcosane, is available, and is much less toxic.

**Virulence of Tubercle Bacilli in Sputum.**—H. J. Corper (*Journal A. M. A.*, May 4, 1918) tested eighty-two cultures of tubercle bacilli, isolated directly from the sputum of open cases of tuberculosis, to determine the virulence of the organisms. Guinea pigs were used for the tests, and the virulence was measured by the nature of the lesions and by the tissues involved, rather than by the capacity to cause death. Varying doses of bacilli were employed with each culture. The results led to the conclusion that in the great majority of open cases of pulmonary tuberculosis the tubercle bacilli contained in the sputum were highly virulent and that such sputum in the fresh state was capable of infecting man, especially through droplets.

**A Study of Blood Pressure by the Method of Gaertner.**—Alfred E. Cohn and Christen Lundsgaard (*Journal of Experimental Medicine*, April, 1918) point out certain defects in the fractional method of estimating the systolic pressure in fibrillation of the auricles, and suggest as a substitute the tonometer method of Gaertner, which gives satisfactory readings. These are always about twenty millimetres lower than the pressure in the brachial artery. In some instances a crossing of the two curves of average brachial pressure and digital pressure was observed, hitherto unreported by others, and not seen in cases the mechanism of whose hearts was normal. Taking the pressure of both brachial and digital arteries has demonstrated the existence of certain different types, as that in which both central and peripheral pressures are stable; secondly, when the more central pressure is stable and the peripheral pressure fluctuates, and finally, when both pressures fluctuate.

**Studies on Immunity, with Special Reference to Complement Fixation.**—Alfred Blumberg (*Journal of Laboratory and Clinical Medicine*, April, 1918) says that a specific antigen (one which contains the etiological factor of the disease to be diagnosed) will only work in conditions where there is a polymorphonuclear leucocytosis. He divides antigens into three groups: A, that which contains the specific organisms of a certain disease, emulsified or autolyzed; B, those essentially the liquid culture of a specific organism, the only one in use at present being the heated liquid egg medium tuberculosis culture of Besredka; and C, those which are the watery or alcoholic extracts of tissues, notably the antigen for syphilis. The antigen recommended by Besredka is considered to be specific for tuberculosis, a disease in which lymphocytosis is usually present. Experiments conducted with tissue extracts of thirteen mammals, ten birds, eight reptiles, and seven fishes show that an antigen may be obtained for the diagnosis of syphilis from sources other than the beef or guinea pig heart, or the human liver or heart. There is a fourth group of complement fixation, that which takes place without the presence of an antigen. Following the statement of De Luca that hemolytic serum to which the urine of a pregnant woman is added will show hemolysis, but that the same system, to which normal urine is added, will not, Blumberg tested 259 samples of urine by the technic described in his paper, with very interesting results. Hemolysis

usually means pregnancy, although it occurred in such conditions as nephritis, scarlatina, and measles. With such reactions the clinical history of the patient may usually be relied on to separate the condition. If hemolysis occurs in the third tube, which is the control and should not hemolyze, it is due to some cause other than pregnancy.

**Recovery From Toxic Jaundice and Atrophy of the Liver.**—Barbara G. R. Crawford (*British Medical Journal*, April 20, 1918) reports three unusual cases of very severe toxic jaundice developing from T. N. T. poisoning in which recovery took place, associated with apparent complete regeneration of the liver. In each of the three cases the symptoms were typical of the fatal type of T. N. T. poisoning with atrophy of the liver to such an extent that its dullness in the mammary line shrunk to only from one to one and a half inch in extent. The treatment was symptomatic, except for the administration of large amounts of sodium bicarbonate which seemed to have a decidedly beneficial influence on the symptoms and the recovery. Following beginning recovery from the jaundice and associated symptoms the livers of all the patients returned to normal size with considerable rapidity. In all of the cases the recovery was permanent and complete, the patients having been seen six months after discharge from treatment, when they were in good health and working hard.

**The Atropin Test in Typhoid Infections.**—Alfred Friedlander and Carey P. McCord (*Journal A. M. A.*, May 18, 1918) applied this test in 228 cases of various diseases other than typhoid or the paratyphoids in order to be familiar with its technic and results in the event of an outbreak of one of the typhoid infections. In typhoid and the paratyphoids the administration of two milligrammes (grain 1/30) of atropin subcutaneously is supposed to give an increase in the heart rate of fourteen or less beats per minute, while in other conditions and in normal man this dose of atropine increases the heart rate by more than fifteen beats per minute. In a group of 170 nontyphoid cases, given the test exactly as described by its originator, sixty-four per cent. reacted negatively with an increase of heart rate above fifteen per minute, while thirty-six per cent. reacted positively. Neither the positive nor the negative reactions were associated with any particular disease and the positive and negative reactions were distributed throughout the various diseases in about the same ratio as for the whole series. Twenty-seven patients were given the atropine test on two successive days and of these fifteen reacted negatively on both occasions; four positively on both tests, and eight were on the borderline, reacting within the limits of negative on one and positive on the other day. The results of the application of this test show that it is in no way specific for the typhoid fevers, since insensitiveness to atropine is shown to occur in many cases other than typhoid infections and even in normal individuals, and since others have also shown that negative reactions may be quite frequent in the presence of proved typhoid or paratyphoid fevers. The outcome of the test seems to rest upon the condition of the vegetative nervous system.



# Proceedings of National and Local Societies

## Canadian Medical Congress

(Continued from page 47.)

### CANADIAN MEDICAL ASSOCIATION AND THE ONTARIO MEDICAL ASSOCIATION.

*Joint Meeting, Held in Hamilton, Ontario, May  
29th, 30th, and 31st.*

On the evening of May 29, 1918, Dr. H. BEAUMONT SMALL, Ottawa, the president elect of the Canadian Medical Association, delivered his address. He spoke in detail of the ideals, aims and purposes of the association, and gave a brief historical account of its origin and development. On Thursday morning, May 30th, the combined sessions of the Canadian Medical Association and the Ontario Medical Association commenced.

#### SECTION IN SURGERY.

##### Address in Surgery—The Cancer Problem.—

Dr. CHARLES H. MAYO, of Rochester, Minn., delivered this address. He said that unicellular life of both the animal and plant type divided the cell, and with it the cell intelligence for type and habits. The polar bodies, centrosomes, and chromosomes do not occur in the unicellular organisms as found in the cells of multicellular organisms, and while unicellular growth is parasitic, increasing as long as food can be obtained and environment permits, in multicellular life each cell must be controlled for community existence and harmony of work, and the controlling agents are the chromosomes and centrosomes. Probably the centrosome represents the dynamic power as suggested by Wilson.<sup>1</sup> Cancer is created in some manner by the division of one cell failing to carry with it the centrosome, the next division leaves it without control as a unicellular type of life capable of lawless growth more or less true to type but without a controlling brain. In reversion of type the cell becomes parasitic in existence, creating nests of cells, fungating growth, ulceration and degeneration or connective tissue, according to the location, tissue and blood supply and reaction to irritation, and primarily changing the local field into a slightly acid one as an environment suitable for its growth. Ultimately this fluid permeates the body, a curious cancer cachexia occurs, and with it there may be metastases, later becoming manifest by growth at any point where cells may be carried. Before this it occurs in adjacent local lymph glands permeated by the fluid, and cancer grows freely in them. It is this need for proper chemical fluid environment that explains why cancer cannot be transmitted into higher types of life, but can be transmitted in the lower. This explains the metastases occurring in cachexia, the whole body being in an acceptable fluid state.

**Methods of Training Surgeons.**—Dr. JASPER HALPENNY, of Winnipeg, read this paper, which was a consideration of the training of under-

graduates leading up to surgery and outlined the best way of connecting the training, internship, assistantship, postgraduate work and the visiting of other clinics. Dr. Halpenny somewhat severely criticised existing methods of training surgeons and quoted Rutherford Morison, of Newcastle, England, as saying that these were not on high lines.

##### Radical Operation for Cancer of the Breast.—

Dr. D. GUTHRIE, of Sayre, Pa., read a paper on radical operation for cancer of the breast. The paper was largely a résumé of the history of the various classical operative procedures dealing with cancer of the breast. The comparative merits of the operations initiated by Von Volkmann-Heidenhain, Willy Meyer, Halsted, Warren, Jackson and Rodman were discussed and beautifully illustrated on the screen. Guthrie acknowledged his preference for the Meyer operation upon which the technic of the subsequent ones was mainly based.

Doctor COBORN, of Guelph, Ont., after stating that a radical operation was needed for cancer of the breast, said that it would be a good thing if operations for cancer of the breast could be standardized. Each great surgeon had his own particular mode of performing the operation, which was confusing to students. If the best features of each operation were standardized it would make the operation simpler. Especial attention must be paid to the lymphatics in operations for cancer. He had employed the method of fulguration, Keating Hart, after operation, with gratifying results. The excellent results after cancer operations obtained by fulguration by Dr. W. Seaman Bambridge, of New York, were mentioned.

Doctor BEAL, London, Ont., did not think that the standardization of operations for cancer of the breast was quite feasible. True, there was one essential line of operative treatment which must be followed, but the small modifications mattered little one way or the other.

**Fractures of the Hip.**—Dr. M. S. HENDERSON, Rochester, Minn., read an interesting paper on this subject. The discussion was limited chiefly to the surgical treatment of cases of ununited fracture of the hip. Numerous statistics were adduced showing that ununited fractures were fairly frequent and arguing that if in the first instance these had been treated intelligently, those suffering from them would not have been condemned to go through life handicapped by lameness. It was pointed out that different methods had been used for the purpose of uniting fractures, as for example, metal nails and screws, bone transplants, autogenous and heterogeneous. The type of fixation to be provided was governed by consideration of the pathological conditions present.

**Teaching of Plastic Surgery on the Head and Neck.**—Dr. JOSEPH C. BECK, of Chicago, who read this paper, pointed out the necessity for teaching plastic surgery and after describing the types of injuries in the present war, he dealt with the possibilities of plastic reconstruction, illustrating his statements by representations on

<sup>1</sup>Wilson, E. B.: *The Cell in Development and Inheritance*. New York: Macmillan, 1911, 483 p.



the screen of the work he had done. Among the injuries to which he drew attention were those of the external nose, the external ear, and the loss of the greater portion of the nose. He described minutely, and by the aid of the screen, most clearly, the plastic reconstruction of the larynx, cartilage, and bone transplant; nerve plastic work with special reference to the facial hypoglossal and facial spinal accessory anastomosis, and cosmetic plastic operations. In concluding this paper on the work of the surgeon engaged in plastic operations with reference to war injuries, Doctor Beck emphasized its importance in civil life.

**Surgery of the Biliary Tract.**—Dr. G. R. SECORD, of Brantford, Ont., gave some observations on the surgery of the biliary tract. Attention was directed to points in diagnosis and the supposition was brought forward that cholelithiasis was probably an end result of cholecystitis. It was shown that there were two groups of cases, those active, with colic, etc., and passive with stomach disturbance, scapular pain, indefinite tenderness and so on. The unreliability of röntgenographic findings were noted. The following points in pathology were pointed out: Hydrops with stone in cystic duct, empyema, multiple calculi, small contracted gall bladder, "strawberry" gall bladder and adhesions. The operative treatment was cholecystotomy and drainage. Conditions associated with cholecystotomy were angiocholitis and pancreatitis.

**Surgery of the Colon.**—Dr. G. I. MCGUIRE, of Buffalo, New York, in a paper discussing surgery of the colon commenced by reviewing the opinions of surgeons on Lane's theories as to the causation of intestinal stasis, and the results thereof and the surgical measures of the great British surgeon for the relief of this condition. The question was asked, what is the general verdict of surgeons after years of sober reflection on Lane's work. Should his teaching and practice be entirely discarded, or was there some real element of truth in it? According to McGuire, although there was certainly an element of truth in Lane's theories and practice, his operative procedures were altogether too radical. In the opinion of McGuire, surgery of the large intestine must be limited, with few exceptions, to cases showing definite evidence of obstruction. Ileosigmoidostomy should be cast aside as an operation of election, resection being the ideal procedure. In fact, it is said that Lane has discarded ileosigmoidostomy in favor of resection. Side by side anastomoses were unsatisfactory, as demonstrated by the frequency with which diverticula developed in the blind end. End to end anastomosis gave the most satisfactory results. A feature of Doctor McGuire's paper was that special points of technic were beautifully and clearly demonstrated by moving pictures of the operation for right colectomy.

Dr. JASPER HALPENNY, of Winnipeg, Man., said that some of the main contentions of Lane's were correct. For example, with reference to the cause of enlargement of the thyroid, Lane had stated that it was frequently due to infection in the colon. Halpenny agreed with the view. He did not sew mucosa in gastroenterostomy on account of hemorrhage.

## SECTION IN OBSTETRICS.

**Address in Obstetrics.**—Dr. JOSEPH DE LEE, of Chicago, gave this address which dealt with methods and operations for reducing fetal mortality with special reference to the newer methods of Cæsarean section. The older and classical operations were described minutely. De Lee advocated the cervical operation of Cæsarean section in preference to the classical operation, because in his opinion, convalescence was much smoother than when older procedure had been followed.

**Late Repair of Injuries in Labor.**—Dr. W. H. WEIR, of Cleveland, Ohio, read a paper concerning the late repairs of injuries due to labor in which stress was laid upon the frequency of injury to pelvic organs in childbirth and the difficulty of estimating and repairing at the time. Attention was also drawn to the disproportion between reflex disturbances and the extent of the injury. Onset of symptoms might be long delayed, hence the advisability of repair before condition became aggravated. Advice was given concerning when to operate and when to employ palliative measures, and the procedures available were given.

**Repair of the Perineum.**—Dr. B. P. WATSON, of Toronto, discussed the technic of operations for the repair of the perineum. Immediate repair after delivery was recommended, and the importance of closure of tear in vaginal mucosa and coaptation of musculofascial layers was emphasized. Buried catgut sutures should be used. As for a secondary operation, there should be a thorough exposure and union of separated levator ani and of the torn triangular ligament. This paper was illustrated by lantern slides.

**Cancer of the Uterus.**—Dr. F. A. CLELAND, of Toronto, read a paper regarding the results of various measures in the treatment of cancer of the uterus in which the vaginal abdominal, radical abdominal, and Percy cautery operations were discussed. It was stated that preliminary thorough cauterization was the best means of eliminating primary dangers of hemorrhage, shock and infection, as well as of the secondary danger of implantation. As a palliative treatment of inoperative cases, the use of the Paquelin cautery, the Percy cautery, and the ligating of the blood were recommended.

**Normal Labor.**—Dr. IRVING W. POTTER, of Buffalo, N. Y., in a paper on this subject placed emphasis on the point that all labor cases must be considered as surgical procedures, and in accordance with this view patients must be properly prepared. Moreover, the element of time was of the greatest importance. The position of the patient during as well as after delivery was described, and the importance of the care of the breasts both before and after delivery to prevent infection was dwelt upon.

**Toxemia of Pregnancy.**—Dr. K. C. McIRWRAITH, of Toronto, discussed in an interesting paper the toxemia of pregnancy. It was shown that the toxemia which was peculiar to that condition, was usually of slow development, and, to some extent, controllable. The controllable factors were diet, eliminations, chill, neurotic factors. The essence and mainspring of treatment was the measure of toxicity which would show when delay was

possible and when action was imperative. The form of treatment when delivery might be delayed was described and the means of delivery when such action was imperative was told in detail.

#### SECTION IN MEDICINE.

**Modern Methods in Diagnosis of Nephritis.**—Dr. W. GORDON LYLE, of New York, in discussing modern methods in the diagnosis of nephritis, presented case charts of patients studied for renal function and the value and significance of blood analysis and functional tests in the diagnosis of early nephritis were discussed. Findings in several hundreds of cases with especial reference to the nitrogen partition of the nonprotein nitrogen residue of blood were presented.

**Treatment of Bronchial Asthma.**—Dr. I. CHANDLER WALKER, of Boston, read a paper on this subject. The importance of a careful history, and the sensitization and treatment of sensitive cases and the treatment of nonsensitive cases were discussed. Bronchial asthma was classified clinically and such a classification was discussed. Stress was laid upon the significance of protein in substances in the causation of bronchial asthma. Emphasis was also placed upon the fact that it was of considerable moment that asthma occurred frequently in young children.

**Autoserum Treatment of Chorea.**—Dr. ALAN BROWN, of Toronto, read a joint paper with Dr. George Smith, also of Toronto, on Autoserum Treatment of Chorea. The causation of chorea was discussed. The autoserum treatment was first introduced by Goodman, of New York. Brown and Smith have developed three modifications of this form of treatment. The report of technic and results obtained were dealt with, and a description was given of the withdrawal of blood from the patient, separating the serum from the blood and its injection into the patient's spinal canal.

**Moral Conflict in Functional Neurosis.**—Dr. BEATRICE M. HINKLE, of New York, in an able paper gave a psychological analysis of the moral conflict in functional neuroses. The views of Jung that such a conflict is found to be the basis of every neurosis were cited. It was pointed out that Freud's psychoanalysis was the first attempt of medical science to find in the psychic the cause of neurotic conditions. In his remarkable contributions to the subject were included his theories of repression and resistance, transference, infantile sexuality, dream interpretation, and the technic of psychoanalysis. Adler's theory of organ inferiority was explained, as well as Jung's theory of conflict arising from nonfulfillment of the life's task.

**Physiology of Intracranial Pressure.**—Dr. I. I. R. MACLEOD, of Cleveland, Ohio, who formerly worked in London, Eng., with Dr. Leonard Hill, who Doctor Macleod stated was the greatest living authority on the subject, discussed the physiology of intracranial pressure. The physical principles underlying the circulation of the blood in the intracranial cavity were considered. The physiological variations in the blood supply as revealed by comparisons of the pressure in the arteries supplying and veins leaving the brain and the brain volume. The different modes by which intracranial

pressure might occur were elucidated. It was explained that there was a cerebrospinal fluid which was displaceable in the cranial cavity and to which had been ascribed the means for bringing about intracranial pressure. However, under normal physiological conditions, the amount of cerebrospinal fluid in the cranial cavity was extremely small. In fact, the fluid acted as a lubricant only, in much the same way as synovial fluid. Expansion in the brain might occur by expansion of arteries and constriction of veins. Various experiments had been made on animals with the object of solving the problem of intracranial pressure. Incidentally, Doctor Macleod mentioned that the only instrument to correctly measure intracranial pressure had been devised by Leonard Hill. Venous pressure was of greater importance than arterial, but at the same time these were interdependent. When the heart failed, the cerebral pressure rose and the arterial fell. All increase in intracranial pressure was made by venous pressure. It was generally believed that a tumor of the brain, if so situated, would cause pressure. Doctor Macleod asked the question, why did a tumor of the brain cause intracranial pressure, and answered that it did not directly cause pressure. Indirectly it did, because it increased intracranial pressure by producing cerebral anaemia. Doctor Macleod pointed to the apparent absence of active vasomotor nerve fibres in the brain and the consequent dependence of the blood supply upon changes occurring in other parts of the vascular system.

#### SECTION IN PEDIATRICS.

**Address in Pediatrics.**—Dr. ISAAC A. ABT, of Chicago, Ill., gave the address in pediatrics, the subject being Asthma in Infancy and Childhood. Attention was drawn to the fact, that infantile asthma, which was of frequent occurrence, differed in type from that which occurred in adults. It was more prevalent among the rich, and the seasons had a considerable amount of influence upon its incidence. Locality had a curious effect upon its incidence; some got rid of it in dry climates, others in moist climates. It was a capricious disease, even in a house. In one room in a house it would occur, while in another room it would be absent. Therefore, locality exerted no particular influence. The various hypotheses as to its origin were discussed at length, bacterial, toxic, and so on. Asthma might be the expression of an anaphylaxis, but the view did not especially commend itself to Doctor Abt. It might, however, be said that in infants and children anaphylaxis was sometimes brought about by proteins. Injection of a small portion of egg albumin would produce asthma in a certain child. Pollens and horse hair would produce asthma. It has been claimed to be due to an exudative diathesis, because asthma was often found in connection with eczema, urticaria, adenoids, etc. Doctor Abt thought that to attribute asthma to exudative diathesis was purely speculative. Diet played a very important part in the treatment. Bronchial tetany had more relationship with asthma than bronchopneumonia. Nasal lesions might bring on an attack. It had a relationship to various diseases, to rickets of the nose for example.



Asthma occurred at almost any age in children, and began with marked bronchitis. Calcium chloride had had a beneficial effect on asthma in young children. Respiratory exercises were to be recommended for older children.

**Infant Feeding.**—Dr. DOUGLAS ARNOLD, of Buffalo, N. Y., read a paper dealing with practical infant feeding for the general practitioner. Reference was made to the importance of infant conservation as a war measure. It was shown that the common sense methods of infant feeding were to avoid formulae and patent foods and to encourage mothers to employ simple but well balanced milk mixtures according to tolerance. The vital importance of tolerance, its estimation, and how to feed within its limits in order to obtain the best nutritional results was pointed out. It was demonstrated how nutritional results were gauged and it was shown how to keep clear of the common pitfalls of infant feeding.

### SECTION IN OPHTHALMOLOGY.

Dr. E. BLAAUW, of Buffalo, opened the section in ophthalmology by reading a paper on a rare eye case with presentation of patient and microscopic slides. How the growth on the cornea began at the limbus was shown. Its excision, and recurrence, its second incision and recurrence, and seventeen treatments, with radium, with apparent inhibition of growth, were described. It might be mentioned that vision was good throughout.

**Paralysis of Divergence.**—Dr. JOHN WHEELER, of New York, considered the paralysis of divergence and said, in part, that neurology did not recognize such a condition as divergence paralysis, as no centre for divergence had been localized. Yet there could be no doubt of the existence of this condition and the clinical picture it presented to the ophthalmologist was clean cut. It was easily differentiated from paralysis of the external rectus although there was a superficial resemblance. The onset was sudden and manifested itself in diplopia for distance. When a test object was brought toward the eyes, this diplopia gradually decreased and binocular single vision resulted. There was no increase in diplopia when the test object was carried to the right or left. The ocular relations were not limited in any direction. A lesion of the hypothetical divergence centre must be assumed.

**Treatment of Simple Glaucoma.**—Dr. WALTER R. PARKER, of Detroit, in discussing the management of cases of simple glaucoma gave as his opinion that all such cases should be divided clinically into anterior or posterior glaucoma, based on the point as to whether or not the anterior or posterior lymph system was most involved. All cases should be treated medically before surgical treatment was considered. Visual fields including color fields, tension, and visual acuity should be considered in the order mentioned. All cases, in which medical treatment failed, should be subjected to iridectomy if anterior glaucoma and the field of vision was not excessively contracted.

The medical congress in Hamilton, after a five days' session devoted to the reading and discussion of papers bearing upon every phase of medical and surgical activities, came to an end on June 1, the

sixth day, with a combined medical and surgical clinic held in the Mount Hamilton Hospital. The clinic was conducted from the surgical point of view by Dr. Charles H. Mayo, of Rochester, Minn. Dr. Frank Billings, of Chicago, who was unable to be present, should have dealt with the medical aspects of the cases presented. In his absence the vacancy was filled by members of the local medical profession. The following types of cases were represented: (a) Goitre, simple, toxic and exophthalmic; (b) Anemias; (c) Focal Infections.

The scientific exhibits were of great interest, especially the Museum and Laboratory Section. A large series of beautifully mounted pathological and microscopic specimens, together with the steps in various laboratory procedures, were exhibited. Throughout the week, demonstrations were made with regard to the scientific methods employed. The institutions represented in this exhibition were the Canadian Medical Army Corps, the University of Toronto, the Western University of Toronto and the Connaught Antitoxin Laboratories of Toronto. So far as the museum series were concerned, the pathological specimens from the C. M. M. C. museum, shown by permission of Surgeon General Fotheringham, and mounted in the medical museum of McGill University, aroused the greatest interest. These were the first war specimens to reach Canada. Post mortem specimens were shown, as well as specimens from men who had recovered, the latter illustrating in a striking manner the large number of lives surgeons in the war hospitals had been able to save. The University of Toronto had one of the finest exhibits and there were shown also many unique specimens from the Western University of London. From McGill University came a valuable series representing congenital cardiac disease, animal parasites, and bronchopneumonia in infants. In the laboratory department, Dr. A. H. Caulfield, of the Connaught Laboratory, of Toronto, gave daily demonstrations. Doctor Caulfield has been recalled recently from France for the purpose of investigating the possibilities of surgical treatment and prevention of gas gangrene in wounds.

Doctor Davis, of the Toronto Municipal Laboratories, on Tuesday and Wednesday of the week demonstrated the methods of conducting a modern municipal laboratory, and particularly with respect to milk supplies and the modes in use for studying and determining the chlorite and bacterial content of water. The menace of the house fly was vividly depicted by growths of bacteria caused by allowing a fly to walk across a dish which was then placed in an incubation oven to permit the bacteria left by the fly to make their characteristic colonies. The Institute of Public Health, of London, Ont., which is affiliated with the Western University, held continuous demonstrations conducted by Doctor Luney, Doctor Campbell, and Doctor Crawford. A continuous demonstration of the estimation of the carbon dioxide tension of the alveolar was conducted during Thursday and Friday, by Dr. Paul Roth, of Battle Creek, Mich., and Dr. Maude Abbott, of Montreal.

The officers elected to the Canadian Medical Association were: president, Dr. H. Beaumont Small, Ottawa; vice-presidents, the presidents of affiliated



societies and the presidents of provincial societies, ex-officio; secretary-treasurer, Dr. W. W. Francis, on active service; acting secretary, Dr. J. W. Scane, Montreal. Officers of the Canadian Medical Protective Association were elected as follows: president, Dr. R. W. Powell, Ottawa; vice-president, Dr. J. O. Camirand, Sherbrooke, Quebec; secretary-treasurer, Dr. J. Fenton Argue, Ottawa.

The Ontario Medical Association, one of the associations which took part in the Canadian Medical Week, held its annual meeting in the Royal Connaught Hotel on the afternoon of May 31st, Dr. J. P. Morton, of Hamilton, the retiring president, in the chair. The following officers were elected: President, Dr. J. S. Cameron, Toronto; first vice-president, Dr. J. H. Mullen, Hamilton; second vice-president, Dr. J. F. Argue, Ottawa; honorary treasurer, Dr. Gordon Bates, Toronto; honorary secretary, Dr. T. C. Routley, Hamilton; assistant secretary, Dr. F. C. Harrison, Toronto. The place of meeting chosen for the Ontario Medical Association meeting of 1919 was Toronto.

One of the principal resolutions passed at the meeting of the Ontario Medical Association was to the effect that in view of the enormous responsibility thrown upon the medical profession in Canada as a result of the war, the remuneration of medical officers should be made commensurate with their services.

The meeting was distinguished by a great display of fervent patriotism which was stirred to boiling point by an impassioned address given by Major LAUCHLIN MACLEAN WATT, of the Black Watch, who has been sent by the British Government to the United States to aid in the formation of the American army and to arouse enthusiasm for the cause of the Allies. Major Watt is famous as a poet and novelist, and has also acted in the capacity of an army chaplain.

The meeting was a great success, a result greatly due to the efforts of the secretary of the committee on arrangements, Dr. J. Heurner Mullin, whose energy was unlimited and whose courtesy and urbanity were unfailing.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Ungearred Mind.* By ROBERT HOWLAND CHASE, M. D., A. M., Physician in Chief, Friends Hospital for Mental Diseases; formerly Resident Physician, State Hospital, Norristown, Pa.; Member of the American Medico-Psychological Association. Illustrated. Philadelphia: F. A. Davis Company, 1918. Pp. ix-351. (Price \$2.75.)

A favorite phrase, "I have half a mind to—," will soon be disused if people come to be convinced that they can bring a whole and a sane mind to bear on small worries and big difficulties, and Doctor Chase is a gentle and cheery conqueror for the man secretly obsessed by a fear of "inherited disease" or seemingly invincible tendencies. He admits the dangers, but bids us mount with him the heights of experience, which long years among the insane have given him, and see from thence how exaggerated our hopeless-

ness of victory over the mass of mental diseases swarming below.

Beginning with the child, he points out that disease is not a direct inheritance but a tendency, a tendency to be halted by wise training and wholesome surroundings. Too often the parents regard the matter as hopeless instead of making the child strong to resist the evil when adolescence brings free choice. The peculiarities which characterize insanity may be traced back to borderland conditions as promptings and tendencies which had beginnings even in the sane mind, but, because repressed in the latter, are designated eccentricities or faults. It is pleasant to learn that he puts the punster (not the wit) on the borderland, but not so comforting to many to learn that rhymsters, and those who love to illustrate by metaphor, or those whose fancy can see forms and shapes in clouds and trees, in design of carpet or paper, must be put there too. But these need not advance into cloudiness of intellect so long as they can correct their impressions, which a lunatic cannot do.

Some show madness to be a disease of civilization, and the author partly confirms this by the fact that insanity among the colored races, once rare, now equals that among the whites. At the same time, he remarks that the larger percentage of cases which have come under his care have been country folk, small farmers, field workers, etc. This he attributes to hard work and exposure, loneliness, monotony, and poor food. Another large percentage is drawn from immigrants who have to face hard work in uncongenial surroundings, disappointed hopes, and the loneliness enforced by knowing only their own language.

He gives as the chances of recovery some figures drawn from the literature which state that of ten attacked with insanity five recover. Of these five, two will remain well, the other three have subsequent attacks during which two will die. The popular idea that the insane return to sanity just before dying is a mistake; over ninety per cent. die unconscious, though, just as the rational man will do evil in "a moment of temporary insanity," so the madman will sometimes astonish his friends by having "lucid intervals," their lucidity so strong that courts of law have admitted the righteousness of a will made during such a period. The chapters on autistic thinking and abulia, or the weakened power to will, if comprehended by the laity might do much to avert the breakdown of those whose actions and words are excused as "rather queer" or "eccentric" or "wretchedly denounced as 'beastly ill tempered' or 'insufferably conceited.'" But chiefly is the book to be commended for its adaptability to the minds of the scared, anxious people who resolutely but sometimes unwisely lock up the secret fear of approaching insanity.

## Births, Marriages, and Deaths.

### Died.

BALCH.—In Galway, N. Y., on Wednesday, June 5th, Dr. William Vestus Balch, aged sixty-eight years.

DAVIS.—In Kineo, Me., on Sunday, June 16th, Dr. Gwilym George Davis, of Philadelphia, aged sixty years.

HALL.—In New York, on Monday, July 8th, Dr. William H. Hall, aged eighty-four years.

HILL.—In Washington, D. C., on Tuesday, July 2d, Dr. Richard Franklin Hill, Assistant Surgeon, U. S. Navy, of Philadelphia, aged thirty-one years.

LINCOLN.—In Brookfield, Mass., on Monday, June 24th, Dr. Eugene A. Lincoln, aged fifty-two years.

RICHARDSON.—In Duxbury, Mass., on Thursday, June 20th, Dr. Frank Chase Richardson, of Boston, aged fifty-eight years.

SEVERANCE.—In Greenfield, Mass., on Monday, July 1st, Dr. William Sidney Severance, aged eighty-nine years.

SOMERS.—In Cambridge, Mass., on Monday, July 1st, Dr. John E. Somers, aged sixty-seven years.

STEDMAN.—In Baltimore, on Friday, June 14th, Dr. Joseph Cyrus Stedman, of Boston, aged fifty-one years.

WEST.—In Philadelphia, on Friday, June 26th, Dr. S. Leslie West, aged seventy-three years.

WEYGANDT.—In Brooklyn, N. Y., on Wednesday, June 12th, Dr. Frederick Weygandt, aged seventy years.

WILGUS.—In South Bend, Ind., on Friday, June 7th, Dr. James Livingston Wilgus.

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## Original Communications

### THE BLOOD AND THE SOUL IN ANCIENT BELIEF.

*Their Relation to the Evolution in Medicine of Humoral and Pneumatic Theories.*

#### I.

#### THE SOUL AND THE BREATH.

By JONATHAN WRIGHT, M. D.,  
Pleasantville, N. Y.

As we look over the field of primitive medicine, open to us in the reports of those who have visited uncivilized tribes and studied the social phenomena exhibited by them, and as we seek for the links which bind the medicine of prehistoric man with the medicine of the oldest civilizations of which we have considerable records preserved through the vicissitudes of many thousands of years and revealed to us by the labors of Egyptologists and Assyriologists, we take note of two phenomena which arrest the attention of medical men, notable, because they rest upon fundamental physiological processes without the continuation of which life is impossible. These processes are so familiar in their manifestations to the observation of all men, even to those savages lowest in the scale of intelligence, that their significance cannot be mistaken in the bearing it has on the existence of living things in the animal world. I refer of course to the respiration and the vital importance of the blood. It is plain that, when the breathing stops for any considerable length of time, life leaves the body, which then is incapable of movement, soon becoming corrupt and mouldering away. Scarcely less insistent in activities in the reasoning faculties of the mind of primitive man is the fact that the loss of blood inevitably leads to this loss of breath and the departure of what we mean by animal life. These phenomena, giving rise as they do to the many activities in the reasoning faculties of the mind of primitive man acquire some significance in the attention of all medical men as apart from lay observers, but for those professional men acquainted with the history of medicine and with theories upon which its practice has been based, it possesses an importance which it is impossible for the uninstructed to realize. We find medical historians who have busied themselves with the records of the Egyptian and Mesopotamian civilizations, struck with the revelation that humoral pathology and the

theory of the pneuma penetrated the medicine which blossomed on the Nile and the Euphrates thousands of years before the times of Galen and Hippocrates. To the evidences of this I shall shortly have occasion to refer. It is as true today as in the beginning, that, after all, blood is the life and the breath is its food. Nothing is more plausible than, that upon derangements of these, sickness and death ensue. These are fundamental ideas still reasonable and held in the estimation of men.

Our only resource for an endeavor to pick up the threads in early cultures on which these ideas in regard to the blood and the breath are strung, is to search through the beliefs which modern primitive men entertain. The Mesopotamian and the Egyptian civilizations had progressed too far and had already become too complex when they first of all come to our notice for a sufficient analysis of their thoughts on the nature of things so fundamental. Ideas in regard to the blood and the soul had become developed beyond the point where they include, by their mere vagueness, the germs of medical science in a concept which also includes the mystery of life and death as held in religious thought and expressed in magical practice. We must know more intimately than archaeology can teach the minute manifestations of these common undifferentiated primitive ideas. Faulty and full of uncertainties as is the method, we must question modern primitive men to get an inkling into how prehistoric men came to ascribe to the pneuma and to the blood properties which regulate the physiology of man, or rather what affiliation these ideas had with other phenomena and mysteries which surrounded the savage. As a matter of fact it is quite obvious how it came about that man attached life and death values to them. It needs no very active imagination firmly to fix in our minds the belief that human intelligence, as soon as it was capable of reasoning from observation to sequence, took note that excessive bleeding was followed by cessation of breathing, of movement and by the stillness of death, even though there existed no criterion of death but the decomposition of the body. This was a materialistic manifestation.

The association of the breath with mystical concepts is somewhat less self evident. The gases set in motion by respiratory movements are such firmly impressed real facts to us, we do not realize that they are invisible and naturally fall for primitive man into mystical categories. Something passes out

of the dying man with his last gasp and does not return. This he knew, and to the savage mind this was intimately associated with and might become the ultimate cause of death, as it is for us the proximate link in a process which now includes for us certain intracellular chemical changes. It is only a part, a very small part to us of the change which supervenes, but for primitive man it included all those things which we as materialists have grouped into differentiations of mechanical and chemical, organic and inorganic formulas and which as spiritualists we, with less precision, still associate with concepts of the soul. For primitive man, things psychical and things physical, much less things physiological, had not emerged into differentiations. Yet the primitive man's concept lingers in our phraseology and "when we draw our last breath," "we give up the ghost," just as the Australian was about to do when he was saved by the doctor in the tale taken from the lips of the native by Mr. Howitt (1). "His Murup (spirit or ghost) had gone from him and nothing remained in him but a little wind. . . . The dead man was just breathing a little wind when Dorobauk (the doctor) laid himself on him and put the Murup back in him." This was exactly the procedure of Elisha in II Kings iv: 34-35 after praying to the Lord. "He went up, and lay upon the child and put his mouth upon his mouth, and his eyes upon his eyes, and his hands upon his hands; and he stretched himself upon the child; and the flesh of the child waxed warm. Then he returned, and walked in the house to and fro; and went up, and stretched himself upon him: and the child sneezed seven times, and the child opened his eyes." Hopkins (2) in discussing the religion of the Rig Veda says that in the earliest periods of Hindu theology the word *âtma*, so philologically allied to the German *athmen* and the *anima* of the Græco-Latin etymology has a very definite meaning, though hard to translate into modern tongues, since the men who speak them have lost the conception. It is "breath, spirit, self, soul," as Hopkins gives it, and the connection between these is quite obvious without going into the examples of its use in the Rik. In the Upanishads, breath and immortal spirit are made one.

Breasted (3) quotes from a hymn to Osiris in which the god is saluted as the father and mother of men. It declares "they live from thy breath." We know it was the breath of life which the Lord Jehovah breathed into men's nostrils (Genesis 2:7). There can be no question that this "life" for the Jew and the Egyptian and the Australian was a thing which we have, in a materialistic way, recognized to be chiefly oxygen and nitrogen and which we have in a spiritual way apprehended as the soul of man, or perhaps as its vehicle. The early animistic theory of vitality and, to a large extent, modern belief, thus confounds the breath and the soul and intimately associates it with physiological processes. We find it something of a step now, but primitive man found it a natural inference that the disturbances of the body were due to disturbances of the soul; interference with the breath was its manifestation for him.

The distinction between physiology and pathology

is still indeterminate. To primitive men vague and indistinct that idea must have been, for some apparently conceived of the body as carrying on its functions for a time at least—though imperfectly perhaps—in the absence of the soul even without the patient being aware of it. Its prompt restoration was urgently required. Confusing the absence of the soul, as they believed, during a faint with its absence at death, stories of resurrection were common. Primitive man seems to have transmitted to his descendants the belief that the soul leaves the body at death, and in the Scottish Highlands (4) even before death those gifted with second sight or perhaps common people might see the wrath leaving the victim's body, even if he was to die by violence. By the Thompson Indians of British Columbia it was believed that "the soul may leave the body a long time before death, although it does not do so as a rule. If the soul leaves the body, the latter must soon die unless the soul returns. Whenever the soul reaches the spirit land, the body immediately dies. The body needs the soul but the soul does not need the body." (5) . . . "The soul is supposed to leave the body through the frontal fontanelle. Shamans can see it before and after it leaves the body, but lose sight of it when it gets farther away toward the world of souls." "When the ghosts take away a soul (among the Chinooks), (6) its owner faints at once. Then the seers are paid and their guardian spirits pursue the ghosts. The soul which has been taken away sees the ghosts."

By the time of the Greeks we find Plato putting into the mouths of Socrates and his interlocutors in the *Phædo* references to the prevalence of belief among the ordinary people of their day that the soul issues forth like smoke or air from the body and vanishes away into nothingness. They are haunted by a fear the wind may really blow it away and scatter it. This the philosophers repudiate, but it points unmistakably to the primitive union of the soul and the breath or *pneuma* in furnishing life and health to the body. The missionary, Weeks, (7) noticed among the Congo cannibals that the mouths and nostrils of the recently dead were always plugged and tied, and, to his questions on the subject, he always received the same reply. "The soul of a dying man escapes by his mouth and nose, so we always tie them in that fashion to keep the spirit as long as possible in the body." Once released no one knew what trouble they might cause. Archæologists have shown that in the Egyptian tombs a way was arranged through the wrappings of the mummy for the *ba*-soul to go in and out. Curiously enough the human mind, in a consideration of the soul as an immaterial concept nevertheless almost invariably thinks of it as requiring some material object or some geographic locality or cosmic space, or supra or infra mundane sphere which it may inhabit. These old Egyptians in the chamber of death provided stone heads in which it might find refuge as the body mouldered in decay and perished. (Maspero.)

With such beliefs, and especially with the ideas of the soul leaving the body at fainting and the consequent belief in resurrections, there arose also many



tales of the soul's experiences when detached from the body. In Sumatra and Nias and among the North American Indians it was believed that the soul could escape or be decoyed from the body, linger outside of the body or go for a season to the land of spirits. The visit to hell by various heroes, Ulysses, Orpheus, Aeneas, Virgil and Dante, to name only a few, grew out of this conception evidently (8). Busy as the poets have been with the notion, the priest doctor of primitive man was busier and found it more profitable, on the whole, than the poets, because it was his job to get the vagrant souls back, and since the patient could not afford to have his soul wandering around at the risk of imminent death to him, he exemplified the adage, "All that a man hath will he give for his life"—and here veritably life was the soul.

It would be interesting to follow more of the ramifications of this independent soul of man, freed from the body yet free to return to it. It was not only man who was supplied with a soul but all nature. "The dwellers in or habitual travelers in the desert assert that the mirages seen are the shadows of long vanished cities, live trees, and assert the same pictures in the air are seen constantly over the same localities and the leader of the caravan, who had traveled the route all his life, further declared that we also, should we perish in the desert, after a certain period of years, would flit and dance around in the air over the location of our destruction" (9). Thus the health of man fell into a perfectly consistent category, made up of an all embracing pantheistic scheme of things.

The idea was that the ghost cannot pass running water. Where Tam O'Shanter eluded the pursuing spirit, Nanny, was at the "Auld Brig" across the brawling Ayr. The Algonquins believe that, when one is sick, his soul, escaping from the body, sometimes gets as far as the brink of the river of death, but, not being allowed to cross, returns and reenters him which rouses him from the stupor in which he fell on its departure. "Acting upon a similar notion the ailing Fiji will sometimes lie down and raise a hue and cry for his soul to be brought back. 'Thus,' continues Mr. Tylor, 'in various countries the bringing back of lost souls becomes a regular part of the sorcerer or priest's profession.'"

The physician of primitive man must have been very reluctant indeed to separate himself from a companionship which shared in the lucrative rewards which must have accrued to ministrations of this kind. Removing an evil appendix could not compete with the restoration of a lost soul, and we need not be surprised that in sickness "among the Buddhist tribes the Lamas carry out the ceremony of soul restoration in most elaborate form" (10).

Of course, belief in the success of the crude process of lying on one's back and lustily yelling for the soul to return must have been discouraged by progressive members of the profession in Fiji, and we have no reason to wonder that in various countries the bringing back of lost souls becomes a regular business. "When a person believes that his soul has been taken away, he must send a Shaman in pursuit within two days, else the latter may not be able to overtake it" (11). When the soul

belonging to the patient cannot be caught, in Africa, according to Miss Kingsley, (12) they do not give up the fight, but "the witch doctor himself gets ready as rapidly as possible another dream soul, which, if he is a careful medical man, he has brought with him in a basket." To prevent the entrance of an unsuitable soul, when the doctor has discovered the patient's own spirit has flown away, a cloth is clapped over his mouth and the patient is almost suffocated. "Then the patient is laid on his back, and the cloth is removed from the mouth and nose, and the witch doctor holds over them his hand, containing the fresh soul, blowing hard at it so as to get it well into the patient. If this is successfully accomplished, the patient recovers. Occasionally, however, this fresh soul slips through the medical man's fingers, and before you can say 'knife' is on top of some 100 feet high or more silk cotton tree, where it chirrup gaily and distinctly. This is a great nuisance. The patient has to be promptly covered up again. If the doctor has an assistant with him, that unfortunate individual has to go up the tree and catch the dream soul. If he has no assistant, he has to send his power up the tree after the truant; doctors who are in full practice have generally passed the time of life when climbing trees personally is agreeable."

Amusing as this is in Miss Kingsley's entertaining narrative, we must halt a moment at the account of how the doctor had to blow hard to get the recalcitrant soul back into the body, conceiving of it, or artfully meeting the conceits his fellow men had of it as a sort of smoke. An important part of the surgical therapeutics of practitioners of medicine among many primitive tribes is the sucking cure. It is not probable that this arose from the idea of sucking out a foreign or disordered soul from the affected body. In all likelihood it came from endeavors to get out more material objects. Yet in Australia a mouthful of wind was sufficient evidence, at times, that the operator had succeeded in removing the evil influence. Again in Australia we find the medicine man strengthening his patient by sitting on the windward side of him, in order to let the emanation of his stronger soul pass into the ailing person. In another continent, among the South Americans, Father Dobrizhoffer declares that "if the whole body languished, if it burns with malignant heat," the practitioners, whom he impolitely calls harpies, fly to suck and blow it. In California (13) as in Australia, we note the operator claiming he had got out the disease in the form of air, blowing it out of his mouth (14). Tylor declares, "such processes were in full vogue in the West Indies in the time of Columbus, when Friar Roman Pane put on record his quaint account of the native sorcerer pulling the disease off the patient's legs (as one pulls off a pair of trousers), going out of doors to blow it away, and bidding it begone to the mountain or the sea; the performance concluding with the regular sucking cure and the pretended extraction of some stone or bit of flesh, or such thing, which the patient is assured that his patron spirit or deity (cem) put into him to cause the disease, in punishment for neglect to build him a temple or honor him with

prayer or offerings of goods." Blowing on the affected part Avebury (15) quotes from de Sahagun as a medical practice among the ancient Mexicans, and from *Hearne's Travels* Bancroft (16) gets his authority for the assertion that among the Northern Indians "for inward complaints the doctors blow zealously into the rectum or adjacent parts." Vambery (17) declares that in Central Asia they requested their dervishes or holy men who had been to Mecca to use the holy breath, that is, they breathed three times on the painful spot; usually immediate relief was experienced. We may conjecture that the idea here, and perhaps the origin were diverse—the healing influence of the afflatus from an individual who had been impregnated with the influence of a god or spirit, and the blowing away of an extracted ethereal or aerial essence of an evil indwelling spirit.

This may be a spirit or soul which belongs normally elsewhere, but in foreign quarters has a pathological influence, so that disease may occur not only from the escape or misbehavior of one's own soul, but from the invasion of another person's soul, though what effect it has is not always very clear, and sometimes the results do not seem very calamitous. In order to show the early interlacing of pneumatic and humoral theories we may here note that in Africa the life means a spirit (18), and there also "the blood is the life," hence blood liberated or shed "is the liberated spirit, and liberated spirits are always whipping into people who do not want them." Some blood from a female was thought to have contaminated a young Fan, and "the opinion was held that the weak spirit of the woman had got into him." Among the Shoshone, according to Lowie (19), a dzoap, which he speaks of as a ghost, may enter the patient's body and fly away with his mind. Under these circumstances madness usually ensues. In Australia (20), "if a young man or young woman of the Wakelbura tribe eats forbidden game, such as emu, black headed snake, porcupine, they will become sick and probably pine away and die, uttering the sound peculiar to the creature in question. It is believed that the spirit of the creature enters into them and kills them." On the other hand, in a distant quarter of the globe, in Greenland, the entrance of the soul places the sick person on the high road to recovery. "When after an exhausting fever the patients come up in unprecedented health and vigor, it is because they have lost their former soul and have had it replaced by that of a young child or a reindeer (21)."

This idea parallels the ministrations of the Australian doctor whom we have seen generously allowing his more vigorous spirit to be blown by the wind into the patient.

We might easily pursue the thread of these ideas into the primitive cult of metempsychosis which was once so widespread in the ancient civilizations, and which still lingers in the beliefs of millions of men, but it will be more profitable to refer to a subject less well known outside of ethnology—the belief in a plurality of souls. Lest the Egyptologists should say at once this was a theory which arose in the high civilization which flourished thousands of years ago on the banks of the Nile, and was

subsequently carried to the primitive African tribes, I turn first to an account of it from another continent by Schoolcraft (22): "It has been found that the Indians of the United States believe in the duality of the soul." Among the Chippewa burial customs it was noted that "over the top of the grave a roof shaped covering of cedar bark is built, to shed the rain. A small aperture is cut through the bark at the head of the grave. On asking a Chippewa why this was done, he replied: 'To allow the soul to pass out and in.' (Remember the device noted in the Egyptian tombs for the same purpose.) 'I thought,' I replied, 'that you believed that the soul went up from the body at the time of death, to a land of happiness; how, then, can it remain in the body?' 'There are two souls,' replied the Indian philosopher. 'How can this be?' Said he: 'You know that in dreams we pass over wide countries, and see hills, and lakes, and mountains, and many scenes, which pass before our eyes and affect us, yet at the same time our bodies do not stir, and there is a soul left with the body, else it would be dead. So, you perceive, it must be another soul that accompanies us.'" The Dacotas say "one person has four souls; one goes to the land of spirits, one goes in the air, one remains about the corpse, and one stays in the village."

Boas (23) says that among the Chinook Indians "each person has two souls, a large one and a small one. When a person falls sick the lesser soul leaves his body. When the conjurers catch it again and return it to him he will recover." It is in Africa, however, where the belief in the plurality of souls is most frequently reported, and, while there is corroboration (24), I have here, as so often, to draw largely on the works of Miss Kingsley, who seems to have devoted a good deal of attention to this point. It seems quite possible that this may have been either the origin of the Egyptian ideas or it may have been derived from the latter. According to the Rev. Mr. Nassau it may be conjectured that this plurality of souls arises from the multiplicity of observations which the natives interpret in more or less allied ways, from the shadow, the dream spirit, etc. According to Miss Kingsley (25), "the number of souls possessed by each individual we call a human being is usually held to be four:

"The soul that survives.

"The soul that lives in an animal way in the bush.

"The shadow cast by the body.

"The soul that acts in dreams.

"I believe the most profound black thinkers hold that these named souls are only functions of the true soul,<sup>1</sup> but from the witch doctor's point of view there are four, and he acts on this opinion when doctoring the diseases that afflict these souls of a man. The dream soul is the cause of woes

<sup>1</sup>The Socratic idea of the plurality of functions of the soul is an almost exact parallel and this may also be noted in Malay magic (WALTER SKEAT: *Malay Magic*, Macmillan & Co., London and New York, 1900): "Every man is supposed (it would appear from Malay charms) to possess seven souls in all, or, perhaps, I should more accurately say, a sevenfold soul. This 'septenity in unity' may perhaps be held to explain the remarkable importance and persistency of the number seven in Malay magic, as, for instance, the seven twigs of the birch, and the seven repetitions of the charm (in soul abduction), the seven blows administered to the soul (in other magical and medical ceremonies), and the seven ears cut for the Rice soul in reaping."



unnumbered to our African friend, and the thing that most frequently converts him into that desirable state—from a witch doctor's point of view—of a patient. It is this way: The dream soul is, to put it very mildly, a silly, flighty thing. Off it goes when its owner is taking a nap, and gets so taken up with skylarking, fighting, or gossiping with other dream souls that sometimes it does not come home to its owner when he is waking up. So if any one has to wake a man up great care must always be taken that it is done softly—softly, namely, gradually and quietly—so as to give the dream soul time to come home. For if either of the four souls of a man have their intercommunication broken, the human being possessing them gets very ill. . . . In all cases of disease in which no blood is showing, the patient is suffering from something wrong in the soul." It is the bush soul apparently that has to do with the bodily health of its host, who, unless he possesses the very exceptional power of second sight, cannot see his bush soul. "Offerings of various kinds are made to appease the bush soul. If it works well, the patient recovers, but if it does not he dies. Diseases arising from derangements in the temper of the bush soul, however, even when treated by the most eminent practitioners, are very apt to be intractable, because it never realizes that by injuring you it endangers its own existence. . . . A man may be a quiet, respectable citizen, devoted to peace and a whole skin, and yet he may have a sadly flighty, disreputable bush soul which will get itself killed or damaged, and cause his death or continual ill health" (26). A Jekyll and Hyde affair apparently.

The body soul of a deceased person may enter into another person, as we have seen on other authority, but I must refer the reader to the sprightly Miss Kingsley. "Another soul, an uneasy stranger, intrudes sometimes and takes the place of the dream soul. When the patient collapses in a faint, it is supposed that this treacherous intruder has suddenly deserted and left the other souls of the man in such confusion that they cannot keep the man's inside in the proper order—other spirits attempt to get in—convulsions, delirium, high fever, etc., ensue, and with all these evil souls the witch doctor has his hands full. When the doctor succeeds in getting the original intruder, the 'sisa,' out of the body, a high fee from the relatives is necessary to teach it the way to Hell, where it belongs. Otherwise, if it gets loose, it may act like the diphtheria germ or the typhoid and cause trouble to the neighbors, who have been cautioned to go around with cloths over their noses and mouths—like the gowns the modern orthodox doctor dons when he goes into a case of scarlet fever or diphtheria. The black man, it seems, reasons quite as acutely as his white civilized confrère; the only difference is the fact from which they start, the germ or the soul. It is expensive to get the captured soul to Hell, and an irregular practitioner, for a smaller fee, undertakes to dispose of it in some less effectual way—disinfection not properly carried out—then the first thing one knows a baby has an attack of tetanus in the family and dies, and another one has fits, and those moving in the higher circles take care

that they hire a practitioner that conscientiously goes to Hell with the bad spirit—whatever the cost. The babies that have died are chopped up fine, so as to kill or drive the 'sisa' permanently out of the family. There are many more diseases which result from trouble with the dream soul, and more still from disturbances of the other souls. . . . But of all of the spirits, the 'sisa' is perhaps the most aggravating. Sometimes it wanders about and, taking advantage of an open mouth and the absence of a kra, or dream soul, it enters a person and causes rheumatism, colic, or other painful ailment. The medical man has to be summoned at once to get it out. All the people in the village, particularly babies and old people—people whose souls are delicate—must be kept awake during the operation and have a piece of cloth over the nose and mouth."

This is to keep the dangerous soul, when it is driven out, from getting into any one else, especially the susceptible. Curiously enough, if the reader will turn to an illustration of Catlin's (27), drawn from nature, he will find among the North American Indians, the Blackfeet, bystanders guarding against exactly the same danger by holding their hands before their mouths. There in America, as in Africa, every one howls "so as to scare the 'sisa' off them."

It is a pleasure to quote even second or third hand from Miss Kingsley (28), as she infuses her own humor into a story absurd enough in itself, but which loses nothing in her telling of it. In her amusing manner she says, "according to Mr. Frazer, in that benighted Nass River district, those native American doctors hold it possible that a doctor may swallow a patient's soul by mistake. This is their theory to account for the strange phenomenon of a patient getting worse instead of better when a doctor has been called in, and so the unfortunate doctor who has had this accident occur is made to stand over his patient while another medical man thrusts his fingers in his throat, another kneads him in the abdomen, and a third medical brother slaps him on the back. All the doctors present have to go through the same ordeal, and if the missing soul does not turn up the party of doctors go to the head doctor's house to see if by chance he has got it in his box. All the things are taken out of the box, and if the soul is not there, the head doctor, the President of the College of Physicians, the Sir Somebody Something of the district, is held by his heels with his learned head in a hole in the floor, while the other doctors wash his hair. The water used is then taken and poured over the patient's head."

Even more absurd is the account given by Declé (29) of the performances of a woman doctor of the Goa tribe in Africa who is treating a patient who seems to have got mixed up with a germ or a soul from a relative who had died. "The sick man sits on the ground, and a female doctor passes her hands over his leg and pretends to throw that which she takes from it into a basket at her side. This is the 'musimo,' or spirit of the dead man, which has been withdrawn from the heir's body. The whole family assembles and goes through the



same pantomime. They then take a piece of stuff and wrap it tightly over the basket to prevent the spirit from getting out. The next day the doctor comes back and says to the basket, which has been left in the hut of the invalid, 'You are quite well, are you not, and have slept well?' The spirit replies with a whistle, which the medicine lady translates thus: 'Yes, I have died once, and I am very well.' 'Are you comfortable in this basket?' the doctor then asks. 'Will you stay there?' Another whistle. 'Yes, yes,' answers the spirit, 'I am comfortable, and I wish to stay here.' After that follows a process called 'marombo,' which is pursued in all cases of illness alike. The doctor dances, and, during the dance, places a piece of stuff over the head of the patient and a gourd on the top of that. In this uncomfortable posture the patient is expected to wag his head from side to side while the dance continues. Presently he also gets up and dances himself, a sign that the evil spirit within him—or was it within the basket—"wishes to leave." "Upon this the doctor pretends to faint, breaking off short in the middle of the dance and clutching at his, or more generally her, heart—for most doctors are women. . . . The next day the man is well, or ought to be." Ellis and others tell similar stories of the African natives, which add much to the complexity of the subject, but despite this and the, to us, ridiculous side of many of the stories, it is plain that this ramifying belief of primitive man in the pathogenic and in the therapeutic effect of the soul on the body is directly associated with the respiration and is a primitive form of the pneumatic theories which later appeared in medical history.

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(To be continued.)

## THE TONSIL OPERATION AND INDICATIONS WHICH REQUIRE IT.\*

An Analysis of 430 Cases.

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In discussing the indications for removal of the tonsils, I am guided by experience gained in several hundred operations and from these I quote pathological conditions which require operative interference. It is easier to decide when to remove tonsils, than when to abstain. The percentage would be low in cases which do not require removal. The majority of patients come to me for some local condition either of the tonsil itself or closely allied with it and in a few cases the connection is very remote. I would advise no operation in an adult person who has a clean, visible, smooth tonsil surface, has never had any inflammatory action of the tonsils, or who at least has not had an attack of tonsillitis for ten years or longer. Operation should not be done in patients also of adult age, eighteen or twenty years, whose tonsils never become tender or painful and who are in all respects healthy individuals. Boot (1) and others have reported that often tonsillectomy has been done, not only with no advantage to the patient, but even with positive detriment, this being particularly true in children. Where a properly performed tonsillectomy has been done and the indications were present, I would positively disagree with this statement I have never seen harm done the patient from this operation. I further believe that, in children particularly, the operation is, when properly performed, justified and of the greatest benefit improving not only the local condition of the throat, but also relieving and removing a constant source of infection. Many remote diseased conditions, such as rheumatism, endocarditis, and neuritis are relieved and the child avoids contracting such acute contagious processes as diphtheria and cerebrospinal meningitis. Boot further points out that deformities of velum, absence of uvula, and infected stumps result from operation and have been made by the inexperienced and occasional operator. Of course deformities may result from any improperly performed operation, whether surgery of the tonsils, appendix, extremities, joints, or any other part of the human anatomy. I would advise the tonsil operation in persons having some of the following indications:

1. The operation should be done in all persons who have attacks of tonsillitis, even if several years apart, and in those in whom the tonsils become at intervals slightly painful or tender. The latter applies especially to children. These mild attacks are perhaps unnoticed in children except that the parent may state that the child has had a little fever, has been irritable, or has complained that the tonsils were tender. On examination of the throat, no swelling is present; this condition is simply a mild attack of this disease. "Growing pains," being of rheumatic origin are often traceable to tonsils.

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2. In a good many patients, especially adults, there is a state of chronic inflammation in or around the tonsils, which is characterized by reddening of the anterior pillar covering the tonsil and the history that the tonsils are at times slightly sore or tender. This condition should indicate the removal of the tonsils, as other diseased conditions of the tonsils are generally found with it. In adult life the tonsil is so largely fibrous that functionally it is of no importance and "like the appendix is a vestigial organ which evolution, except in infancy, has rendered worthless."

3. Chronic inflammation in or around a submerged tonsil requires removal of the tonsil in every case. In all these cases when the tonsils are uncovered at the time of operation I find hidden deposits of foul cheesy material, absorption of toxic material taking place in the individual. Absorption also takes place when these cheesy deposits are found on the surface of the tonsil, without the tonsil being submerged; nearly all of these individuals have a foul breath. The crypts of the tonsils at all times contain myriads of disease germs and the masses in the crypts consist of bacteria, desquamated epithelium, and sometimes pus. It has been shown that acute tonsillitis has been followed by appendicitis and the same organism that produced the throat infection has been recovered in the appendix at the time of operation. The pearly white spots of *Mycosis fungoides* closely resemble these cheesy white deposits and is also an indication for the complete removal of the tonsils. This latter is a rather rare condition. The deposit shines like pearl and is very tough and tenacious in efforts at removal.

4. Another condition which always requires removal of the tonsils is the presence in the tonsil, either near the surface or deep in the tonsil structure, of a collection of pus, without any accompanying inflammatory action. This condition is unknown to the patient. The quantity of pus may be minute or may amount to as much as six or eight drops, and may be deep in the tonsil and not discovered until a section of the removed gland is made after removal. A small abscess of this character may be broken into at the time of the operation and is discovered then. An abscess of this character was found in a woman, who had been suffering from perionychia, a disease of the finger nails. This disease is a secondary infection from some other focus in the body. In this case the abscess was broken into while traction on the tonsil was being made. These patients are all advised to have the tonsils removed.

5. In all children from four to fifteen years, I would advise the removal of the tonsils if there is a single indication for operation, even though they are free from attacks of tonsillitis. This would only be a prophylactic measure against not only local trouble liable to ensue up to puberty, but also as a preventive of many serious systemic infections. It is especially necessary that the tonsils of children, either with or without collection of adenoid tissue, be removed if there is hypertrophy sufficient to obstruct respiration or to make swallowing difficult. Examination of school children has shown enough

of the deformed protruding lower jaws or the narrow misshapen arches of the upper maxilla to warrant removal of the tonsils and adenoids in all children during this period of life. These deformities, together with the resulting malocclusion of the teeth, are due to the obstruction of the air passages, which causes mouth breathing, which in turn results in faulty development of the bony structures. Adami (2) says: "In a certain proportion of cases what appears to be a simple hypertrophy, is found, in the inoculation of guinea pigs, to be tuberculosis." It is a mistake, however, for the general surgeon to remove tuberculous cervical glands, without first having had the tonsils removed, as the tonsils in these cases are generally found to be infected and are probably the pathway by which the tuberculous infection entered the body.

The proximity of the tonsils to the cervical and submaxillary glands provides a ready passage for the entrance of infecting germs to the circulation. Palpable glands under the jaw or in the cervical region either in children or adults, are an indication of infection and the tonsils should be removed. Tonsils that stand out prominently in the throat, even if large, are the least harmful. Peritonsillar abscess rarely starts in a large open tonsil, but usually occurs in a submerged or hidden type. The infectious material seeking an outlet at the point of least resistance, breaks through the capsule of the tonsil and infects the peritonsillar space.

These enlarged tonsils, with or without adenoids, may give rise to ear conditions such as acute or chronic nonsuppurative and acute or chronic suppurative disease, also to deafness, tinnitus, or pain or sensation of fullness in the ears. In a great many cases of chronic suppurative disease of the ear, this condition is not cured until tonsils of this character are moved. Some of these tonsils will be reduced in size if the children are put on syrup of iodide of iron for a few weeks, providing of course that there be no cheesy plugs or pus in the crypts. This can be tried before an operation is decided upon and will also get these patients in a better preoperative condition.

6. Patients suffering from rheumatism, nephritis, arthritis, neuritis, endocarditis and some other conditions for which the tonsils can be proved responsible, require an operation. As an illustration of this last I would cite the following cases:

CASE I.—A man of fifty-six years, a storekeeper, had had attacks of tonsillitis all his life. One year ago, following an attack of tonsillitis which ended in a peritonsillar abscess, four weeks later, articular rheumatism developed, and he was then bedridden for three months. When I first saw him he had to be carried from room to room. He was placed in a Turkish bath sanatorium, where he was given treatment for three weeks. By this time he could get about by himself and was sent home for another interval of three weeks. The tonsils were then removed, and patient has had no further trouble and is in very good health today.

CASE II.—An otherwise healthy girl, twenty-five years of age, had been for some months troubled with an albuminuria. She had been carefully examined by the family physician, who could find no cause for this, and she then consulted me. The only trouble I could find were some palpable cervical glands, together with the history that at times the tonsils became sore and tender. I advised her to have her tonsils removed, but did not promise cure of her albuminuria. She then consulted Dr. Frank



Billings, of Chicago, who strongly advised her to have the tonsils removed. This I did on her return to me, and in three weeks her family physician advised me that the albuminuria had entirely cleared up.

CASE III.—A young machinist, twenty-five years of age, had a nephritis, which his physician, Dr. Charles Miller, of Peoria, thought due to his tonsils. He gave a history of attacks of tonsillitis since a child and had an attack of acute articular rheumatism when twelve years old. Ten weeks ago he had an attack of tonsillitis which ended in a peritonsillar abscess, and at this time his nephritis began and a general edema set in. Following a slow recovery, he was sent to me. He had lost twenty pounds in weight and had a very bad color. At this time he could only keep at his work half the time. I advised removal of tonsils, and he was operated the following day. Pus and cheesy deposits were found in the tonsil. Albumin was present in the urine the morning of the operation and had entirely disappeared when tested five days later.

These cases illustrate the connection of the tonsils with remote general diseased conditions. If the tonsils are at fault, in the presence of glomerular nephritis, their removal is indicated. It is of course assumed that when a suspicious condition is found in the tonsil in patients with a systemic infectious disease, other possible points of infection also, such as the teeth, sinuses, or bowel, have been excluded. To Billings, the pioneer in the focal infection theory, we are greatly indebted for clearing up many questions in regard to the tonsil.

*Preparation of patient for operation.*—Inquiry is made to ascertain if the patient is a bleeder. If such history be given, the coagulation time of the blood is taken. A physical examination of the chest is always made. The patient is sent to the hospital the morning of the operation without food or liquids, a cathartic having been given the day previous and a specimen of the urine is examined the morning of the operation. The patient is put to bed and given a hypodermic, either scopolamine or atropine with morphine, an hour and a half before the operation, but children of six years and under are not given any hypodermic. A nasal douche of normal saline solution is given adult patients. Ether is given in all cases for the anesthetic. I have tried gas anesthesia, but have not found it as successful because of the congestion of the head and the subsequent increased hemorrhage; neither do I consider it as safe as ether. The degree of anesthesia should be such that, when once under, the operation can be finished without the need of any more anesthetic. Unless the patient is thoroughly under the anesthetic, that is to the surgical degree, gagging occurs, which will cause bleeding with consequent interference with the dissection.

Fatalities during or shortly after this operation are rare. Mortimer (3) calls attention to this and says: "On account of probabilities and because an unexpected death in the young is so distressing, public attention and alarm are aroused to an exaggerated extent when one does occur." A number of these unfortunate deaths have occurred in this vicinity and I have never known of a single instance where the cause of death, other than newspaper accounts, was reported to our society: Mortimer considers "the immediate deaths due to: 1, faulty administration of the anesthetic; 2, respiratory obstruction; 3, shock, or 4, hemorrhage." Under faulty administration of the anesthetic, some errors among others he believes to be: "1, failure

to select the right anesthetic; 2, lack of knowledge of anesthesia, so that a deep anesthetic is mistaken for a light one; 3, failure to maintain free respiration." He further says that "serious results are more likely to occur during the tonsil or adenoid operation on account of the liability of the anesthesia often being impeded and irregular, than in other operations of greater surgical importance." This means that a much more skillful anesthetist is required for this operation, and as the anesthetist must also act as the surgeon's assistant in holding the head in position and otherwise rendering assistance, he must, therefore, be thoroughly acquainted with the special operative technic.

Of course the question of shock is involved only when operation is prolonged and is uncommon when the tonsils are enucleated quickly. Mortimer also does not believe in the familiar "status lymphaticus" as a cause of death in tonsil and adenoid operations and thinks the exact cause of death in every one of these cases should be determined whether due to shock, hemorrhage, or obstruction to respiration.

*Operation.*—The patient is placed in the Trendelenberg position with the anesthetist holding the lowered head. The tonsils are removed by blunt dissection, after first grasping the tonsil, pulling it forward, and incising the mucous membrane around the upper margin. After the tonsil is thoroughly loosened of all attachments down to the base, a snare is used, the wire being passed around the remaining part and the membrane cut through. The tonsil is removed complete in the capsule. Adenoids are then removed, if present, with a curette, the mouth gag is removed, and the patient is then turned with the face down and the head lowered until all bleeding stops. The usual time of operation is from five to seven minutes.

*Aftertreatment.*—The patient is placed in bed and no liquids or food given for the first twelve hours. The morning following the operation they may be taken home. In adults two or three days after the operation the area where the tonsil has been removed is touched daily with tincture of iodine. This facilitates healing.

*Results.*—In my experience in 430 consecutive operations during the past four years there have been no deaths. The ages of these patients ranged from two to fifty-six years. Nine patients were under four years; 184 were between four and ten years; there were 126 from ten to twenty years; from twenty to thirty there were eighty-three, and twenty-eight patients were above thirty years. The removal of tonsils is a much more simple procedure in children than in adults. It is a good rule, however, not to operate on children under four years of age unless there are present well defined indications. When an adult has had many repeated attacks of tonsillitis with peritonsillar abscess, the resulting scar tissue with adhesions of the capsule to muscle tissue of the throat renders the operation much more difficult. Vaccines made from the tonsils of a number of patients have been tried and were in some cases of benefit; these were used in patients with severe articular rheumatism. I consider this part of the treatment of rheumatism as a



valuable adjunct. In the treatment of hyperthyroidism also, tonsillectomy has a place, and I have had some good results where the indications were present.

In five cases the tonsil was removed incompletely and the patient required a second operation. In one patient only one tonsil was removed, no attempt being made to remove the second tonsil as the patient was acting so badly under the anesthetic. The clamp has been used five times either at the time of operation or a few hours later to control hemorrhage. Two patients had a postoperative hemorrhage, one three days following the tonsillectomy and the other four days after operation. These patients were put to bed and the bleeding stopped itself. These postoperative hemorrhages are caused in most cases from dislodgement of the clot following retching or vomiting and for this reason no liquids are now being given patients for the first twelve hours. The same danger of hemorrhage occurs if the patient swallows blood during the operation which will also produce retching and vomiting. This is avoided by inclining the body with the head down, so that the blood does not get into the stomach.

An accident that happens probably not infrequently with other operators, occurred in one case, a ten year old child. Some blood was drawn into the larynx immediately after the tonsils and adenoids had been removed, and the child suddenly became black and stopped breathing. The gag was immediately removed. Artificial respiration with hypodermics, lowering of the head, and drawing out the tongue, saved him. I have found since this occurrence that if the correct position of the patient, with the head lowered, is maintained, accidents of this kind do not occur. Many reports of postoperative pneumonia and lung abscess following tonsillectomy have been made, but this has never happened in my practice.

Following the operation, when the throat is healed, deformed pillars follow in a certain percentage, even with an operation that at the time one would consider perfectly satisfactory. Of course displacements, drawing up, adhesions, and other deformities also result if injury to the pillars or velum occurs at the time of operation. Following tonsillectomy there is frequently complaint of earache, pain in swallowing, or a nasal twang to the voice, sometimes also a paresis of the throat muscles causing regurgitation of liquids through the nose, but these are all transitory and harmless. Acute suppurative otitis media occurred in two cases, but in one of these patients the ear previously had been the seat of a suppuration. Recovery in both cases under ordinary treatment followed. An unpleasant incident which occurred in one boy following tonsillectomy was the development of diphtheria. A neighbor's child was discovered to have diphtheria the morning after the boy was operated and the two children had been playing together the day previous to the operation. The patient acquired severe diphtheria with membrane covering the whole operated area and involving the larynx. He made a complete recovery, however, with large doses of antitoxin. Tonsillectomy to cure chorea has not been successful in my experience. The decision as to whether or

not the tonsils should be removed in these cases and in diseases of similar character should be left to the internist, providing of course that there is no local condition in the throat indicating their removal. The internist may perhaps require the advice and cooperation of the laryngologist, but he should be the one to decide if an operation is indicated. This mode of procedure will save tonsil surgery from being brought into disrepute.

Regardless of the general condition of the patient and whatever the systemic disorder, it is ill timed surgery to attempt removal of the tonsils while they are the seat of an acute inflammation. In pulmonary tuberculosis the removal of the tonsils is contraindicated in the presence of râles or consolidation. Other contraindications for tonsillectomy, as given by Crowe (4) and his associates, are in diabetes, the chronic deforming type of arthritis, acute rheumatic fever, and endocarditis. So much has been written for and against the removal of tonsils, that it seems to me one must be guided solely by his own personal experience in advising this operation. In solving the tonsil question for myself, the results of my work, carried out as outlined in this paper, have been most gratifying. The type of instrumentation or method of operation matters little, providing the tonsils are removed *in toto* with as little injury as possible to the soft structures surrounding

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608 JEFFERSON BUILDING.

### UNDERNUTRITION IN CHILDREN.

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The extent to which school children would benefit from free lunches is the question brought up recently for action and experimentation. To understand fully the situation it is essential to know just what the present condition of children is and how their needs can be most wisely met.

During the last two years 300 children, members of families applying for advice to the Charity Organization Society, have been known to me personally. I have visited them in their homes; known their school records, and studied their habits. Although these children are from families that are below the self supporting line, I feel they illustrate the various elements coming into the problem of undernutrition. An increase in food would not be expected to improve the condition of children already diseased, so forty-eight sick children will be excluded from consideration. On the other hand, children already in good condition would not warrant the expenditure of time and money the new plan proposed. One hundred children will be dropped for this reason. This leaves 152, or fifty-one per cent. of the entire group, who present the condition known as undernutrition and for whom the school lunches would be especially planned.

Insufficient food is only one of the causes of undernutrition. Rapid eating, unwise eating, irregular

eating, overeating, and the various forms of nerve strain to which children are subjected produce similar symptoms, for then the child's system does not function normally and food is not assimilated.

With a child, eating habits depend largely on the home training and environment. Among the 152 under consideration eight had no mothers and were living under the guidance of well meaning but unwise older sisters. Thirty of the children had alcoholic mothers, which meant unhomelike homes. The children eat when and where they could. A good warm meal might be ready for them at noon, or their mother might be sleeping and no food in the house. A solid regular meal in a cheerful environment every noon would surely help this group, but would not entirely counterbalance home strain.

Fourteen children had feeble-minded mothers—women sincerely trying to do the wise things for the little ones, but unfitted for this responsibility by lack of judgment and selfcontrol.

Forty had parents who might be described as inferior. They are the undernourished children in the second generation. This, in a few cases, was due to specific disease in the parents in early life—not active in the children but giving them inherently poor powers of growth and development. Usually these little ones had the added handicap of insufficient income because the parents were unskilled workers. An Italian family consisted of a man, his wife, and six children. All the children were small for their age, all had defective teeth, and all were continually getting sick. One child spent nine months of the first year of its life in a hospital and has since spent more time in institutions than at home. She will have bronchitis, and after this is over she will be sent to the country for two or three months. A week after her return she will develop tonsillitis, then will follow another rest in the country—so it goes through the year. School lunches would help this group, but no amount of food and care can really make them sturdy, efficient people.

As in all groups in a community so among these children we find some that are delicate and ailing. There are families where one or two children will be of this type and the rest sturdy and strong. Here is a family of four little girls. The older two enjoy excellent health. The baby too, is splendid. Little three year old Florence is pale, cannot eat this or that, and continually has attacks of indigestion. There are seven such children in the group. Frequently with these little ones the difficulty is to interest them in eating. School lunches would inspire some and others it would deter. Closely allied to this group are six little ones who had had a serious illness from which they had never fully recovered. They illustrate the extreme importance of persisting in medical care to complete recovery. Measles is frequently the cause of this condition. The general belief that measles is a slight ailment, leads to neglect of the coughs, running ears, and other sequelæ which should be relieved at the time of the disease.

A small group, six, of the 152 undernourished children under consideration, but a group that would be larger among people in better financial situation, are the little ones who are used to entertain adults. They are kept under strain and excite-

ment almost constantly and while excellent food in sufficient quantity may be provided, they remain undernourished and become ineffective adults. These children keep late hours, recite poetry and sing songs to amuse callers, stunts satisfying to parental pride but inconsistent with normal child growth. Similar in effect is the giving of the child too great responsibility. When a girl of twelve, is the oldest of six children, she will, if given responsibility, so neglect her own health that she will be old and withered at sixteen. For her the school lunches would be a boon because she could have a meal free from responsibility and interruption.

To the children whose parents have incorrect ideas of health the school lunches would bring a splendid opportunity to develop normal tastes. The mother of four children had been told in her youth that eggs were good for children. Everything has been sacrificed to provide eggs in amazing quantities for these children. When the little ones seemed weak and looked yellow she borrowed money to procure more eggs. The five year old boy seemed particularly affected. The mother was persuaded to allow a diet to be prescribed and provided for him. This was continued for four months and by frequent mealtime visits some assurance was gained that the boy actually ate his food. Then the mother seemed to understand, because the boy had gained splendidly. Six months later she reports that Paul is feeling bad again and won't we please send in some more eggs. Another mistaken idea, fortunately rare in this group, is that a healthy child needs constant medication. Poor little three year old Tony is having his constitution and disposition spoiled by continual and needless medication and overheating. He spends unhappy days tightly bundled up, close to the family stove. In many homes children are totally undisciplined, they eat when they please and what they please. Their mothers find it economical to give them a few pennies "for when Johnnie has had two cents' worth of candy he does not eat so much for dinner." The remaining sixteen of these children suffered simply from lack of food. They had intelligent mothers, but for various reasons, there was not enough money. These children are the easiest to relieve and are the ones in whom the school lunches would work considerable improvement. Thus school lunches would be a contribution of constructive value in providing needed food for sixteen of the 151 children considered. For those with alcoholic, feeble-minded, or inferior parents they would help somewhat. They would be of educational value to the undisciplined, the overstimulated, and the fussy child. They would bring relief to the child burdened with home responsibility.

To accomplish these various purposes food is the prime essential in a small proportion of the cases. The educational value of simple food, well served at a regular time, is the essential habit for children to form. As few people appreciate anything that requires no effort or sacrifice on their part, it would be better to charge the cost of materials in most cases. But in any plan undertaken to get results commensurate with effort and cost there must be a combination of intelligent management and an understanding of community needs.



## A POSSIBLE FACTOR OF DEGENERACY.

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Is it not probable that the very capacity for variation, so far as animal life is concerned, is hived in and about the craniocerebral base? The present holdings of science justify the doctrine that the hypophysis has a very important developmental responsibility. There is abundant evidence that it has also a reciprocal relation *in vestigio* with the general food supply. The sphenoid bone is the arch of the skull base. The sella turcica, the body of the sphenoid, is the keystone of the arch. The hypophysis rests upon and in a groove or fossa on the upper surface of this keystone. The sphenoid is preformed in cartilage. There are plural centres of ossification, and, with all, a strangely independent but definite time for their several emergences. The earliest ossification begins toward the end of the sixth week of fetal life and is not complete until some years after birth. To be more explicit: plural centres of ossification emerge in the sella turcica early in and toward the middle of fetal life. They appear in two definitely arranged groups, an anterior and a posterior group. "The two halves of the body of the sphenoid do not unite until after birth, and then but slowly, so that an intersphenoidal synchondrosis exists for a long time." (Edinger.) So, for some years after birth there are practically two sellæ turcica, one anterior, the other posterior, with joint relations between them.

While considering at some length the probable causes of the two skull types of man, the dolichocephalic and the brachycephalic, Darwin makes use of the following findings: "For instance, of two heads of nearly equal breadth, the one of a wild rabbit and the other from a larger but domestic kind, the former was 3.15 and the latter 4.2 inches in length." Again he says: "I have noticed with long eared rabbits that even a trifling lopping forward of one ear drags forward every bone of the skull on that side." (The Descent of Man.) *Attrahens* et *retrahens* aurem are very important for the rabbit. The bone attachment fields of the two muscles are both wide and long. For the latter the attachment field embraces the mastoid, extending to and including the occiput laterally: for the former it reaches well forward on the lateral surface of the frontal bone. The ever open eye, passively sensitive even while asleep, and the ever retracted ear, passively sensitive also even while asleep, together with the long hind legs and magnificent leap, have been for countless ages the only efficient but constant guard and protector of the timid rabbit. The habitual retraction of the long ears of the wild rabbit, the motives of fear and escape being always on tap, and the indifferent position of the long ears of the rabbit domesticated for countless generations, the motives of fear and escape receding to the vanishing point, explain the findings of Darwin, especially in the light of the intersphenoidal synchondrosis. In other words, the habitual contraction of these two strong and opposing muscles, *attrahens* and *retrahens* aurem, paralleling the ever present motives of fear and escape, have had a tendency to "jam" the base of the rabbit's skull.

It is not my purpose to discuss man's relations with the lower levels of evolution. I refer to the rabbit merely to illustrate the probable factor of fear in skull type formation. It is fruitless to speculate as to whether the broadheaded man's making antedated that of the longheaded man, at an age, too, when his environment was fearsome indeed. However conditioned, two well defined primitive skull types are coexistent with the earliest findings of man on this old earth of ours, the one having a long, and the other a broad head. That is, one has a longitudinal diameter of 100 and a transverse diameter of less than eighty, and the other has a longitudinal diameter of 100 and a transverse diameter of more than eighty. Possibly this same unmixed skull type, whether of the long or of the broad head variation, is the most marked example of supercrystallized heredity. In the skull type variation, the departure of the sphenoid exceeds that of any other bone. That of the sella turcica is even more marked. In the long head skull type, therefore, the sella turcica presents a longitudinal diameter of exaggerated length; but in the broad head skull type, on the contrary, it presents a transverse diameter of exaggerated length. Thus the real variation is a long sella turcica type and a broad sella turcica type. Edinger wrote in 1896: "Kupffer made a discovery a few years ago that is destined to throw a new light on the significance of this structure [pituitary]. In the embryos of lower vertebrates there exists for a period a peculiar evagination from the dorsal side of the primitive pharynx having a forward direction. He called this the preoral gut. It is known that a passage leads from the exterior into this preoral gut, *i. e.*, the fundament of a separate mouth is established over the permanent mouth. This whole structure, the preoral cavity and the preoral gut into which it leads, becomes the hypophysis. According to Kupffer, the evagination of the oral cavity of craniate vertebrates, that is, the hypophysis, is a vestige of the preoral cavity. In front of this [lobus posterior hypophysis] lies the anterior lobe, a tuft of epithelial tubules, which, as you know, arises from the mucous membrane of the pharynx. Recent investigation makes possible the recognition of two kinds of cells in it, smaller clear cells and larger and cloudy cells. Since, as is known, exactly similar cells are found in very active glands, it is thus probable that the hypophysis performs some physiological function."

Cushing and Goettesch state (1): "Hitherto, the lethargy of the hibernating stage has been attributed to two external stimuli [extracorporeal] low external temperature and diminished food supply." But they assert also: "On the basis of our observations, hibernation may be ascribed to a seasonal wave of physiological pluriglandular inactivity. The essential rôle may perhaps be ascribed to the pituitary body, not only for the reason that the most striking histological changes appear in this structure, but also because deprivation of the secretion of this gland, alone of the entire ductless gland series, produces a group of symptoms comparable to those of hibernation." It is altogether probable that both doctrines are near the truth. Lower external temperature and diminished food supply are lusty colleagues. In the "preoral cavity and preoral gut"



stage of animal life, nature's only efficient accommodation to "lower external temperature and diminished food supply" conditioned "the seasonal wave of physiological pluriglandular inactivity" referred to above as hibernation. Hibernation, therefore, is a transmitted physiological reaction to certain external stimuli, "external lower temperature and diminished food supply." In the countless ages of the past, the reaction was in terms of the "preoral cavity and the preoral gut into which it leads." Today the reaction is in terms of the hypophysis. Then the reaction was in terms of digestion. Now it is in terms of metabolism. I am not concerned upon what plane of evolution this change from a digestive to a metabolic function was accomplished. It is fair to assume that the transition required ages. In the embryonic parallel development of the hypophysis, its prepharyngeal and pre-digestive relations are but transmitted vestiges. Therefore, as soon as developed, it assumes a metabolic function. At whatever period of fetal life the transition is accomplished, then and there the hypophysis arrogates unto itself a supervising and directing attitude and guides the energies and motives for further development. It appropriates the very hormones derived from racial and parental sources.

In the two skull types of man the harmony of structure and function, hived in and about the craniocerebral base, bespeak severally the most rigid and supercrystallized racial heredity. All along the developmental route, both as to evolution and fetal life, reciprocity and interrelation are but emphasized. Any departure in structure or any departure in function of necessity results in a measure of disharmony. There is a well recognized and much mentioned relation subsisting between asymmetry of form, especially of head and face, and degeneracy—idiocy, insanity, or criminality. Asymmetry is usually referred to as the cause, and degeneracy, as the effect. Are not both due rather to disharmony of structure and function in and about the craniocerebral base? Is not degeneracy a co-effect with disharmony? What will occur then if a long head male mates with a broad head female? Will Mendel's law take efficient care of heredity in the matter? Will Galton's law insure harmony of structure and function in this all important region? The best thing that can be said about Mendel's law is the following: It was conceived and developed in terms of the garden pea. Its application and potency become more and more inadequate as we ascend the evolutionary ladder, and are practically nil long before we reach man. Of Galton's law the most select assertion, as far as I know, is that too much weight is given to the immediate parentage, and not enough to the more remote and even racial ancestry. Two distinct and supercrystallized factors of racial heredity are pitted against each other, with their all peculiar structure and function. Of these two contending factors, will one dominate to the exclusion of the other? A happy medium is inconceivable. Besides, what becomes of that remote hereditary force known as atavism? On the contrary, is it not reasonable to assume that there will too often be a sort of mixed victory? In some parts of this all important locality one supercrystallized

force will dominate, and in others the other factor. Too often the result will be disharmony of both structure and function and entail asymmetry and degeneracy.

At some uncertain but remote period of the past, a broad head people occupied a region along and corresponding to the borderlines between Switzerland and Italy, Austria and Germany, and between Germany and France, reaching even to the Netherlands. It would be interesting to determine how far the mixture of broad heads with long heads is responsible for the excessive prevalence of certain kinds of idiocy and dwarfism, an excess which not only reaches to our day, but which gave color to folklore handed down from prehistoric times.

Speaking broadly, the long heads occupied all Asia on this side of a line corresponding to the western borders of China and India. They overran India later; of Europe they possessed the lands west of central Russia; of Africa, they occupied at least the valley of the Nile, and the countries touching the Red Sea. Practically all other lands were in the possession of the broad heads.

It is entirely unnecessary to discuss the relative merits of these peoples, with their well defined skull type variation, a variation which is supercrystallized in the most rigid terms of racial heredity. However, latter day students of history have put aside some of their impatience when confronted with China's vast claim of antiquity; but from the viewpoint of the most narrowly accredited history, China manifests a continuous and steady stability of civilization and government, in comparison with which that of the long heads of Asia Minor, as well as Middle and Western Europe, appears temporary and evanescent.

In an excellent article (2) while discussing at some length certain assertions of Dr. Eugene Apert, of the Paris hospitals, on the effects of the present war upon the human race, Dr. Joseph H. Marcus quotes the following: "It is true it may be urged that as the number of women is comparatively larger than before, selection will be more perfect. The women may raise the level of racial qualities in the same proportion as the penury of males would tend to debase that level." . . . "The reasoning is correct and justifies the belief that this war will not be followed by unduly grave consequences from the viewpoint of race preservation." In another part of same article he says: "To sum up, the facts are on the whole reassuring. Gravely as the young population has been depleted in this war, we may anticipate that the quality of the race will not be injuriously nor permanently affected." He could have added: The larger percentage, I will say all of them, of the rejected young men left at home unfit for the soldier's life and duties have identically the same heredity and parentage with the accepted young men who make up our armies. Acquired qualities are not transmissible, therefore these young men left at home have racial and parental potentialities practically equal with those of our soldier boys, whether good, bad, or indifferent. No one can guess the mortality of this long war, but it seems to me that to put it beyond fifteen per cent. would be an hysterical exaggeration."

Thus we have, at the very least, three conserving

factors looking toward efficient preservation and perpetuation of the race: superselection for the race when the women outnumber the men; eighty-five per cent. of our soldier boys will return after the war, racially and parentally nondebilitated, if not virgin; and the young men who remain at home have the same racial vigor and parental potentialities, as compared with the returning soldiers. In no sense is war itself degenerative. It is destructive of life and wealth, it is true, but the fountain head of the race is not tainted. A few generations will suffice for complete restoration. So far as our own beloved land is concerned, there is a fourth conservative factor looking to the preservation and perpetuation of our race. I refer to woman suffrage. Chief among the good results will be a more complete segregation and a strong tendency against race mixing.

Again I assert that wars between peoples of the same skull type cannot be degenerative. A few generations suffice for complete restoration. On the contrary, wars between peoples of different skull type may be degenerative. In the former case, there can be no skull type mixing. In the latter, there may be. The degeneration will depend solely upon the degree of skull type mixing. Friendly migration, if as large, would be equally disastrous. It was not war, though destructive of life and wealth, which destroyed the splendid manhood and magnificent civilization of ancient Egypt. It was rather the subsequent skull type mixing of the Egyptian long heads with their neighboring African broad heads. It was centuries in accomplishing. The rebound, such as it is, required other centuries. It is hardly necessary for me to say that Egypt has not reattained the splendid level of her displaced civilization. It was not the devastating wars, however many and severe they may have been, that brought low the grand manhood and brilliant civilization of Asia Minor. Again it was the skull type mixing of the long heads of Asia Minor with the broad heads of Eastern Asia and Eastern Europe, and the present degenerates of Egypt. Again it required centuries for its accomplishing, and the rebound is yet in the future. It was not merely the wars that wrecked the proud manhood and the glorious civilization of ancient Greece and Rome. The degeneration of Spain and Portugal is not due to war in itself, but to the race mixing with their neighbors of Africa.

In every instance the retrogradation has required centuries for accomplishment. Where there is a rebound—alas! sometimes there is none—it requires other centuries for its accomplishing. A happy medium of skull type may be approached in the centuries to come, and a fair level of manhood and civilization may be thus insured.

Practically there remain the Celt, the Gael, the Teuton, and the Jew. These are the long heads who remain comparatively unmixed, while the comparatively unmixed broad heads are still in their ancient homes, Eastern Asia, Eastern Europe, parts of Africa, and some isles of the sea. Many peoples of our old earth are of the mixed skull type. The broad head peoples and the mixed types largely outnumber the long head peoples. Where lies the destiny of the human race? Today a world and

time beating war is on with these people of the pure long head skull type as the chief contestants. The destruction of men, of wealth, of art, of the very land itself, in short, of all that man holds dear, is unprecedented. There is nothing like it in all history. Yet there is no cause for despair. Racial degeneracy and racial retrogradation will not come if there is no skull type mixing after peace is secured. But there is danger. Religion and commerce, and the idealism of universal democracy, world wide socialism, together with the practical annihilation of distance, are towing the Greek horse through the gap in the broken wall.

During the retrogradation following the race mixing after the wars of ancient Egypt, Asia Minor, and Middle Europe, for a period of more than 3,000 years, the children of Abraham, the Arabs and the Jews, with their long heads pure and unmixed saved the wreckage of the Old World for the long head peoples being newly born in the west. After the war, when peace is secured, will the long heads of Western Europe and America, invite or permit a migration of the mixed or broad head skull types? If so, in the centuries of retrogression which are to follow, the mighty problem, will again be handed to the Jews, God's chosen people, whose very religion is to continue as an unmixed race.

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### SYPHILITIC JOINTS.\*

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As a factor in the etiology of chronic destructive joint disease inherited syphilis has heretofore been considered of so little importance that the orthopedic textbooks of the day dispose of the subject in a few paragraphs.

Bone tuberculosis, on the other hand, commands exhaustive chapters devoted to statistics, symptomatology, surgical and mechanical treatment and the management of resulting deformities which are looked upon as the inevitable sequelæ of chronic joint morbidity. The pathological groundwork for these elaborate discussions has in the main been handed down from older investigators whose work was done before the *treponema pallidum* was discovered thirteen years ago. These men were, consequently, unaware that many of the nodules or tubercles upon which their conclusions were based might have been produced by the presence of spirochetes and not by the bacillus of Koch. Modern pathologists recognize these granulomatous masses merely as tissue reactions which may be set up by any one of several organisms, notably the bacillus tuberculosis, the *treponema pallidum* and the bacillus lepra. They are not, therefore, pathognomonic of tuberculosis as the term is commonly used, and a differential diagnosis, either from the gross specimen or by microscopic examination,

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is at times impossible until the invading microbe has been isolated. Thus the foundation upon which our clinical conceptions of tuberculosis joint disease has been erected crumbles, our statistics and bedside observations on the course and treatment of this condition are exposed to criticism.

The trend of events indicates the necessity for a radical readjustment of our views on the subject of destructive joint disease, and points to the wisdom of correcting the widely disseminated impression that every chronic articular disability characterized by gradual onset, the presence of spasm, atrophy, limitation of motion, limp or alteration of attitude is due to tuberculosis. In the last few years osteochondritis of the hip, hemorrhagic osteomyelitis (Barrie), and localized infectious lesions have been removed from their former classification under tuberculosis, and, as I will demonstrate, the day is at hand for recognizing that probably forty or fifty per cent., or perhaps more, of the cases presenting the symptoms described are suffering from syphilitic infection and not from tuberculosis. Should this opinion be confirmed by the test of time it needs no vivid imagination to sketch the benefits which will accrue. It means the period of invalidism in such cases will be immeasurably shortened, the necessity for surgical interference grow less and less, and the number of permanent cripples be visibly reduced. Diagnostic errors in the past were due to the fact that the recognition of tuberculous joint disease rests entirely upon symptomatology and x ray findings, and in this study of nearly two hundred cases it has been revealed that the symptoms and radiological characteristics of joint lesions due to inherited syphilis are so nearly identical with those of tuberculosis that upon these factors alone differentiation of the two conditions is impossible.

The diagnostic sterility of both ordinary clinical and radiographic examination throws upon the remaining evidence available a rôle of great importance, and the problem of differentiation is reduced to the question of either confirming or eliminating the presence of inherited syphilis. Indeed, after my past two years' experience, it seems to me wholly inadvisable to venture a diagnosis of joint tuberculosis until lues has been absolutely disproved.

In the perplexities of the situation our first appeal is instinctively to the laboratory, yet, while the Wassermann reaction is of considerable assistance, it is not, unfortunately, conclusive, but helpful only when the test is done with sensitized antigens and where full recognition is accorded the significance of weak positive reactions. With the older technic negative reports are extremely common, even where there is a direct family history of syphilis and where lesions in clinically luetic children clear up under the influence of mercury and potassium iodide. Through the generous cooperation of Dr. Cyrus W. Field, a study of this phase of the subject is now in progress, and the data already accumulated points convincingly to the value of weak positives obtained by the more delicate methods.

Inasmuch as the Wassermann is not wholly dependable, every other means at command for the detection of an inherited taint should be utilized to prove the presence of syphilis in a given case.

It is to our advantage that the disease frequently leaves a trail of more or less permanent imprints which careful investigation will disclose. The search for these signs should include an inquiry into the family history of father, mother, and grandparents, the early physical and mental development of the patient, examination for ocular and oral defects, skin eruptions, chronic headaches, and any other possible manifestation of lues. When all this has been done there still remains a fertile field for investigation—the teeth. It is the dental stigmata of syphilis I wish to specially emphasize, for in all the cases thus far collected a clue to diagnosis was obtained by examining the teeth.

When we consider that the maxillae are a favorite site for colonization of the spirochetes, that the period of greatest activity of inherited syphilis is during the last half of gestation and the first few months of the child's life, and that this interval corresponds to the time during which the deciduous teeth, the first permanent molars, and the incisors are formed and partly calcified, it will not be difficult to understand why the teeth bear permanent imprints of inherited lues. If we go further and realize, as Cavallaro has shown, that the syphilitic process in the dental structures of the foetus results in both constriction and obliteration of the blood vessels, thereby interfering with the nutrition of certain parts of the rapidly growing dental tissues, it will become evident that deformities of great variety may appear on the completed teeth.

Two deformities other than Hutchinson teeth appear very commonly in syphilitic children. The first of these is an abnormal spacing between the upper incisors, to the diagnostic significance of which I called attention about a year ago. The condition exists in varying degrees of conspicuousness, and while it is not pathognomonic of syphilis, and may obviously be due to other causes, it is so frequently seen in proved luetics as to constitute a signal for further investigation when found in a subject suffering with joint disease.

A second common deformity is one to which the name "humpy molar" has been given—a term which well describes the appearance of the malformed unit without endeavoring to explain its pathology. The anomaly consists of outgrowths on the normally smooth lingual surface of the molar, which may be so slight as to present merely a ridge which will catch the point of an instrument passed over it, or it may take the form of a rudimentary cusp easily discernible on casual inspection. The clinical significance is the same in either case. Diagnoses of inherited syphilis based upon the presence of humpy molars has so often proved to be correct that the contention of Cavallaro, Sabaraud and others that they are of syphilitic origin seems to be confirmed. There are many other dental deformities due to syphilis, among them hypoplasia of the enamel, so called erosions of various kinds, pitted surfaces, white and brown sulci, fissured teeth, etc., but time will not permit of their discussion. The important thing is to remember that a clue to the diagnosis of inherited syphilis—that extremely common and frequently unrecognized condition whose influence reaches into all fields of medicine—



July 20, 1918.]

may often be gained by examination of the teeth, and that any dental anomaly, however slight, may be of diagnostic significance.

It is not to be assumed from this that every dental defect should be laid at the door of syphilis.



FIG. 1.—Extreme type of widely spaced incisors. Lateral incisors uncruped. Knee case.

On the contrary, post-natal influences should ever be borne in mind. However, the anomalies described are the products of intrauterine development, and cannot be produced after birth. They are so common in the teeth of proved syphilitics that, while in the present state of our knowledge we cannot say that they are

pathognomonic of the disease, we are justified in considering them as an indication that lues may be present, and to proceed with various tests to either establish or refute the theory. Of these, it seems to me the therapeutic test is more important than the Wassermann, for three reasons: First, a negative Wassermann does not exclude syphilis; second, a child may have inherited syphilis and consequently have a positive Wassermann, and yet his joint lesion may be due to a superimposed tuberculosis; third, we cannot ignore the judgment of those able clinicians of earlier times, whose powers of observation were sharpened by the absence of our present day laboratory refinements.

Perhaps the practical diagnostic value of the dental stigmata will best be illustrated by a few briefly outlined case reports.

CASE I.—Boy (F. K.), age eight. "Tuberculosis" of hip for fourteen months, wearing plaster spica during this time. On the evidence of inherited syphilis furnished by humpy molars he was placed on mixed treatment. At this time he had only fifteen degrees of motion in the hip joint, accompanied by pain and spasm. The x ray showed considerable bone destruction in both the acetabulum and head of the femur. After two weeks of medication the pain and spasm had disappeared and the joint was more freely movable. The plaster spica was omitted. Improvement was progressive and in three months the patient was apparently well except for a limp due to shortening. He has flexion of the hip to a right angle and indulges in all the boys' games.

CASE II.—Boy (M. S.), age seven. "Tuberculosis" of the hip for two years, wearing plaster casts. Just before coming under observation was advised to have injections of tuberculin. The classical symptoms of tuberculous hip disease were present, and the x ray showed a lesion in the acetabulum. He had widely spaced upper central incisors and humpy molars and was therefore placed on mixed treatment. Plaster spica removed. In a month the hip motions had increased from fifteen to ninety degrees; no pain, no spasm. In two and a half months he



FIG. 2.—Widely spaced incisors with notched margins in a child of four.

walked without limp and has never had any sign of disability since.

CASE III.—Boy (C. B.), age eight. For six years had "tuberculosis" of the knee, wearing a plaster cast all the time. When he came under observation he had all the usual symptoms of tuberculous knee joint disease, tenderness, swelling, no motion, marked limp. The x ray showed a large necrotic area in the upper end of the tibia. Because of widely spaced incisors and humpy molars he was placed on mixed treatment and the cast was discarded. In three weeks pain and tenderness had disappeared. In three months he had flexion to a right angle and an x ray taken five months after the beginning of treatment showed regeneration of the softened bone. He has had no return of symptoms and walks without a limp.

CASE IV.—Boy (G. B.), age five. An early case and demonstrates how a correct diagnosis may eliminate long periods of treatment and the usual deformities. Treated for three months for tuberculosis of the right hip, the usual symptoms of which were present. The x ray showed slight changes in the head of the femur. There was marked sensitiveness and spasm and only forty degrees of motion in the joint. Taking advantage of the clue furnished by widely spaced upper central incisors and humpy molars he was put to bed and placed on mixed treatment. In two weeks all active symptoms had subsided. In six weeks normal motion had returned to the hip, general condition was much improved and the child was running about and very active. His Wassermann was positive.

Spine cases respond particularly well to medica-



FIG. 3.—Extreme type of humpy molars.

tion, and as there is no means but the therapeutic test to determine which are tuberculous and which are syphilitic, it would seem unwise to submit any of them to operation until the effect of a month or six weeks of treatment can be noted. One case which had been grafted, and had gone from bad to worse, was admitted to Neponset Beach Hospital while I was in charge. He had profusely discharging sinuses, had been bedridden for several months, and was extremely cachectic. Even the fresh air and good food of Neponset made no change in his condition. One day I noticed he had Hutchinsonian teeth, and placed him on mixed treatment. From that time on he began to improve. His sinuses closed, and before he was taken home he was able to stand and take a few steps alone.

CASE V.—Girl (J. K.), age twelve. Lumbar Potts disease eight years, wearing plaster jackets or braces all this time. Four months ago she was a delicate stunted child, pale and sickly in appearance, unwilling and unable to play out of doors, always tired, had little appetite, and she had four profusely discharging sinuses. She had humpy mo-

lars and was therefore placed on mixed treatment. In four months she has gained seven pounds in weight, goes to school, plays out doors and is extremely active. Her appetite is excellent, color good, and she seldom complains of being tired. Three of her sinuses have closed and the fourth is discharging a small amount of thin watery fluid.

Her mother had had almost daily headaches as long as she can remember. She, too, had humpy molars and was placed on mixed treatment four months ago and for three and a half months has not had a headache.

The child's grandmother lost three children in early infancy.

CASE VI.—Girl (H. K.), age sixteen months. For several weeks had had typical symptoms of tuberculosis of right knee and came in with this diagnosis. There was pain, swelling, spasm, and fixed flexion of the joint. She also had a dactylitis of the fourth finger of the left hand which had existed for three months. Patient had widely spaced upper central incisors and was placed on mixed treatment. Two weeks later pain had almost disappeared, leg could be brought to full extension, child was much more active and did not limp. In two months all symptoms had disappeared from both knee and finger.

This patient was probably a third generation case. The father gave a history of chronic knee joint disease in boyhood, and he has a saddle nose. The grandfather had tabes dorsalis for several years before his death.

There have been many striking cases under observation in the course of this work, but in some respects the next one is more instructive than any of the others, for it shows the length of time that symptoms due to inherited syphilis may persist.

CASE VII.—H. F., age thirty-one. When the patient was six years old, he developed symptoms in his left hip. He was treated at the New York Orthopedic Hospital for a year, wearing a brace during that time. For the following ten years he was a patient at the Hospital for Ruptured and Crippled, wearing braces and plaster spicas and on three different occasions he was admitted to the wards for considerable periods because of acute symptoms.

Finally he was permitted to go without protection to the hip but he has always been conscious of the joint. During the latter part of 1917 his disability became more marked and he was obliged to give up his work. When examined January 2, 1918, the hip was extremely sensitive and for a week he had not had a good night's rest. The presence of humpy molars indicated inherited syphilis and he was placed on mixed treatment. After three days of medication he slept throughout the night without discomfort. In a week he was without pain for the first time in several months and returned to work.

The results of the therapeutic test is striking evidence that this case, treated for so many years by some of our most eminent clinicians for tuberculosis, is one of inherited syphilis. Examination of the teeth gave a clue to the correct diagnosis. The family history, which revealed that this man's mother had eight children, six of whom died in infancy, added corroborative evidence to the clue, and a positive Wassermann, obtained a week after treatment was begun, confirms the therapeutic test and the diagnostic value of both dental stigmata and the family history.

These cases have been selected for the purpose of illustration, and are typical of the majority in the series. It should not be assumed, however, that every patient enjoys a prompt and rapid recovery. Results will vary according to the type of tissue invaded, the virulence of the organism, and the co-operation in treatment which the patient is willing to give. Where there is no bone involvement joint symptoms of long standing usually disappear in a

few weeks, and sometimes with astonishing rapidity. Bone lesions, on the other hand, clear up slowly, even when the accompanying acute symptoms subside quickly. Where regeneration of bone does take place approximately, a year or more of continuous treatment is necessary.

In conclusion, let me repeat that there is a large amount of symptom producing inherited syphilis in the world, the presence of which is not even suspected, but which should be recognized; that a negative Wassermann reaction is not sufficient evidence for the exclusion of syphilis; and that in the dental stigmata, especially widely spaced incisors and humpy molars, we have a clue to the possible presence of inherited syphilis which is worthy of serious consideration.

576 FIFTH AVENUE.

## CONGENITAL STENOSIS OF THE ESOPHAGUS.\*

### Case Report.

By HARRY APPEL, M. D.,  
New York.

Instructor in Pediatrics, New York Post-Graduate Medical School and Hospital; Assistant Attending Physician, Kingston Avenue Hospital, Brooklyn.

Of all congenital deformities of the organs which comprise the digestive tract, stenosis of the esophagus is least frequently met with. The condition in most instances is only of interest from a diagnostic standpoint, for the prognosis in these cases with complete stenosis invariably spells death from starvation and exhaustion; nevertheless we should be able to recognize the condition when it does exist. This deformity may exist in varying degrees: one is a complete stricture somewhere along the lumen of the tube with an absence of the lower end of the esophagus; or there may be only an incomplete stricture which would still permit a narrow stream of fluid to go through and enter the stomach; or it may present a condition not frequently recognized until the child is well nigh grown up, and that is an incomplete stricture of the cardiac end of the esophagus, the lumen being sufficiently large to transmit even solid food, but, as a result of that stricture, the esophagus immediately above it, due to the tendency of part of the meal to remain at that point, develops a dilatation. A case of such a nature came under the author's care at the New York Post Graduate some two years ago. The child was



FIG. 1.—First exposure after barium sulphate.

\*Read before the Brooklyn Pediatric Society, November, 1917.

three years of age and came up in every respect to the measures of a normal, healthy child, but the mother brought her for what she called a vomiting habit. The child vomited every day at least once or twice after meals, and while it was beyond our

belief that a child would vomit up to the third year of age, every day of its existence, and still show no ill effect from it, an x ray examination disclosed a marked degree of narrowing of the lower end of the esophagus, with a great deal of dilatation of esophagus immediately above it.

The case I wish to report this evening was a case of Doctor Otis that I saw with him and

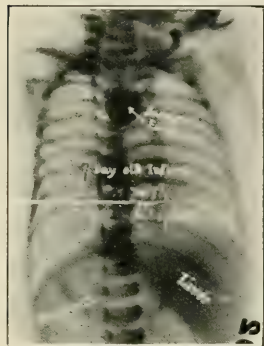


FIG. 2.—Second exposure four hours later; upper part of shadow diminished.

which has the following history:

CASE I.—Male child, seven days old, duration of labor twenty-four hours, birth weight seven pounds, breathed readily.

The nurse reported on the following day that the baby vomited after attempts to nurse. Stools were small and black and baby slept poorly and was restless most of the time. Examination showed a poorly nourished baby, weight, four pounds. Looked very emaciated, skin loose and cold to touch. No abnormalities noticed on skin.

Head normal. Fontanelle open and not bulging.

Eyes—normal.

Mouth—showed the usual stomatitis from too frequent washing and in this case perhaps from starvation.

Heart and lungs—negative.

Abdomen—Flat, and soft, no tumors palpable and no visible peristalsis noticed after baby had been nursed.

Extremities—normal.

The tentative diagnosis offered was a stoppage somewhere in the upper part of the digestive tract, probably at the cardiac end; for if it were a case of the usual pyloric stenosis we should be able to get visible peristalsis after nursing as well as palpable tumor in the region of the stomach, especially since this child was so emaciated. To corroborate such a diagnosis two things were necessary, the passing of a catheter and an x ray examination.

We attempted to pass a sixteen French catheter, but could only get it down as low as five inches; after that the catheter would coil upon itself in the mouth. We next attempted to pass a smaller size tube, with similar results.

We then attempted to get some saline solution through the tube, but the solution would remain in the funnel with no change in the fluid level (of course we made sure the catheter was not plugged). The child was immediately taken for an x ray examination.

A barium sulphate feeding was given, an exposure taken, and a second one four hours later, with the result shown in the photographs. Figure 1 shows a stoppage of the shadow at about the fifth dorsal vertebra, with well defined curvature of the

shadow upward. The second exposure, figure 2, four hours later, shows the lower level the same as in figure 1, but the upper part of the shadow is diminished due to the vomiting soon after the feeding. The child was admitted to the New York Post Graduate Hospital, and Doctor Peterson did a gastrostomy, but the child died two days later from starvation and exhaustion.

327 PENNSYLVANIA AVENUE, BROOKLYN.

## A CASE OF SALIVARY CALCULUS.\*

BY MAX NISSELSON, M. D.,  
New York.

I present this subject not because of the rarity of its occurrence, but because the condition was not recognized for a long time, though seen by many,



FIG. Salivary calculus.

and because of the size and the pretty shape of the stone. Wharton's duct is the most common place for a stone to occur.

CASE.—E. F., forty-three of age, came to me with the following history: For the last two years, intermittently at first, then at longer and finally at shorter intervals he had pain on the right side of the tongue. The floor of the mouth on this side would become swollen and there would also be a swelling beneath the jaw. This would gradually subside. He was seen by many physicians and was given numerous mouth washes without benefit. For two months previous to my seeing him, it bothered him more than before. The swelling persisted without any letup; the pain was constant, increasing when eating. Examination showed a long swelling on the floor of the mouth on the right side beneath the tongue which was very tender. Bidigital palpation revealed a hardened mass; pus was seen coming from Wharton's duct, which was dilated. Upon inserting a probe grating could be felt. After thorough cocaineization and locating the stone, I made a longitudinal incision over it and the stone popped out. The stone was twenty-five millimetres long, nine millimetres at its widest part and tapering to a point.

Salivary calculi are composed of either organic or inorganic matter. The inorganic consists of the phosphate and carbonate of lime, potash, and magnesium. The organic consists of bacteria and epithelial debris. More than half of the calculi are said to be found in the submaxillary glands, the balance being about equally divided between the sublingual and parotid. According to various authors, calculi occur more frequently in males than in females, mostly in middle life, and are rarely met with in children. The most common predisposing causes are: the entrance of foreign bodies into the ducts which act as nuclei; and microorganisms around which the salts are deposited. The calculi should be promptly removed, on account of pain, and because of the liability to abscess formation.

\*Read before the Alumni of Lebanon Hospital, April 2, 1918, and the Bronx County Medical Society, June 19, 1918.



# Medicine and Surgery in the Army and Navy

## IMPREGNATION OF THE UNDERWEAR AS A MEANS OF CONTROLLING THE CLOTHES LOUSE.\*

By WILLIAM MOORE,  
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Head of the Insecticide Department, Division of Entomology,  
University Farm.

In view of the conclusion arrived at by the British Commission that trench fever was conveyed by lice, the control of the louse becomes a very important matter in the trenches. Therefore, a thorough study of the subject was made.

The control of the clothes louse was attempted by four different methods. The underwear was, in the first series of experiments, impregnated with oil; then with oil carrying certain toxic substances; with the toxic substances without the oil, and with non-organic chemicals.

Using mineral oil it was found that the lice were destroyed with a minimum dose of one c. c. of oil to four square inches of a medium piece of underwear. With a larger quantity of oil the destructive action was more apparent until the saturation point of the underwear was reached, one c. c. to one square inch. When the amount of oil was reduced to about one c. c. to eight square inches, when the garment was just visibly oily, the killing quality of the oil disappeared to a great extent. Mineral lubricating oils were used, such as petrolatum, vaseline, paraffin, and chlorcosane, and crude oils from Pennsylvania, Kansas, and Oklahoma. In using animal and vegetable oils the results were no better than with mineral oils, but if the oil was rancid its killing qualities were, in general, increased. The presence of oil, equal to one c. c. to four square inches, slightly retarded egg laying; at the rate of one c. c. to eight square inches egg laying was not retarded; nor was the hatching of the eggs interfered with.

In the second phase of the work toxic substances were used with the oil. Of the organic acids used, valeric was the only one giving good results, but owing to its volatility, soon disappeared. Among the iodine derivatives, iodoform was very good; phenyl iodide, although killing at first, lost these properties within twenty-four hours. Thymol iodide failed to kill. The alkaloids were uniformly of little value, but this may have been due to their insolubility in the oils used. Crude anthracene was effective and retained its effectiveness for 118 hours. Some impurity in the crude anthracene was responsible for the killing of the lice, since neither commercially pure, nor chemically pure, anthracene killed. Diphenyl destroyed the lice within twenty-four hours and retained its killing qualities for as much as 280 hours. A ten per cent. solution of naphthalene in lubricating oil destroyed 100 per cent. of the lice in twelve hours, but twenty-four hours later failed to kill the lice. Alpha naphthylamine, which was just as effective, still killed 100 per cent. of the lice with-

in twenty-four hours. Sulphonated naphthalene tetrachlor naphthalene, chlorinated naphthalene, and dichlorinated naphthalene were all more or less ineffective. Alpha naphthol killed slowly and its killing qualities lasted for 360 hours; beta naphthol was, however, but slightly toxic.

Of the aromatic compounds heliotropine or pipronal was the most effective compound tried, killing 100 per cent. of the lice within twelve hours, even after a period of 528 hours had elapsed.

The phenol compounds, creosote and tricresol, were effective, while guaiacol carbonate and phenyl salicylate were nontoxic, the latter even at a concentration of twenty-five per cent. Tribromophenol was toxic to the lice, but would not last longer than 192 hours.

Chemicals to have lasting qualities must have a boiling point of less than 300° to 350° C.; the most toxic compounds were those with boiling points of 265° C. or lower. The most favorable compound, heliotropine, has a boiling point of 263° C.

The third series of experiments carried out was to determine if the organic compounds retained their toxicity when no oil was used. The compounds showed no reduction in toxicity while some of them killed even better without the oil.

In the fourth series with inorganic chemicals mercuric chloride was the only one that gave favorable results. A saturated aqueous solution killed within twelve hours. Sodium fluoride, which is effective against the chicken louse, gave negative results.

The two most favorable compounds were creosote and heliotropine. A ten per cent. solution of creosote in lubricating oil used at the rate of one c. c. to eight square inches of underwear was effective for twenty-four hours; after this period it lost its toxicity.

Heliotropine used with oil is effective for but forty-eight hours when the clothing is worn, since the oil is absorbed by the other clothing, weakening the dose to a point where it is no longer effective. Used without oil heliotropine soon crystallizes out and is rubbed off. Some other oily compound which is too viscous to be absorbed rapidly by the underwear must be used with the heliotropine. A five per cent. solution of heliotropine in ether, to which one half gram of fat or wax was added remained effective for seventy-two hours. Heliotropine was found to be most soluble in cocoa butter. Using the proportions of one gram of heliotropine to three grams of cocoa butter dissolved in ether per forty-eight square inches of underwear, the underwear could be worn for 168 hours without losing its toxicity.

One hundred and sixty-eight hours is then the maximum time that an effective compound will remain in the underwear in sufficient quantities to kill the lice quickly. The use of a less volatile compound will result in a diminishing toxicity that is an increase in the time required to kill the lice.

The author wishes to express thanks to Dr. A. D. Hirschfelder for his interest in the problem and his cooperation by the preparation of a number of the chemicals used in the experiments.

\*Abstract of a paper read at the Annual Meeting of the American Medical Association. Published with the approval of the Director as Paper No. 125 of the Journal Series of the Minnesota Agricultural Experiment Station.

## HEART CONDITIONS IN RECRUITS.

*Investigation of Ten Thousand Recruits With Doubtful Heart Conditions.\***Preliminary Report.*

In February, 1916, by desire of the British War Office, the honorary medical staff of the National Hospital for Diseases of the Heart undertook to act as expert referees on all cases of doubtful cardiac conditions referred to them by the various recruiting boards of the metropolitan area.

*Methods Employed.*—In every case an exhaustive medical history was taken, inquiry was made into subjective symptoms complained of, and the ordinary clinical examination by inspection, palpation, percussion, and auscultation was undertaken. In addition to this, the urine of every recruit was examined, the pulse, blood pressure, and the respiration was taken in the recumbent position before and immediately after a standardized piece of exercise, and again after three minutes' rest in the recumbent position. Each case was electrocardiographed, and the heart was examined by means of the x rays. As the result of these various methods of examination a diagnosis was arrived at, and the medical boards were advised as to the category for service for which, in the opinion of the examining physician, the recruit was fitted, the responsibility for the actual classification adopted necessarily resting with the medical boards.

*Special Nature of Cases Investigated.*—It is necessary to bear in mind the general character of the cases dealt with. They are not, and cannot be, an average sample of the population. All recruits presenting themselves had been, in the first instance, examined by boards of competent medical advisers, cases where the heart was obviously normal having been passed by them, if suitable in other respects, as fit for service, and also most of those who showed well marked and definite diseases having been rejected. Consequently, the men referred to the Heart Hospital were only cases about whose fitness there was some doubt, or cases of cardiac disorders in regard to whom there was difficulty in deciding in which category they should be placed. These cases, therefore, may be considered a fair example of the difficulties encountered by the practitioner in cardiac medicine. It is in this fact that their value, as a subject for investigation, lies.

Up to January 14, 1918, 10,000 recruits were examined, as well as 181 men already in the army, who were referred for opinion by army medical officers.

In order to eliminate, as far as possible, the personal equation, and to promote a uniform standard, for some months every recruit was examined independently by two physicians, the two working together being varied from time to time. The average time that each individual recruit was actually under examination was a little over an hour. The taking of histories, x ray examination, urine examination, and exercise test of about the first thousand was carried out by the examining physicians.

After that, these portions of the examination were made by trained assistants. The actual examination by the physician then averaged a quarter of an hour per recruit. When over 2,000 had been examined conjointly, and there was a probability of a general consensus of opinion having been established, on account of the time required and of the number of recruits, each was examined by one physician only.

As time went on, fewer and fewer fit men were seen. No doubt this is partly due to the fact that the absolutely fit joined the army early, and that by this time the general standard of the population to be drawn on was lower; but another factor of great importance, so far as these returns are concerned, is that the later numbers contain an ever increasing proportion of men who had previously been rejected by medical boards and were called up for reexamination. It also seemed to the examining physicians that the medical boards increasingly referred to them men whom they proposed to put in some of the lower categories, but who themselves were desirous of being placed still lower, and probably in this way the hospital performed a useful function in convincing many discontented recruits that their cases had been adequately investigated, and their category only decided on after full investigation.

The full service men on a new classification from August 8, 1916, to January 14, 1918, fell to 11.6 per cent. The total rejections remained fairly constant, being 4.4 per cent., as opposed to 5.4 per cent., while those considered capable of some form of combatant service fell from 51.8 per cent. to 40.1 per cent., and the labor and clerical class rose from 13.8 per cent. to 43.9 per cent.

*Classification of occupations.*—Considerable difficulty was experienced in arriving at a suitable basis of classification of the various occupations. It was, therefore, decided to adopt a vertical classification of indoor, partly indoor, and outdoor occupations, subdividing these into sedentary, semi-sedentary, and active, the active being again subdivided into light, medium, and heavy, with reference to the amount of muscular work entailed, while a transverse or cross classification was made dependent upon professions and trades.

Preponderance of cases among those in certain occupations makes it seem legitimate to conclude that there is, on the whole, a greater proportion of doubtful heart cases in some employments than in others. This, however, still leaves it open to question whether this greater incidence is due to men with defective hearts naturally drifting into light occupations, such as that of a clerk, or whether such occupations themselves lead to any particular form of heart weakness. This point can only be decided by a detailed examination of the incidence of the various forms of cardiac derangement in the various occupations. An attempt to do this will be made later.

A hospital group of one story pavilions has just been completed at the naval training camp at Pelham Bay, N. Y., providing facilities for 750 patients and accommodations for hospital corps, etc.

\*Conducted at the National Hospital for Diseases of the Heart, London, by C. Chapman Gibbs, R. O. Moon, S. Russell Wells, P. Hamill, F. W. Price, and J. Strickland Goodall.



# THE SPECIAL BRITISH MEDICAL MISSION TO AMERICA

*Colonel Herbert A. Bruce, Consulting Surgeon to the British Armies in France; Sir William Arbuthnot Lane, Consulting Surgeon to the Queen's Hospital, Sidcup, England, and Sir James Mackenzie, Consultant in Heart Conditions in the British Military Hospitals, constituted a special medical mission sent by the Government of Great Britain to meet the leaders of the medical profession in the United States and to confer with them regarding medical and sanitary work on the western front. After being enthusiastically received at the various large centres of medicine and of war industry, these distinguished visitors bade farewell to America on the evening of June 26th at the Metropolitan Club of New York City, where some fifty physicians and surgeons were gathered at a banquet in their honor, hurriedly arranged through the courtesy and foresight of Dr. Wendell C. Phillips and Dr. J. J. McPhee, as orders for their immediate return made impossible a more general gathering, as had been planned.*

## The Farewell Dinner

Dr. WALTER B. JAMES, president of the New York Academy of Medicine, at the conclusion of the dinner addressed the visitors in a brief but feeling tribute to the services which had been rendered to the cause of liberty by the navies and armies of Great Britain and France, and more particularly by the medical men of those forces. He introduced each speaker in turn in a particularly suitable and happy manner.

## THE PROBLEMS OF MILITARY MEDICINE IN FRANCE

Colonel HERBERT A. BRUCE, F. R. C. S., A. M. S., first entered the war in the Canadian Army Medical Service and has for the past year and a half acted as consultant for the Imperial Forces, covering the entire line from the North Sea to Switzerland. Before taking up the medical problems of the army he referred in a most appreciative manner to the services rendered by American surgeons in caring for the wounded, mentioning particularly the Presbyterian Hospital Unit, which is in his area, and which had lost one medical director after another by promotion, Major George E. Brewer, Major William Darrach, and Major Fordyce St. John having each in turn been advanced from the post of director of the Hospital Unit to other fields of usefulness, leaving Major J. A. McCreery as the present director with ample material to draw on with such names as Majors Stevens and Swift, Captains Parsons, Neuhoof, Pappenheimer, Casamajor, Raymond, and Cunningham and many others still with the unit. He also paid tribute to the work of Captain Dunning, the dental surgeon of the unit, and to the services rendered by the nurses.

With regard to the general medical problems of the army, some of the greatest advances that had been made lay in the direction of hygiene and sanitation, a number of which had resulted from the necessity of meeting new conditions and overcoming them. This had a value other than military for it would result in enormous benefit to the citizen population of the civilized world after the war. In all previous wars the chief wastage had been from disease, but that was no longer the case. Owing to improved sanitary methods and inoculations with various vaccines, epidemics which formerly decimated armies were unheard of, and now practically the only wastage was from wounds. Typhoid fever was almost entirely stamped out. In May there

were only twenty-seven mild cases of typhoid in an army of millions of men, a condition which could only be attributed to the protective influence of typhoid vaccination which was compulsory with the troops.

Trench fever had been a source of some trouble, but a commission was appointed by the British Government for its investigation with the result that the louse was convicted as being responsible for its transmission, since which time strenuous efforts had been employed to eliminate as far as possible what the soldiers called "the pilgrims of the night," and their ravages had been materially curtailed by increased bathing facilities in the field and delousing establishments.

A few words might be apropos of the gas which the Hun was throwing over in such large quantities. Three kinds were being used, chlorine, mustard, and phosgene, the last being the most deadly. A great deal had been written on this subject so it was not necessary to go into details, but the pleasant fact might be mentioned that they had now in the British service a mask that was absolutely impervious to any form of gas, so far employed, and the American troops were also using these masks. The mustard gas was the least dangerous, but it was troublesome, particularly in consequence of its action on the eyes. In some offensives the gunners and infantrymen were obliged to wear their masks for twelve to twenty-four hours at a stretch. Practically all the casualties from gas now were due to the fact that the men did not put on their masks quickly enough through failure to realize that gas was being used. Arrangements were now being made for a sufficient number of field ambulances at the front for the early treatment of these cases, who would be admitted to a tent where their clothing would be removed and a shower bath given, followed by washing out the eyes with a soda solution. Ninety per cent. of the cases so treated returned to their units in three or four weeks.

The method of disposal of casualties had been developed to a fine point. The wounded were collected at certain predetermined points, called regimental aid posts, brought there by stretcher bearers, and were carried thence to the advanced dressing stations two or three miles back where they received a field dressing. From these they were formerly taken by horse drawn ambulances to a casualty clearing station far in the rear, but there were now in use a large number of light cars which got the



wounded back with great speed and a reasonable amount of comfort. The casualty clearing stations were really the most advanced hospitals with excellent facilities for taking care of the wounded and here all the serious cases were operated upon. The operating rooms had eight tables, sometimes ten, and were in use day and night. In order to increase the operating capacity of these hospitals in time of emergency mobile surgical teams had been organized, which could be moved from hospital to hospital. Each consisted of a surgeon, anesthetist, nurses and orderlies. During a strafe twelve to fourteen teams worked during the entire twenty-four hours and at times they had taken care of two to three thousand wounded in a single day at one casualty clearing station. Adjoining was a railroad and from here the patients were taken to the base hospitals in ambulance trains. In the British service there were forty of these trains with a capacity of 500 beds each, which gave them a mobile hospital of 20,000 beds. Each train was equipped with operating rooms, doctors, nurses, and orderlies so that the patients could be cared for at the same time they were being transported to the rear to a base, or to a hospital ship for transfer to England.

This brought up the subject of life in the casualty clearing stations under present conditions. At one of these hospitals, during a time when Colonel Bruce was there, they were bombed every night for six nights. Operations were carried on in rooms from which no glimmer of light escaped and all the huts containing patients were in darkness. In the beginning of the war no possible thought had been given regarding precautions as to lights, but they soon discovered that the lights which the Geneva convention fixed as the distinguishing features for designating places of refuge for the wounded simply became a target for the Hun. So all these signs were removed from the hospitals. At times they waited with lights extinguished and when they heard the hum of the German Gotha they took to the doughts, carrying such patients as could not walk. The patients were evacuated from these hospitals as quickly as possible, but the doctors and nurses had to remain and many varied were their experiences. One night while lifting two or three patients to a place of safety they heard a crash in the adjoining casualty clearing station and knew it had been bombed. One of the surgeons whose sleeping tent had been hit had been on his way to rest after a strenuous day when a group in another hut called to him to join them and being a man of great amiability he assented and thereby probably

saved his life for his tent was demolished. This was very fortunate for the service for the man was Major Darrach. Miss McDonald was less fortunate. A splinter of shell caused the destruction of one of her eyes, but a Parisian doctor made an artificial eye for her so skillfully that it could not be distinguished from the other. They tried to send Miss McDonald back to America, but she refused to give up her work [applause] and was now at the front with Major St. John, who has been appointed chief of a mobile operating unit in the American Expeditionary Forces. There were some twenty-five of these mobile units in the American service, and they were similar to the French *auto-chairs*. They were really advanced dressing stations and consisted of an operating room with equipment, including x ray apparatus, etc., carried on two or three trucks.

There was a little to be said regarding new methods. As was well known, practically all wounds received in the present war were infected. Various stages had been passed through in the treatment of such wounds and now it might be said that one technic was similarly employed in the French, the British and the American services. In a word, this consisted of the thorough mechanical cleansing of the wound, the excision of all infected and damaged tissue and primary closure in cases operated upon at a sufficiently early period. Where conditions did not permit of this, then either the delayed primary closure or secondary closure took place at the base. The results obtained were very striking and they had had ninety per cent. of successes. This was an enormous saving in time and lives and man power.

Transfusion of blood was being resorted to much more freely than heretofore, and in the casualty clearing stations

a number of donors were selected and held in readiness, properly grouped. In addition to this, a quantity of Group IV citrated blood was kept in cold storage to be available in periods of rush, and this blood remained good for a month. As a rule thirty pints of blood were kept all the time in an ice chamber in each casualty clearing station. During the offensive at the end of March one of these hospitals was lost. Fortunately none of the wounded, doctors or nurses, fell into the hands of the enemy, but they mourned the loss of thirty pints of citrated blood. It was to be hoped that the Germans employed this blood with their own men and that it would have a purifying effect. [Laughter.]

There seemed to have been some misunderstanding.



COLONEL HERBERT ALEXANDER BRUCE,  
M. B., L. R. C. P., F. R. C. S. (England);  
Temporary Colonel and Consulting Surgeon to the British  
Armies in France; Associate Professor of  
Clinical Surgery, University of Toronto,  
since 1897; President, Ontario Medical  
Association; etc.

ing regarding the part the colonies had played in this war, and there had evidently been a purpose in the German propaganda to make Great Britain suffer by comparison with the rest of the Empire. Recently a member of the House of Commons published some interesting figures in this respect. Among the six million men of the British Army engaged on fourteen fronts, an entire fifty per cent. was composed of Englishmen. Wales had contributed about ten per cent. and Scotland about fifteen per cent., and the part they had played was known to all, although the wonderful achievements of the Fifty-first Division might be recalled during that terrible time in March when part of the line was held by them, fighting with their faces to the enemy continuously for four days and nights without rest, and it was owing to their heroic deeds that this part of the line was held during the most critical time of the war. Ireland had contributed about eight per cent., in spite of the Sinn Fein, and very nobly had they fought. The colonies, Canada, New Zealand, Australia, and South Africa, had contributed fifteen per cent. As a Canadian, Colonel Bruce said he took second place to no man in his appreciation of what the Canadians had done in this war, but the achievements of the mother country had not been surpassed even by the brilliant deeds of her daughters.

The trip, just completed, had taken the members of this special medical mission through many of those centres where the people were working day and night to equip the fighting forces. It was not necessary to enumerate all that had been seen of the marvelous and effective program America was carrying out upon so colossal a scale and with such astonishing precision, but it might be said that the members of the mission had been greatly heartened at what they had seen, as would be those in England to whom they would report on their return. It was very gratifying to know that America could come so satisfactorily to the assistance of her allies, enabling them to secure a complete and final victory which would lead to the only kind of peace that they would ever be willing to accept. [Applause.]

#### PLASTIC FACIAL SURGERY.

SIR WILLIAM ARBUTHNOT LANE said that as it was in the interest of America as well as Great Britain, he had no hesitancy in talking shop for a few moments. Early in the war, one of the departments started by the British medical service was for injuries of the jaw and face. At the commencement that department was small, but it increased in size as the work improved after the appointment at Queen's Hospital at Sidcup of a man named Thomas, who was a great artist and very successful in his management of these unfortunate fellow creatures whose plight seemed to be the most pitiful of all those afflicted by the misfortunes of war. The personnel of the staff consisted of the greatest plastic and dental surgeons that the service possessed, nurses and orderlies, a large corps of mechanics, and this artist whose keen eye visualized at a glance the former appearance of these poor creatures whose faces had been so torn by explosives or burned by flames as to possess little or no resemblance to human beings. It was hard for the imagination to

compass their sufferings. The man wounded in the body or the extremities had no such mental anxiety as the one who felt that on his return home those most dear to him would involuntarily shrink at the sight of his disfigured face. Many of them had destroyed themselves in their despair, but there was no need any longer for a hopeless outlook, for the treatment of these cases turned out to be very satisfactory. Under the discerning eye and gentle hands of Thomas the work assumed a very high quality. The progress and development of his work resulted in about 500 patients being sent to him; this represented a small percentage of the wounded. A certain proportion had other wounds also. The department grew wonderfully and the Red Cross became interested, and the work went on steadily improving. It was planned to get in those wounded in this way from the troops of the Dominion of Canada, of Australia, and of New Zealand. At first the idea was not received as warmly as one could wish, because each had little bases in which they kept these men, but they finally agreed to send their patients and the best of their surgeons and dentists. It had seemed a pity America should not take a hand in it, and so the speaker started a movement in that direction but without much success at first. At last Captain Dunning, of the Presbyterian Hospital unit, arrived at Sidcup, and he was delighted with the work being done. In a little while he was called away, but shortly afterward twelve American surgeons turned up. They were very warmly welcomed and they sent their assurances of the tremendous value of this experience to them and their belief that it would be of very great advantage to the United States forces. Among the patients there were not only Britishers, but a number of Americans. It had been a struggle to achieve the desired aims and the results had been very gratifying, but the cost was very great, and financial support was needed. A promise had been made to lay this matter before the proper authorities here and induce them to send patients to this hospital and also the means for their support and treatment. It really did seem a pity that the American medical service should go through the mistakes of experimentation. It would be better to send the American soldiers there and let them have the advantages of accumulated experience. It might prove to be a slight difficulty that money would have to be provided, because the hospital had not the means of accommodating these people, with its slight resources, but they must be supported somewhere, and their treatment must be undertaken somewhere, and it was very probable that at the present time, at any rate, more could be done for them there than anywhere else.

Some of the work done at Sidcup was marvelous. It was to be regretted that some of these reconstructed faces could not be shown here. The improvement in the eye work was especially fine ever since a method had been devised of making a cartilage eye in which the glass eye was enclosed so that there was perfect movement, and no one would realize that the eye was artificial. The bone graft work was exceedingly good, the finished result of a new nose or a new jaw being extremely gratifying both to patient and surgeon. Any number



of ears were built up. Sir Arbuthnot was anxious for America to take a hand in this, not only to train the surgeons but that American patients should go there and get the full benefit of friendly competition, for the men who did the best work on the nose were given the cases requiring work on the nose; those doing best work on the mouth were given the mouth cases, and so on, and this competition led to a vast pride in superior work. It would not be fair to the men from the United States to let them fall into the hands of those experimenting in nose work and mouth work when they could be given the benefit of the most highly developed talent and experience, for all these soldiers who had suffered in defense of a high principle deserved the best that could be given them.

As Dr. Walter B. James concluded his introduction of Sir James Mackenzie, a distant strain of bagpipes was heard, growing gradually clearer until suddenly through the open doorway appeared Pipe Major James Cooper, leader of the New York Scottish Highland Pipe Band, dressed in the Mackenzie tartan, and skirling madly on his pipes a salute to the chieftain. He marched around the hall, a picturesque and romantic figure, ribbons flying and figure swaying, and was recalled twice before the audience settled down to listen with attention and affection to the man who has done so much to advance the world's knowledge of cardiology.

#### THE SPIRIT OF ENGLISH MEDICINE.

Sir JAMES MACKENZIE said that one of the reasons the Special British Medical Mission had been sent here was to bind closer that growing fellowship and unity between America and Great Britain and also to convey certain hints that might be of value.

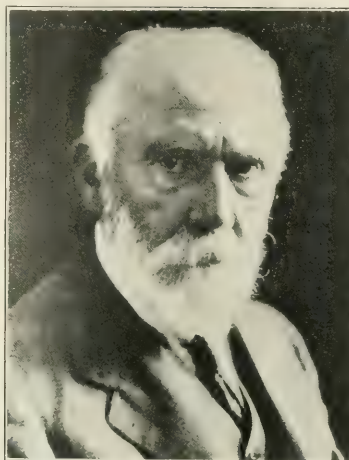


COLONEL SIR WILLIAM ARBUTHNOT LANE, C. B. 1917.  
M. B., M. S., F. R. C. S. (England).  
Consulting Surgeon, Guy's Hospital, London, and to the Hospital  
for Sick Children, London, and Queen's Hospital, Sidcup, Eng.

Sir Arbuthnot had tried to convey the necessity of knowing how much could be saved by trying to benefit by the experience of those long in the war, and

especially by their failures. The people here had taken up their work so well and intelligently that the speaker would not waste time telling them what to do, but he would try to say one or two things that might have a bearing on the future.

Sir James said he had always deplored the old



SIR JAMES MACKENZIE, M. D. (Edinburgh), F. R. S.,  
F. R. C. P., LL. D. (Aberdeen and Edinburgh),  
Physician to Royal College of Physicians, London Hospital.

idea of Americans that progress in medicine was only to be found in the Teutonic school. If a young man in this country had a few months to brush up his medical knowledge, he hastened to a German city and took an intensive course in his favorite study, and went home with the idea that he had done the proper thing. What it should have taken years to do he tried to do in six months. The spirit of English medicine had not been understood. The English school studied the living subject. The German went to the autopsy room and to the laboratory, while the English believed the laboratory should be the servant, not the master. Medicine was a science, and true science was always progressive. Medical science progressed through the liberty to give birth to new ideas as civilization advanced. The same ideals that attained to the highest form of civilization necessarily lent pace to progress. It was the growth of ideas and their cultivation that influenced the spirit of a nation. There was a community of ideas between America and Great Britain; they both had the same qualities of breadth, imagination, vision, and the highest form of cultivation; never brutal, never vulgar, never degenerate; and both countries loved liberty. The lover of liberty was the investigator, the promulgator of ideas. The true conception of clinical investigation should be to make the recognition of a new fact a step to further knowledge. This was recognized in theory, but it was not always put into practice. Clinical medicine in Germany dealt with the later stages of disease, seeking for physical signs of disease and the changes in the tissues after the disease had damaged the organism. The continua-



tion of progress depended upon another conception. How could a German assess, for instance, the value of an irregular heart when he began his study at the terminus? England's conception of research in clinical medicine showed a distinct advance. This was due to a fuller appreciation of the importance of symptoms and the necessity of more accurate investigation into these symptoms. This required exhaustive observation of individual cases for long periods of time in order to note the progress of the disease and to recognize associated signs and symptoms. In cardiology one should be able to assess the value of an irregularity and to differentiate one that had significance from one that had none. It was essential that one should recognize the early stages of a disease. If one was to be able to ascertain the significance of murmurs actually caused by a valve defect, he must turn his attention to the careful investigation of the symptoms of the disease, know the life history of the subject, watch similar cases during the illness causing the damage, and note the gradual changes that ensued during the remainder

to say a parting word to the distinguished guests of the evening, and to express to them, and through them to the people of Great Britain, the good feeling of the medical profession and people of the United States. He referred at some length to the causes of the misunderstandings that had come down from the past and the various influences that had favored their perpetuation and dissemination, but declared that their hold had been growing less for a quarter of a century, and that now that the two countries had come together to fight for the same principles that caused their differences in the eighteenth century, these misunderstandings had disappeared and were replaced by a strong feeling of kinship. He thought it could be truly said that all Americans had come to see the old land in a clearer and better light, and to look upon her after all as the background of our liberty and one of the greatest influences for good in our civilization. He hoped that America would have the honor of receiving more such distinguished visitors bearing the good will of their people and the knowledge gained in the tremendous



GUESTS AT BANQUET GIVEN TO THE MEMBERS OF THE SPECIAL BRITISH MISSION AT THE METROPOLITAN CLUB, JUNE 26, 1918.

1, Dr. Walter B. James; 2, Sir William Arbuthnot Lane; 3, Sir James Mackenzie; 4, Colonel Herbert A. Bruce; 5, Lieutenant Colonel Franklin Martin; 6, Dr. Charles L. Dana; 7, Dr. Virgil P. Gibney; 8, Dr. Leland E. Cofer; 9, Dr. Wendell C. Phillips; 10, Dr. Thomas H. Halsted; 11, Dr. William F. Campbell; 12, Dr. Charles W. Pilgrim; 13, Dr. Frederick Peterson; 14, Dr. Reginald H. Sayre; 15, Dr. William B. Coley; 16, Major John A. Hartwell; 17, Dr. Edward L. Partridge; 18, Dr. Francis Carter Wood; 19, Dr. J. Bentley Squier; 20, Lieutenant Colonel C. A. Warren; 21, Mr. Victor Ross; 22, Dr. Louis L. Seaman; 23, Dr. Edward D. Fisher; 24, Dr. John S. Thatcher; 25, Dr. John E. Weeks; 26, Dr. Arthur B. Duell; 27, Dr. Walter F. Chappell; 28, Dr. L. Emmett Holt; 29, Dr. Walter E. Lambert; 30, Dr. Arthur F. Chace; 31, Dr. Howard C. Taylor; 32, Major Graeme M. Hammond; 33, Dr. Floyd M. Crandall; 34, Dr. Frederic E. Sondern; 35, Dr. Carlos McDonald; 36, Captain Henderson; 37, Dr. John S. Waterman; 38, Dr. J. J. McPhee; 39, Dr. Walter Lester Carr; 40, Dr. George D. Stewart; 41, Dr. Joseph B. Bissell; 42, Mr. Louis Tracy; 43, Dr. A. R. Lamb; 44, Dr. Walton Martin; 45, Dr. Ernest Fahnestock; 46, Dr. Frederick S. Lee; 47, Major Charles L. Gibson; 48, Dr. Lewis F. Frissell; 49, Dr. William K. Draper; 50, Dr. Austin Flint; 51, Dr. Seth M. Milliken.

of life. All these things could be studied, and more of practical value could be obtained from such study in three weeks than in six months by the German method. The British idea was probably the most helpful of all, for turning to English medical literature one would find breadth of outlook, philosophic thought, and always sanity of judgment.

Dr. GEORGE D. STEWART, vice-president of the New York Academy of Medicine, was called upon

experiences of nearly four years of war. He realized the advantage to both countries of seeing and understanding more of each other. He was very glad to acknowledge that he had learned much from what they had said about the work in their respective fields and had no doubt the American medical military service would be most happy to avail itself whenever possible of the advantage of association with their British brethren in the splendid work they

were doing for the wounded. These visitors could carry back with them the assurance that the people of the United States appreciated the stand Great Britain had taken in the war, admired her undaunted spirit, and acknowledged what they and the world owed her for her heroic sacrifices. And he thought there now would be an end to all misunderstandings, and that all would come to see and realize their mutual interests in the trying fires of war, and there would, as a result of their common sacrifices, come a different outlook and a binding friendship that would mean much for the good of both countries.

#### MEDICAL NEWS FROM WASHINGTON.

*Training for Military Surgeons at Fort Oglethorpe, Ga.—Promotion of William J. and Charles H. Mayo to the Rank of Colonel.—Propaganda Against Typhoid Prophylaxis.*

WASHINGTON, July 15, 1918.

In order that the wounded of our army may have the best obtainable surgical treatment, the army medical department not only has obtained the services of many of the best known surgeons of the country, but it also is taking many promising physicians of lesser experience and training them for surgical work in the field and base hospitals.

The work of education is entirely practical. Surgeons taking the course themselves wear from twelve to twenty-four hours the splints, dressings, etc., that they must put on others, so that they may learn the feel of them and where and how they hold and bind. The surgical division of the Surgeon General's Office has collected all the best practice into a 300 page digest, which it distributes to the schools and hospitals. To supplement this, and to give the latest methods learned from experience at the front, a monthly review of sixty-four pages is published. This is necessary, methods having so changed since the early days of the war that, where formerly nearly all wounds became more or less infected, now more than ninety per cent. of the wounds are healed without infection; where at the outset of the war most of the wounded were held in hospitals for weeks and months, now a far greater number return to the ranks in two to four weeks.

This marked improvement is due largely to the Carrel method of wound treatment, which was little known when war was declared and must be taught to most of the surgeons from civil life, for they usually had not been brought to face such conditions in private practice.

Special schools of instruction in these methods of treatment have been opened in about ten of the leading cities, but the great training centre for surgeons in military practice is at Fort Oglethorpe, Ga. There Major Edward Martin, Medical Reserve Corps, formerly professor at the University of Pennsylvania, is organizing a surgical school that will supplement the general instruction given medical officers at the medical training camp at Fort Oglethorpe. He will have a corps of associate instructors, who will conduct courses in wounds, excision of tissues, the use of antiseptics, splints, etc., and other subjects with a view to making the civil surgeon conversant with the latest methods of practice in military surgery.

Major Martin also has been made chief of the base hospital at Fort Oglethorpe, and the hospital and school will work in close cooperation. He is assisted by Captain Edsall Lee, Medical Reserve Corps, who recently returned to this country after a year's service in France.

\* \* \* \* \*

Majors William J. and Charles H. Mayo, Medical Reserve Corps, the distinguished surgeons of Rochester, Minn., have been promoted to the grade of colonel in the Medical Corps of the National Army. Colonel William J. Mayo has been relieved from duty in the office of the Surgeon General of the Army at Washington and directed to proceed to Rochester for duty as instructor for officers, nurses, and enlisted men of the Medical Department at the Mayo Clinic.

\* \* \* \* \*

Some propaganda, apparently pro-German, directed against typhoid prophylactic treatment as applied in the army and navy, has come to light. People from many sections of the country have been writing to the Secretary and Surgeon General of the Navy imploring them not to permit the use of the antityphoid serum for officers and enlisted men, alleging that it is poisonous, liable to corrupt the blood, and that it really only is used at the instance of certain manufacturers of vaccine, who, they say, are making millions from its manufacture and sale to the Government.

These statements, of course, are so far from the truth that apparently they have been inspired by evil motives. If they have pro-German origin, it should be known that the Germans, who are not habitually doing anything to injure their own troops, are understood to be repeating the vaccine treatment every six months in their armies.

The only serum used as prophylaxis against typhoid in our army and navy is made in the laboratories of the Army Medical School at Washington, without a cent of profit to any manufacturer. So far as conveying a taint is concerned, the answer is that it must be absolutely sterile to have any prophylactic value; and, to insure this condition and by way of safeguard against the possibility of contaminating the serum, it is submitted to three separate chemical tests, differing radically in character.

Probably the most fatal disease among troops up to 1914 was typhoid, but the disease has been almost entirely prevented in our army and navy by the prophylactic treatment and sanitary precautions, the treatment having been commenced in our service in 1911. In the short period of the Spanish-American War, out of 20,738 cases of typhoid reported among the troops, 1,580 men died, and more cases occurred in the United States camps than in Cuba. In the two campaigns of our army on the Mexican border, there were only about six cases of typhoid, of which only two were fatal.

With the million and more men in the past year suddenly taken from civil life to camp and cantonment, although under conditions where meningitis, measles, and pneumonia occurred, the cases of typhoid have been negligible, and for the most part they were where men had escaped inoculation or had contracted typhoid before inoculation.

# Editorial Notes and Comments

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## THE RECONSTRUCTION OF THE DISABLED.

Already we have with us men who have been maimed in the war. The story of the first blinded soldier is told by himself in the first number of a new publication *Carry On*, issued by the American Red Cross for the Surgeon General of the United States Army. This man is being educated for self support at United States General Hospital No. 7, at Evergreen, a beautiful country estate at Roland Park, near Baltimore, which has been loaned to the Government by Mrs. T. Harrison Garrett for hospital purposes, and is being used as a hospital school for the blind. This interesting little publication, edited by Lieutenant Colonel Casey Wood and a board under the direction of Colonel Frank Billings, brings out strongly the essential fact that the spirit as well as the body of the maimed soldier must be built up. If an injured soldier is allowed to become dependent his future is hopeless. Therefore, the work of reconstruction begins as soon as the patient reaches the base hospital. The fact is firmly fixed in his mind that regardless of the character of his

disability he is not to become a beggar; that he is not to sacrifice his personality and his independence and that he will be kept under the care of the Government until he has been taught some remunerative occupation, and until a place is found where he can resume his status in society as an independent wage earner.

We are fortunate indeed in having this serious task taken up in such an efficient manner by the division of physical reconstruction in the office of the Surgeon General with Colonel Frank Billings as the director. But this is not the only agency at work in this particular field. The Red Cross Institute for Crippled and Disabled Men, which was established nearly a year ago through the generosity of Joseph Millbank, of New York, has already done most valuable work through the publication of a series of monographs giving complete information regarding the organization of this phase of war service in Germany, in France, and in England. These monographs have been prepared by specialists who have studied the situation thoroughly, and are full of valuable data for the guidance of our own workers.

Still another agency has been organized under the presidency of Dr. W. Gilman Thompson in the form of a clinic for disabled soldiers and sailors on Livingston place, New York. This is, we believe, the first clinic of its kind in practical operation. This clinic is intended to pave the way for the work of the Red Cross Institute for Crippled and Disabled Men by giving special forms of treatment to the wounded which will prevent distortion and deformity, so far as is possible, through the application of special forms of treatment. Dr. R. Tait Mackenzie, of the University of Pennsylvania, who delivered an address at the opening of this clinic during the past week, has installed there a number of special appliances devised by him as a result of his study of the work done in Canadian hospitals, which have been very successful indeed in diminishing the untoward results of war wounds. This particular clinic is associated with Cornell University Medical College, whose faculty will serve in the clinic and whose students will profit by the opportunities it affords for observation. No doubt similar institutions are now being organized in other medical centres. There is no field in which the effort put forth is productive of such excellent results, for through such agencies as have been named above, thousands of maimed soldiers will be saved from the ranks of dependents and given a place once more among self-supporting men.



## MUSTARD GAS AND ITS EFFECT UPON THE SKIN.

The carrying on of modern warfare largely through the use of poisonous gases necessitates a full understanding of their nature and effect: their constitution and manufacture are matters for Government concern. Their effect upon the body tissues and the means of combating or avoiding these rests with the medical arm of Government service. Mustard gas or dichloroethylsulphide is the gas which is used in greatest quantity and produces most disastrous results; therefore this is being submitted to experimental investigation in the laboratories of the University of Michigan. Dr. Aldred Scott Warthin and Dr. Carl Vernon Weller [The Pathology of the Skin Lesions Produced by Mustard Gas (Dichloroethylsulphide), *Journal of Laboratory and Clinical Medicine*, May, 1918] have reported their work upon the skin lesions produced by this gas, reserving for another paper the study of the respiratory lesions and of conjunctivitis.

Their experiments were made with animals and upon human material through autoapplication, amputation material with consent of the patient, and accidental chemical laboratory lesions. They had therefore opportunity to study the lesions throughout and made careful microscopic, pathological examinations, their results differing somewhat from conclusions reached a number of years ago through experimental work, and even from those reported by English and French investigators since the use of the gas in warfare.

Mustard gas proves itself an escharotic, acting upon the epidermis and tissues of the corium, particularly the endothelium of the vessels. There is great damage to the vessels in the affected area, with collapse and some local anemia. There is no hemorrhage nor thrombosis, but a distinct fluid exudation and also emigration of leucocytes. The result of this injury to the vessels with the relatively slight leucocytic demarcating infiltration probably accounts for the slow healing of the lesions. In animals there is slight hemorrhage by diapedesis.

The burn is a chemical one, unlike that produced by heat or electricity, or even ordinary corrosives. It is most like that of hydrochloric acid, and, in its slow healing, resembles the injury produced by the x ray. The necrosis proceeds very slowly, not reaching its depth for five or ten days after application. The writers explain this in part by contraction and death of the vessels, resulting in anemia in the injured area. The edema in animals was strikingly intense and deep and different from that in the human skin. In the

latter, necrosis of the epidermis is usually evident in two hours and reaches no further than the papillary layer in the early stages. There is also early vesicle formation, but, in animals, this was not observed. The deep penetration of even a small quantity is another peculiar characteristic. It enters apparently through the hair follicles, sebaceous, and sweat glands. The lesions are marked also by absence of pain, probably due to the edema and degeneration of nerve endings at the site of the lesion. The intensity of the effect of the gas seems to be increased by humidity, and therefore among the soldiers lesions are usually found on the covered parts, and because of the greater moisture of these parts, more severe in the axilla, between the fingers and toes, around the genitals, and between the thighs.

These investigators refute the statement of some observers that the admixture of water increases the escharotic action. They find that if the oil, the form in which the gas is utilized, is immediately washed away, the lesion is rendered much less severe. They advocate washing within two minutes with tincture of green soap as an entirely effective preventive measure. At the most but a slight hyperemia would result. While this would be difficult to carry out under conditions of warfare, it could be used as a preventive measure wherever the gas had to be handled, as in laboratories, factories, and munition depots.

## THE DISPENSATORY.

The Dispensatory of the United States has been so intimately associated with the progress of therapeutics that it may almost be taken as its index. The volume has changed very materially since the first edition made its appearance with a preface dated January, 1833, but the principles upon which the work was based have been followed throughout and the excellent foundations laid by the authors of that first edition have been built upon most successfully by their successors. The original authors, Dr. George B. Wood and Dr. Franklin Bache, would indeed be gratified if they could see what a colossal compendium has grown out of their comparatively modest volume. Even that first edition, however, was no mean contribution to the medical literature of that day, for it contained over a thousand pages. The present, twentieth, edition, which has recently been issued by the J. B. Lippincott Company, of Philadelphia, contains more than 2,000 pages and the type being smaller and more concise, has more than three times the matter contained in the first edition.

In its latest form, the United States Dispensatory contains so much that is new in order to keep it

abreast with the extraordinary advances which have been made in medicine and pharmacy that the book has been almost entirely rewritten. This required the cooperation of seven men distinguished in their particular fields. The senior editor, Prof. Joseph P. Remington, chairman of the committee of revision of the *United States Pharmacopœia*, who had been one of the editors of the work since 1880, died just before its appearance. Associated with him in this work were Dr. Horatio C. Wood, Jr., Prof. Samuel P. Sadtler, Prof. Charles H. LaWall, Prof. Henry Kraemer, and Dr. John F. Anderson. All these men are members of the committee of revision of the *United States Pharmacopœia* and speak with authority in their own special departments.

The new volume contains much that has not heretofore been included in the dispensatory, such as an index of diseases, the text of the federal food and drugs act, abstracts of federal food inspection decisions, the Harrison narcotic act, with the regulations promulgated for its enforcement, and much information regarding the more recent additions to the materia medica; for instance articles appear on the so called vaccines and on the various serums which have come into such general use during the past few years.

Notwithstanding the spread of therapeutic nihilism, we are still large consumers of drugs. It is well, therefore, for the physician and pharmacist to have in such a convenient and accessible form an abstract of the available information concerning our materia medica. In the good old days, so often foolishly deplored, the study of materia medica consisted largely of a study of the United States Dispensatory from "absinthium" to "zingiber." Now we have all sorts of predigested knowledge laid before the student in convenient handbooks and the dispensatory has been relegated to the category of reference books. As such, however, its value can hardly be overestimated and a copy of the latest edition should be in the library of every practising physician.

## THE INTERRELATION OF THE DUCTLESS GLANDS.

Since the pioneer work of Claude Bernard with the ductless glands there has been opened to medicine almost a trackless field of research. The functions ascribed to the ductless glands have been extended, however, to include other glands which have external secretory functions. It is found now that such glands as the pancreas, ovaries, kidneys, cardiac, pyloric, and fundic glands have both an internal and external secre-

tory action. But the term "endocrine glands" refers rather to the glands with only an internal secretory function, and include the pituitary, thyroid, parathyroids, the adrenals, and, most likely, the spleen. The whole range of glands having internal secretory function is better designated as a system because of their close interaction. All are so closely bound to each other that a disturbance in one will throw out of gear or out of action all the others. Not only do these glands secrete material which controls certain phases of the organism, but in order that this control shall be in harmony they secrete material for the control of the action of the others. This control may be inhibitory of the action of the others or stimulating. It is either antagonistic or supplemental. Oversecretion of one gland soon becomes toxic to the organism, and it is the function of the others to control this. The antagonistic action of one over the other not only prevents the overactivity of the others, but keeps the line of action pulled taut. That even the disturbance in one gland may have dire results can be seen from the fact that the action of these glands is concerned with the control of such vital processes as the vasomotor system, nutrition, circulation, digestion, etc. Indeed, there is no phase which they do not control and disturbances may become manifest even with disturbance of one gland. It is for this reason that in conditions thought to have origin in this form of disturbance gland medication, organotherapy, contemplates the giving of the extracts of many glands, a sort of polyvalent gland extract. Whether the theoretic basis for this action is correct or not, better results do in fact follow the use of polyvalent extracts.

But, while the whole system is strongly bound together, some of the glands are more closely related in their action to each other than to other glands. The thyroid and the adrenals control each other's action antagonistically—that is, inhibiting the overaction of the other. The pituitary, on the other hand, seems to reinforce the action of the thyroid. However, the thyroid seems to be the most versatile, having a direct influence on all of them. The thyroid has, moreover, a very definite control over the ovaries and their generative and menstrual functions. The thyroid and the adrenals are probably most concerned in the control of the sympathetic, although all of the glands are concerned in the maintenance of the equilibrium of this nervous system. Gland disturbances may be either in the production of deficient or of hyperactivity. Probably such indefinite conditions as

neurasthenia, malnutrition, sexual neuroses, and allied conditions, and, more specifically cretinism and dwarfism are produced by deficiency, while goitre, acromegaly, gigantism, diabetes, gastric and duodenal ulcers are caused by hyperactivity. These are but a few of the illustrations of the wide range of gland activity. There can be no doubt that many of the obscure and vague conditions will soon be included among those conditions caused by disturbances of the glands of internal secretion, and amenable to the same treatment.

#### ALOPECIA AREATA AND PAIN.

In two cases shown recently before the Royal Society in London there was rapid and almost complete baldness completed, in one case, in six weeks. Both patients were laboratory attendants. The only possible common factor was microscopical work and eyestrain, and cases have been recorded in which errors of vision have caused alopecia areata. Some cases have recently been attributed to air raids, and one eminent dermatologist said pain was a very potent factor. He mentioned a doctor with an unusual growth of hair on the abdomen who suffered from renal stone and had acute pain in "Head's area" on one side. At the seat of greatest pain there was an area of quite smooth skin. It is a well known fact that there is a tendency to alopecia areata over the point of pain in neuralgia of the head. The fact of hair turning white after great pain or shock does not seem to have any direct bearing on the cause, as the hair, though changed in hue often remains as thick as ever.

#### OUR BRITISH VISITORS.

It was a fortunate inspiration which prompted the sending of a medical mission to America by the British government, and a happy choice was made in the selection of the members of this mission. Sir James Mackenzie, the senior member of the mission, has contributed probably more than any other single scientist to our knowledge of the heart, its functions and its diseases. The address which he made on the spirit of English medicine at the farewell dinner given to the members of the mission by New York physicians is an admirable exposition of the basic differences which exist between the methods of teaching in Great Britain and those followed in Germany and Austria. Colonel Sir William Arbuthnot Lane, a veteran of the Zulu, the Egyptian, and the Boer wars, who is an authority alike on surgery of the bones and surgery of the intestines, made an earnest plea for a closer coordination of the work of the surgeons of all the Allies and told of the wonderful results which have been achieved in plastic facial surgery at Sidcup. Colonel Herbert Alexander Bruce, of Toronto, who is now consulting surgeon to the British army in France, spoke with charm and enthusiasm of the excellent work being done by our American hospital units. All three of the distinguished guests have spoken to representative gatherings of physicians in Cincinnati, in Chicago, in Rochester, in Detroit, in Cleveland, in Pittsburgh, and

in Philadelphia. Wherever they have spoken, they have won the enthusiastic friendship of their hearers not only for the speakers individually but for the cause which they represent and for the service of which they form so notable a part.

#### JEAN SAMUEL POZZI.

It would almost seem as though doctors were attaining to kingly and presidential distinction in being assassinated. The general idea used to be that their errand of healing guarded them safely in civilian life and the Red Cross in the battlefield, but now we are finding that they are just like other mortals, including kings. The blood of Jean Samuel Pozzi, shed by his murderous patient recently, crimsoned the Atlantic and caused a wave of indignation and sorrow to break upon our shores. It is not long since he himself was here, charming all and fascinating the elect of our profession with his operative dexterity and calm reasoning in solving gynecological problems. He was a welcome guest in all the large cities and equally enjoyed seeing and discussing art treasures, old books, curios, or interesting pathological specimens. An unconscious actor, he posed even in the operating room, and went unwrinkled through his sixty-eight years because he never touched too closely with the crowd yet took great interest as they filed before him in his busy life. Although death is now such a frequent visitor that we, unafraid, leave the door ajar nor shudder at his knock, yet the tragic outgoing of a great surgeon, a great healing power, will leave us all a little poorer, a little sadder, because Pozzi has gone.

#### HIGHER RANK FOR MEDICAL OFFICERS.

The President has signed the army appropriation act which carries with it a large number of changes in the military establishment of the United States. The act appropriates \$12,085,000,000 which is an increase of \$44,000,000 above the aggregate authorized in the House bill. Among the changes introduced by the bill is an increase in the Medical Department which includes one assistant surgeon general, for service abroad during the present war, with the rank of major general, and two assistant surgeon generals, with the rank of brigadier general, all of whom shall be appointed from the Medical Corps of the regular army. The President is also authorized to appoint two major generals and four brigadier generals in the Medical Department of the national army. As the law was finally enacted, only half the number of generals were provided for the national army asked for in the Owen bill. A very important change is that which authorizes the promotion of members of the Medical Reserve Corps to the rank of colonel. Heretofore, they could not be given a higher rank than that of major. In the course of the hearing before the Senate Committee on Military Affairs, Surgeon General Gorgas said that the most essential feature of the Owen bill was that which provided for an increase in rank to colonel in the Medical Reserve Corps and this has been covered in the amended measure.



## News Items.

**American Hospital Bombed.**—On the night of July 15th, German aviators dropped bombs on the American Red Cross Hospital at Jouy, France. Two enlisted men were killed, and nine of the personnel were wounded, including Miss Jane Jeffrey, a Red Cross nurse from Dorchester, Mass.

**Rockefeller Foundation Mission to Ecuador.**—An American sanitary commission arrived at Guayaquil, Ecuador, July 9th, to cooperate in wiping out yellow fever in that country. The commission, which was sent by the Rockefeller Foundation, includes four doctors and six nurses.

**Doctor Jacobi Honorary President of the Friends of German Democracy.**—Dr. Abraham Jacobi has accepted the office of honorary president of the Friends of German Democracy, an organization of Americans, mostly of German descent, who favor the destruction of Hohenzollern rule.

**New Officers of the American Surgical Association.**—At the annual meeting of the association, held in Cincinnati, June 6th to 8th, the following officers were elected: Dr. Lewis S. Pilcher, of Brooklyn, president; Dr. George W. Crile, of Cleveland, first vice-president; Dr. Edward Martin, of Philadelphia, second vice-president; Dr. John H. Gibbon, of Philadelphia, secretary; Dr. Francis T. Stewart, of Philadelphia, assistant secretary; Dr. Charles H. Peck, of New York, treasurer; Dr. Charles N. Dowd, of New York, assistant treasurer.

**Examination for Surgeons in Naval Medical Corps.**—An examination of candidates for appointment as surgeons in the regular Medical Corps of the Navy will commence on September 2d. It will be open only to members of the Medical Reserve Corps of the Navy who were in service prior to March 1, 1918. At present there are 326 vacancies in the regular Naval Medical Corps, but it is not expected that all of them will be filled as a result of the forthcoming examination. However, those candidates that do not qualify will continue in their present status in the reserve force.

**Additions to Naval Hospitals.**—Much additional hospital construction for the Navy is contemplated, and some of it is already under way. The Naval Hospital at Portsmouth, Va., is to be extended by forty buildings of the pavilion type and a power house, at a cost of about \$1,250,000. The same amount will be expended on a two story structure on Ward's Island, East River, New York. Additions are being built at the existing naval hospitals at Chelsea, Mass.; Newport, R. I.; New London, Conn.; Brooklyn, N. Y.; League Island, Pa., and Philadelphia, and extensions are being made to the emergency hospitals at Charleston and Paris Island, S. C.

**Hospital Donations.**—John W. Sterling, a New York lawyer, left a fortune of \$20,000,000. Of this \$7,500 was given to the Presbyterian Hospital, of New York, \$10,000 to the Bridgeport Hospital, and \$1,000,000 to the Miriam A. Osborn Memorial Home at Rye, N. Y. After numerous specific legacies, Yale University is made the residuary legatee. It is estimated that the university will receive about \$15,000,000. This is the largest single bequest ever received by a university, excepting that left by James Campbell to the St. Louis University, which has been estimated at from \$20,000,000 to \$40,000,000, but which does not become available until after the death of Mr. Campbell's wife and daughter.

**Treatment of Tuberculous Soldiers.**—Difficulty may be met in holding tuberculous soldiers indefinitely. A time limit of three months may be placed upon compulsory treatment in the army sanatorium and the soldier thereafter discharged upon his own request. A tuberculosis sanatorium will be connected with the special hospitals or reconstruction units, of which there is to be one in each of the sixteen military divisions of the country. The government sanatoria for tuberculosis, to be located at Denver, Colo.; Azalea, N. C., and Otisville, N. Y., are now under construction. There are more than 700 patients at Fort Bayard, N. M.; the receiving hospital at New Haven, Conn., is in full operation, and Whipple Barracks, Arizona, is being rapidly put in shape by Major Holmberg as a receiving station.

**Officers' Equipment for France.**—A notice has been issued by the chief of staff as Bulletin 31, War Department, giving a list of the arms, equipment, and clothing which would be required for officers going to France. The depot quartermaster at New York will furnish on application a list of manufacturers of clothing and equipment who will sell these to officers at wholesale cost.

**Industrial Hygiene Research at Harvard.**—Plans have been made to give courses of instruction in industrial hygiene at the Harvard Medical School, and, through the cooperation of an advisory board of business men, facilities will be offered for studying occupational diseases and methods of improving the conditions of labor. The president of the university has appointed a committee on industrial hygiene, which is composed of the following members: Dr. M. J. Rosenau, professor of preventive medicine and hygiene, chairman; Dr. C. K. Drinker, assistant professor of physiology, secretary; Dr. David L. Edsall, professor of clinical medicine; Dr. Reid Hunt, professor of pharmacology; and the professor of chemistry. According to present plans new departments in medicine, physiology, and chemistry will be created, and courses will be developed in the pharmacological, sanitary, and social phases of industry. For information regarding the course apply to Dr. C. K. Drinker, Harvard Medical School, Boston, Mass.

**The Army Nurse Corps.**—The new military law, which has been made a part of the army appropriation act, provides among other things for an increase in the medical department, which is referred to editorially, and provides for some changes in the nurse corps, which will hereafter be known as the army nurse corps. There will be a superintendent of the corps with a salary not exceeding \$2,400; assistant superintendents, with a salary of \$1,800 each; a director and two assistant directors for each army or separate military force beyond the U. S. continental limits, with salaries of \$1,800 and \$1,500 respectively; and as many chief nurses, nurses, and reserve nurses as may be ordered by the Secretary of War. The chief nurses are to receive \$120 in addition to the pay of nurse. The nurse would receive \$720 a year for the first two years, \$780 for the second, \$840 for the third, \$900 for the fourth, and \$960 after twelve years' service in the corps. The reserve nurses receive the same pay as the nurses, and all members of the corps receive \$10 a month additional for service beyond the continental limits of the United States, excepting Porto Rico and Hawaii.

**Clinic for Functional Reeducation.**—A clinic for the functional reeducation of disabled soldiers, sailors, and civilians was opened at 5 Livingston Place, Stuyvesant Square, New York, on Monday, July 15th. Dr. W. Gilman Thompson, the president of the clinic, made a brief address regarding the organization and function of the clinic. Dr. R. Tait Mackenzie, of the University of Pennsylvania, described the work which was to be undertaken by the clinic. While established primarily as a war service and for the treatment of the mutilated men of the army and navy, and to afford instruction for medical officers, it is intended to make it a permanent institution. The clinic is affiliated with the Cornell University Medical College and its staff includes many members of the teaching faculty. The buildings have been leased from the New York Infirmary for Women and Children. The clinic will be open daily, Sundays and holidays excepted, from 9 to 5. About forty beds are provided for patients who are unable to walk. Treatment is offered free to the poor, but the well to do and those receiving the benefit of war risk or other insurance are expected to pay. The officers of the clinic are: President, Dr. W. Gilman Thompson; vice-president, Giraud F. Thomson; secretary, Miss Gertrude Parsons; treasurer, Mrs. Carlos M. de Heredia; directors, Mrs. J. Nicholas Brown, Mrs. Carlos M. de Heredia, Dr. Victor G. Heiser, Mrs. C. D. MacDougall, Miss Gertrude Parsons, Dr. W. Gilman Thompson, and Giraud F. Thomson. The following are the members of the staff: Major Charles L. Gibson and Major John A. Hartwell, consulting surgeons; Dr. Charles L. Dana, consulting neurologist; Dr. Charles H. Stockard, consulting anatomist; Dr. Charlton Wallace, orthopedic surgeon; Dr. William H. Sheldon, visiting physician; Dr. William C. Thro, clinical pathologist; Major John C. A. Gerster, assistant orthopedic surgeon; Dr. Walter H. Brundage and Dr. Edward Miltimore, assistant physicians.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SOME NOTES ON DRUGS AND TREATMENT.

#### *A Review of Recent Progress in Therapeutics.*

BY MARK SADLER, M. D.,

Montreux, Switzerland.

#### I.

#### THE TREATMENT OF GONORRHEA, CEREBROSPINAL MENINGITIS, POLYNEURITIS, AND MYELITIS.

Gonorrhea is a general infection, and this should be always remembered. It may give rise to manifestations in the various systems of the body, and the neuraxis is particularly liable to become involved, so that cerebrospinal meningitis, polyneuritis, and myelitis may develop during a clap. Whether or not these complications of the cerebrospinal axis are due to the gonococcus or its toxins is a question that experimental work has not as yet determined, but the clinical evolution of these processes and simple reasoning should plead in favor of their gonococcal origin. Consequently, the treatment should take its inspiration from the pathogenesis and comprise two indications, namely, general indications directed against the lesion and gonococcemia; therefore, disinfect the primary focus of the infection with injections of electrargol or collargol and Wright's serum; and the special indications relating to each of these nervous complications.

The general indications are those directed not only against the urethritis itself, but more especially the gonococcemia. Leaving aside the treatment of urethritis, since each physician has his own methods, I would only say that subcutaneous injections of collargol or electrargol may sometimes render unexpected results when internal and local urethral treatment has been of little avail, as occasionally occur in stubborn cases with marked involvement of the posterior urethra and adnexa. I would even advise the use of intravenous injections of these products if the case is urgent, particularly when there is evident generalized infection.

As to antigonococcal sera (no reference being here made to that of de Christmas, since its author has not employed it in man because of the necessarily large dose), some good results are to be obtained with that of Wright and some of those now upon the market.

*Special therapeutic indications.*—In gonorrheal cerebrospinal meningitis the treatment is quite the same as in the epidemic variety. Stimulants and tepid baths are useful, but the principal treatment should be repeated lumbar puncture, which is unquestionably successful in amelioration. To control the pain of polyneuritis, rest and exhibition of analgesics are to be employed. On account of the present conditions in Europe, one can no longer obtain pyramidon salicylate, which is unquestionably of great service; but an almost perfect substitute is now manufactured in Switzerland, called amidoantipyrin salicylate. The dose is from thirty

to fifty centigrams, several times daily, and has no depressive cardiac action. Some of these cases will require subcutaneous injections of morphine, or pantopon, which we in Switzerland much prefer. The latter is given hypodermically, two centigrams or even three centigrams if pain is severe, and, as well known, some forms of polyneuritis are excessively painful. For the resulting paralysis, strychnine has its field of usefulness, but more reliance is to be placed in electricity, massage, and re-education of the movements, which have given excellent results.

In gonorrheal myelitis, besides revulsion applied along the spine, and electricity and massage during convalescence, the treatment above all should be prophylactic from the viewpoint of secondary complications. Bed sores are to be carefully guarded against, the patient being frequently turned from side to side and a perfect condition of cleanliness maintained. The use of a water mattress is clearly indicated. If the catheter is required for retention of urine, the strictest asepsis is necessary.

### RECENT OBSERVATIONS IN DIGITALIS THERAPY.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

*(Continued from page 80.)*

Among the most recent contributions to the study of the arrhythmias are those having to do with the recognition of *auricular flutter* as a distinct type of irregularity. Whereas in auricular fibrillation coordinate contraction of the auricle is suspended through irregular stimulus production at many different points in this structure, with resulting gross irregularity of ventricular contraction, in auricular flutter the contractile impulses are thought to arise in a single focus of the auricular tissue. As in simple paroxysmal tachycardia, the point of origin of the contractile impulses is probably an unnatural one, *i. e.*, separate from the normal pacemaker of the heart; in flutter, however, the frequency of the auricular beat is even greater than in paroxysmal tachycardia, the line of separation between the two being arbitrarily placed at 200 per minute because beyond this rate special, new characteristics of the heart action, not observed in paroxysmal tachycardia, begin to appear. The auricular rate in flutter—usually from 260 to 320 per minute—is such that the ventricle is rarely able to follow the successive auricular beats. Partial heartblock almost invariably sets in as a natural beneficent factor under these difficult circumstances, and lowers the rate of the ventricle usually to one half that of the auricle, *i. e.*, to from 130 to 160; sometimes to one fourth that of the auricle, *i. e.*, to a normal rate of approximately seventy-five. Even complete heartblock is occasionally present. Often the rhythm of the ventricle is regular; sometimes it is irregular.



Flutter occurs usually in patients advanced in years, often in conjunction with arteriosclerosis, and almost always in the presence of some signs of myocardial degeneration. In many instances the condition can be detected without special instruments—in particular, the electrocardiograph. "A regular and persistent ventricular action of 130 to 160 per minute in an elderly subject," states Thomas Lewis, 1916, "is a most suspicious circumstance." If such tachycardia continues a month or more, without modification of rate upon change of posture, rest, or exercise, flutter almost certainly exists. Occasionally during emotion or exertion, however, the rate of the ventricle suddenly rises to that of the auricle; the resulting diminution of the cardiac output is so marked that temporary syncope results.

Digitalis and its allies are almost as effectual in auricular flutter as in auricular fibrillation, mentioned in the preceding issue. In full doses, they have been found regularly to lower the excessive ventricular rate in these cases, and the effect continues as long as use of the drug is kept up. Indeed, in many instances not only is a beneficent partial heartblock produced, but the auricular condition itself is influenced, the flutter being replaced by fibrillation and the ventricle, now well protected from excessive auricular impulse production by the partial block, being allowed to assume a rate of contraction approaching the normal. According to Lewis, if the drug is now withdrawn the fibrillation itself in most instances vanishes and the heart returns to a normal rhythm. In a case reported by Halsey, 1918, however, it was only by energetic use of digitalis—not its withdrawal—that the restoration of normal rhythm was obtained. In this patient the ventricular rate had been 160, and that of the auricle in flutter, 320. Tincture of digitalis in thirty minim doses every four hours was given. Two days later the auricles showed fibrillation instead of flutter; the ventricular rate was 104, and later descended to seventy-six. Nausea led to temporary discontinuance of the remedy, but upon resumption of digitalis the auricle itself returned in four days to a rate of seventy-two, with regular beats, the whole heart being thus restored to a normal sequential rhythm. In another, similar case, the heart rate was gradually brought down to and maintained at eighty-five, but the auricular fibrillation persisted. As Halsey points out, the giving of such doses of digitalis as those mentioned should be undertaken only with hesitation where one is not sure of the cause of the abnormal pulse frequency. Signs of cardiac insufficiency accompanying auricular flutter, such as venous stasis, edema, and dyspnea, disappear almost immediately as the normal rhythm is restored by digitalis. Here, then, is another condition in which the effect of this drug upon the rhythm and rate of the heart is all important in accounting for the benefit produced; the degree of benefit it might be exerting by directly increasing the contractility of the heart muscle seems slight or even nil in these cases. In the remaining forms of cardiac arrhythmia at present recognized, digitalis is less frequently of benefit. In sinus arrhythmia, the irregularity is due to disturbed action of the normal pacemaker of the

heart, which instead of initiating the impulses of contraction regularly, exhibits an alternate waxing and waning of rate. The condition is considered due to alterations of vagus tone, which periodically becomes excessive, thus slowing the heart. The irregularity is removed by any factor which decidedly increases the heart rate, *e. g.*, exercise or fever. Digitalis, tending to stimulate the vagi and to slow the heart rate, is manifestly not of service, and besides, the arrhythmia itself is, in contrast with auricular fibrillation and flutter, a harmless condition.

In premature contraction or extrasystole, abnormal, premature contractile impulses arise either in the auricle, the ventricle, or the intervening tissues, and result in anticipated contractions of the ventricle. Since, however, plenty of time is given for recovery and preparation of the succeeding beat, extrasystoles even when frequent cause but little embarrassment of the circulation. Digitalis itself is capable of inducing premature contractions, apparently through increase of excitability of the heart, and in so far as any direct influence on extrasystoles is concerned, is therefore contraindicated in this condition.

In heartblock, conduction of the impulse of contraction from auricle to ventricle is impaired or completely interrupted. Digitalis itself, as already noted, tends to impair conduction and has therefore been held by some to be contraindicated in partial heartblock, though possibly of service as a direct tonic to the ventricular muscle in complete heartblock. As Lewis has emphasized, however, even complete heartblock is not incompatible with good circulatory efficiency, and in many cases of partial heartblock with impaired cardiac function due to disease of heart tissues other than the auriculoventricular bundle, digitalis will do more good by relieving dilatation and edema or other symptoms than it will do harm by increasing the block. Yet this rule has not been without its unfortunate exceptions, and some caution in the administration of the drug seems advisable.

In alternation of the heart, a prognostically unfavorable condition characterized by alternate strong and weak ventricular contractions, without disturbance of impulse production or conduction, digitalis appears to have no direct influence in overcoming the alternation, though it might conceivably be beneficial indirectly by improving the nutrition of the myocardium. Alternation has been known to appear under large doses of digitalis.

(To be continued.)

**Treatment of Puerperal Septicemia by Serums and Vaccines.**—Josue A. Beruti (*Boletín de Medicina e Higiene, Barranquilla, Colombia*, November, 1917) concludes from experience that non-specific serum therapy by the intravenous method gives results equal to, or better than those obtained with specific sera, providing the dose per injection be not more than twenty c. c. Further, the local application of nonspecific serum is a rational procedure in early localized puerperal infections; and the normal horse serum possesses indisputable powers of producing leucocytosis.



### Improved Postoperative Mastoid Treatment.—

Daure (*Bulletin de l'Académie de médecine*, March 19, 1918) strongly recommends the use of Barthe de Sandfort's paraffin mixture in mastoid after-treatment. A special plastic technic in the mastoid operation is followed which permits of enlarging the meatus to any desired size without leaving any raw surface there. The wound behind the ear is sutured and all dressings conducted through the enlarged meatus. An aseptic wick of gauze having been inserted into the cavity to dry it, the paraffin mixture, previously sterilized in a flask at 120° C., is poured in through a nasal speculum until the cavity is half full. Before it solidifies the end of a sterile piece of stout cotton cord is passed into the paraffin. This first paraffin dressing is allowed to remain five or six days, and the later dressings two or three days. The external dressing of gauze is renewed about the third day, and thereafter daily, the inner surface of the external ear being each time washed with ether. In renewing the paraffin dressing, the block of paraffin is easily and painlessly withdrawn by pulling on the cotton cord. The cavity is then merely dried with hot air or cotton. All the steps should be carried out aseptically. The paraffin dressings can be continued up to complete recovery, though at times, after the third week, washings with alcoholic boric solution or powder insufflations are substituted. In all cases with threatening or already established complications, or even where there is merely a long standing disease with pronounced infection, the author employs the Carrel treatment for a time before beginning the paraffin dressings. Into the adductor tube, passing through the meatus, are introduced about ten mils of Dakin's solution every two hours. After a variable period, the duration of which depends on laboratory studies if such are practicable, and averaging about a week, the first paraffin dressing is installed. By these methods complete epidermisation was obtained, in ten cases, in an average period of five weeks; in some cases on the thirty-third and in one even on the twenty-sixth day. The procedure combines the advantages and obviates the disadvantages of the different postoperative treatments hitherto commonly employed.

### The Bad Habit of Vaginal Douching.—W. E.

Fothergill (*British Medical Journal*, April 20, 1918) points out with emphasis that vaginal douching has become a fad among physicians and a common practice among the laity without physicians' orders, and that its practice does vastly more harm than good. The vaginal lining is not mucous membrane, but is one of stratified squamous epithelium, is not quite impermeable to water and has no secretion other than exuded serum with which leucocytes and epithelial debris are mixed. Mucus comes from the cervix and uterus. Normally the reaction of the vaginal secretion is acid due to the presence of beneficial organisms, and is therefore protective against most infectious bacteria. Chronic douching with medicated solutions washes the normal protective fluid away, destroys the protective acid forming bacteria, kills the superficial layers of cells, irritates the deeper layers, promotes hyperemia, increases the amount of secretion, and

favors menorrhagia, congestive dysmenorrhea and intermenstrual pain. Antiseptic douching for intrauterine or endocervical infections is useless, and vaginal infections are very rare and are usually cared for normally by the vagina if untreated. Douching for gonorrheal infection of the vulva, where it is primarily located, merely serves to spread the infection to the uterus. Very hot douches to control menorrhagia and other forms of uterine hemorrhage are seldom taken hot enough for the purpose and usually increase the bleeding due to the congestion produced. Antiseptic and medicated vaginal douches are useful in the palliative treatment of cancer of the uterus to prevent the foul discharge and as a preliminary preparation of the ulcerated and prolapsed vagina or cervix for operation. Warm, normal saline douches are of value in the convalescence from pelvic cellulitis to promote the absorption of the inflammatory exudates through the production of some congestion.

### The Treatment of Advanced Prostatitis.—

Frank S. Crockett (*Urologic and Cutaneous Review*, June, 1918) states that the patient who has sudden retention should have a nurse for the first twenty-four or forty-eight hours. The bladder should never be emptied suddenly. Every two or four hours a small quantity is withdrawn, preferably two to four ounces. Later, if it is found that the kidney secretion replaces the amount withdrawn, the quantity can be increased to six or eight ounces; water should be freely given. The alimentary tract should receive attention, mineral oil being given in a routine way, coupled with arsenic and iron when the hemoglobin is low. The two stage operation should be performed. The second stage should be performed when the kidney sufficiency increases; when pressure effects on the deep abdominal vessels and lower bowel disappear; digestion, respiration, and heart action improved and when the prostate can be felt to have shrunk to about half its size.

### Fractures of the Elbow in Children.—Mayet

(*Presse médicale*, January 7, 1918) disapproves of the customary immobilization of elbow fractures in children in plaster casts for a period of three weeks, and asserts that reduction and fixation can nearly always be effected more easily, completely, and rationally in the extended position. The latter is also highly advantageous in permitting of ready reduction of lateral displacements and even of co-existing dislocations. By allowing the soft parts, and especially the ligaments, to heal without shortening or retraction it facilitates subsequent recovery of the complete range of movements at the elbow. Care to avoid ankylosis in extension is, of course, essential. But the line of fracture in these cases is generally through the zone of epiphyseal union and bony growth, and consolidation takes place so rapidly that in ten days flexion can be substituted for extension and the joint then immobilized again for a period of ten days. By thus utilizing in succession both of the opposed positions, complete mobility of the elbow is preserved and recovery of function hastened. The author's procedure was carried out successfully in a series of thirty-five cases of elbow fracture.

### Nonunion of War Fractures of the Mandible.—

Percival P. Cole (*Lancet*, March 30, 1918) says that the fundamental principle of treatment is the restoration of the normal arch and the maintenance of accurate occlusion. The functional test is the only one by which results can be judged. In about eleven per cent. of the cases of fractures of the mandible nonunion results and the treatment of this condition is of great importance. Both plating and wiring may have to be adopted under certain circumstances, but neither is specially satisfactory. The best results are secured by bone grafting. Of this there are two methods. The first consists in uniting the fragments, after freshening, by means of a free autogenous graft cut from the patient's tibia and held in place by a plate at each end. The results are usually good. Still better, though less widely applicable, is the practice of pedicle grafting by which a living bone graft is assured. This pedicle graft can be taken from the lower border of the ramus of the jaw with a pedicle consisting of the deep cervical fascia and the platysma myoides. The graft is placed in contact with the freshened fragments and held by passing a silver wire over each end and through the bored fragments. In both types of grafting the immobilization and alignment of the mandible must be secured and maintained by means of upper and lower metal cap splints which are cemented to the teeth before the operation. The details of both methods of grafting the mandible are given.

### Important Phases of the Allen Treatment of Diabetes.—

Albert H. Rowe (*Northwest Medicine*, March, 1918) emphasizes the need of observing certain important matters in the conduct of this method of treatment if the best results are to be obtained. In the first place a complete physical examination should be made to discover all abnormalities associated with diabetes or which may influence the results of treatment. Thus all foci of infection should be eliminated before treatment is started, the Wassermann test should be performed to determine the presence or absence of syphilis, tuberculosis should be sought for, and the circulatory system should be examined carefully. In the second place it is absolutely necessary that the treatment be individualized for each patient. In severe cases residence in hospital with the care of a competent nurse is essential at the beginning. In less severe cases daily visits to the physician's office are essential during the fasting period and the urine must be examined daily, a twenty-four hour specimen being used. In general alcohol and soda should not be given, but sometimes one or the other may be helpful. Patients must be taught to approximate the caloric values of the foods which they eat and to know the approximate content of each in fat, protein, and carbohydrate. Continual use of the proper foods within the limits of tolerance is the most important of all factors. The weight of the patient should be kept below normal, but not more than fifteen per cent. below. Excess of food of any form is harmful and a daily intake between 1,600 and 2,000 calories is usually sufficient. Frequent careful determinations of acidosis are essential. Physical exercise is extremely important to shorten

the period of fasting and to restore and increase the patient's strength and tolerance. Self denial and will power should be encouraged and the patient's environment, habits and mental attitude deserve investigation and control. Work should be limited to eight hours daily and an abundance of rest assured.

**Incarcerated Sepsis.**—Albert E. Morison (*Lancet*, April 13, 1918) recalls the frequency with which incarcerated sepsis is encountered and infections from it are lighted up as the result of manipulations or operations. He recommends a very simple method discovering and dealing with such incarcerated septic foci preparatory to undertaking operations. Every previously wounded patient, even though the wounds are healed and apparently quite sound and normal, is given ten minutes' treatment daily with radiant heat of from 150° to 250° F. for a period of a week to ten days. If there is incarcerated sepsis the scar becomes inflamed in a few days, fluctuation develops, and some pus can be evacuated. The wound is then permitted to heal, and from two weeks to three months after the healing, depending upon the severity of the secondary infective process, the radiant heat treatment is again given. If there is no reaction after a week of this treatment it is safe to operate. Using this method the author has secured aseptic healing in all cases of secondary operation. A lesser advantage of the treatment is also evident in the fact that the scars become healthier and thinner under the influence of the radiant treatment.

**Trigeminal Neuralgia.**—Charles H. Frazier (*Journal A. M. A.*, May 11, 1918) concludes from an experience of over 300 cases of this disease that there are only two forms of treatment which are of any value whatever, namely, alcohol injection as a palliative measure and avulsion of the sensory root of the gasserian ganglion. The alcohol injection requires a high degree of skill and has to be repeated at intervals averaging nine months. It is not free from dangers, especially to the eye, and is usually finally followed by the operation of avulsion. This operation is truly curative and is not fraught with any more danger from complications than is alcohol injection. The ganglion should be approached through a trephine opening under a flap incision above the middle of the zygoma. Through a skull opening the size of a half dollar the dura is slowly separated from the margins of the bony aperture. When the foramen spinosum comes into view it is plugged with some convenient material such as cotton or wax and the middle meningeal artery divided. The foramen ovale is next exposed and the dural reflection over the mandibular division of the nerve is cut as the nerve enters the foramen. By blunt and sharp dissection the posterior third of the upper aspect of the ganglion is freed of dura and the sensory root is reached at the apex of the petrous bone. This is then completely isolated, caught up on a hook, and severed from its central connections by gentle traction. The wound is closed by four layers of sutures. During convalescence sensory and motor disturbances may appear, but they are relatively slight and are unimportant.



**Treatment of Tuberculosis.**—Colonel G. E. Bushnell (*Medical Record*, May 11, 1918) emphasizes the importance of rest in the treatment of tuberculosis, that is, rest in bed, not sitting up which is not rest but exertion. Periods of complete relaxation with or without sleep are desirable, best obtained by assuming the supine posture with eversion of the arms and legs. While fresh air is of the utmost importance, the difference between the air of a well ventilated room and outdoor air is not sufficient to justify the disturbing of very sick patients to get the outdoor air. As to exercise, it should be forbidden when the maximum temperature habitually exceeds 99.5, which temperature calls for bed. Overfeeding is not advisable as patients become tired of it after a time and it causes heaviness, acidity of the stomach and a bad temper. The rest of the treatment is symptomatic; patients with cavities should be taught to empty the cavity at least once a day by assuming a position which favors drainage into the bronchi. Tuberculin is most helpful in those cases which need it least, namely, the early cases. Advanced cases are made worse by it and its use is not to be advocated in the hands of the average physician.

**The Modern Treatment of Tuberculosis.**—H. F. Gammons (*Boston Medical and Surgical Journal*, April 18, 1918) says that the general physician of today and the past has overtreated his tuberculous patients, and has used the methods of treatment—good, bad, and indifferent—that any or all authors have advocated. Tuberculin fell into disrepute on account of this very reason. Many doctors give tuberculin to all of their tuberculous patients, regardless of the indications, and push them nearer their graves. Gammons believes in the use of tuberculin, but only in the hands of the specialist. The general physician not being able to interpret the effect of different treatments, should not use them except in cooperation with the specialist. As soon as the diagnosis is made the general physician should institute treatment, which is, as a rule, rest, and should educate and guide his patient continuously. He should not give general and superficial advice, but should see that his patient has rest in bed, fresh air, a well mixed diet of moderate amount, sunshine, optimism, and freshness. He should not give tuberculin, vaccine, artificial pneumothorax, creosote, or exercise, unless by direction of the tuberculosis specialist.

**Fasting in Intestinal Disorders in the Tuberculous.**—C. D. Spivak (*Colorado Medical*, April, 1918) regards rest as the most valuable of all therapeutic agents and fasting as the only form of rest available for the gastrointestinal tract. Having found partial fasting or short periods of total fasting to be of great value in the relief of various gastrointestinal disorders, he has tried it for the relief of the digestive disturbances so common in the tuberculous and has secured the most gratifying results. He recommends that a patient who vomits a given meal daily should omit that meal entirely for several consecutive days; that one who has no appetite should omit one or more meals daily until his appetite returns; that one who has pain after eating should fast for several meals, etc.

The practice of these recommendations has led to very marked improvement in practically all cases and has never proved in the least harmful. It is also suggested that, since the general bodily functions are diminished in the tuberculous, the diet should be adapted to the reduced capacities of the individual and the practice of forced superalimentation should be abandoned as illogical and harmful.

**Artificial Pneumothorax in Private and Dispensary Practice.**—Alvis E. Greer (*Journal A. M. A.*, May 25, 1918) reports his very favorable experiences with the use of artificial pneumothorax in a series of thirty-two ambulatory cases in private and dispensary practice. Eight of the patients were either untreated because of extensive adhesions or failed to continue treatment and of these all but one have died. Of the twenty-four receiving adequate treatment by pneumothorax all but one are living, the fatal case having been in a patient with advanced third stage involvement of a hopeless type. Eighty per cent. of the treated cases were greatly improved, more than half having been arrested. The improvement was very rapid and included the prompt fall of temperature to normal or thereabout, cessation of night sweating, diminution in sputum, and gain in appetite, weight, and strength. No ill effects were observed in any of the patients from the treatment. It was found preferable to give frequently repeated small amounts of nitrogen—300 to 500 mils—rather than to give larger amounts less often. The administration was made with the Floyd-Robinson apparatus, the track of the puncture having been anesthetized with procaine and epinephrine. The treatment proved of greatest value in first stage cases, cases with unilateral involvement, those with only slight involvement of one lung with more extensive process in the other, cases of acute pneumonic tuberculosis, and those with hemorrhage.

**Treatment of Cancer of the Rectum.**—Charles J. Drucek (*American Medicine*, April, 1918), considers that abdominal operation is best in case where the cancer is limited to the colon or movable sigmoid and is entirely surrounded by peritoneum. Where it extends below the promontory of the sacrum a complete removal through an abdominal incision is attended with many difficulties and mishaps and the combined abdominal perineal operation is unquestionably best. With perineal methods the danger of recurrence is greater, secondary growths occurring in the pelvic peritoneum, the pelvic mesocolon and the lymph nodes situated over the bifurcation of the left common iliac artery. The following points are considered essential: the establishment of an artificial anus; the whole of the pelvic colon must be removed because its blood supply is contained in the zone of upward spread; the whole of the pelvic mesocolon below the point where it crosses the common iliac artery, together with a strip of peritoneum at least an inch wide on either side of it, must be cleared away; the lymph nodes over the bifurcation of the common iliac artery are to be removed; the perineal portion of the operation should be carried out as widely as possible so that the lateral and downward spread of the cancer may be effectively extirpated.



# Miscellany from Home and Foreign Journals

**Meningeal Hemorrhage in War Practice.**—G. Guillaïn (*Bulletin de l'Académie de médecine*, April 2, 1918) points out that in penetrating wounds of the skull, nearly all the primary symptoms, as well as the immediate prognosis, are dependent upon meningeal hemorrhage. Indications of it are early coma, epileptiform seizures on the first day, pupillary disturbances, bradycardia, and hyperthermia. In all cases of penetrating skull injury which succumbed to shock the author noted both clinically and at the autopsy the presence of meningeal hemorrhage. Inhalation anesthesia and lumbar puncture are attended with danger under such circumstances. Even in simple contusions of the skull, without fracture, due to war projectiles, meningeal hemorrhage is much more frequent than is generally supposed. It is marked by slight mental confusion, headache, slow pulse, anisocoria, etc.; lumbar puncture yields a pinkish or yellowish cerebrospinal fluid. Subdural hematoma may follow; yet its clinical signs—blindness, hemianopsia, aphasia, paralyzes, etc.—may later completely disappear, either spontaneously or after repeated lumbar punctures. In 1915 attention was called by the author to meningeal hemorrhage from nearby explosive detonations, in the absence of an actual wound. In addition to the frequently present diagnostic signs of meningeal hemorrhage, viz., headache, neck rigidity, Kernig's sign, bradycardia, etc., Guillaïn finds diagnostically significant a state of cerebral excitation with mental confusion, the contralateral flexion reflex by pressure on the femoral quadriceps, true defensive reflexes such as those of the frog, and pupil disturbances. In a few cases there was noted a massive albuminuria or a cholemic tint of the skin.

**Agglutinin Diagnosis in Triple Inoculated Persons.**—H. Marrian Perry (*Lancet*, April 27, 1918) points out that prophylactic inoculation with triple vaccine (T. A. B.—typhoid, and paratyphoids A and B) has wrought material changes in these diseases. The clinical form of the enteric infections is wholly aberrant, and the symptoms have become so modified, or so many are absent which were diagnostic, that the clinical diagnosis of enteric infection has become very difficult. From the laboratory side the condition is similar; the mortality has been so reduced that a necropsy on a victim of enteric infection is now very rare; the recovery of the infecting organism from the blood, urine or feces is now the exception rather than the rule. The agglutinin test has also been greatly modified, but it still remains the one method of making a reasonably certain diagnosis. As the result of a very large experience with this test in triple inoculated subjects the author presents the following conclusions as to its value and the method to be used. The technic of Dreyer and Walker, of quantitative determination of the agglutinins for each of the three organisms against standard agglutinable cultures is the method to be used, but it must be carried out by an experienced worker if its results are to be of value. The test must be repeated at regular intervals to obtain the curve of each of the three agglu-

tinins. Where there is a positive result this is shown by a rise in the agglutinin curve for one, or at times two, of the organisms amounting to 100 to 200 per cent. This rise develops in a regular curve and reaches its maximum between the sixteenth and twenty-fourth days of the disease. The occurrence of such a rising curve is diagnostic of infection by the organism, or organisms, whose curve is affected. In some cases all three curves may rise and fall in this manner, and one cannot then make a diagnosis as to the infecting organism. Negative agglutinin tests in clinical cases of enteric infection may be due: 1, possibly to the mildness of the infection as a result of the inoculation, so that few agglutinins are produced; 2, to the fact that the infecting organism is a feeble producer of agglutinins, such as the *B. paratyphosus A*; 3, possibly to exhaustion of the power of producing agglutinins through the administration of typhoid vaccine prior to the use of the triple vaccine. Finally, the specificity of the positive test is shown by the fact that there is seldom any material rise in the agglutinin curve of any of the three organisms as the result of other febrile conditions.

**A Study in War Nephritis.**—John P. Peters, Jr., and A. Raymond Stevens (*Journal A. M. A.*, June 8, 1918) studied 155 cases classed as war nephritis with a view to determining whether or not there was such a distinctive clinical entity which might be regarded as a disease per se. Of the 155 patients, forty-seven per cent. were found to be suffering from recurrence of symptoms of chronic cardiac or renal disease. Of the remaining eighty-two patients, forty-nine were suffering from definite acute nephritis, usually indistinguishable from that seen in civil practice. Eight had typical trench fever with evidences of nephritis and four had puerile infections with pyuria. A group of fifteen patients stood out from the rest in presenting a peculiar and characteristic clinical and pathological picture. In most the onset was sudden, but some had mild prodromal symptoms. The constant and predominant symptoms were profuse hematuria, frequency and urgency of micturition, and a variable and irregular fever. In the febrile stage the patients gave the picture of an acute infection; later the chief appearances were pallor and debility. A few showed slight edema or puffiness of the face and slight dyspnea on exertion. Heart and lungs were normal, as was the blood pressure. Blood and urine examinations and cultures for organisms were negative. In addition to gross hematuria all but one of the patients showed casts in the urine with albumin which could be accounted for by the blood. The phenolsulphonaphthalein output was generally somewhat reduced. The typical physical sign was found on cystoscopy, being the occurrence of a variable number of submucous hemorrhages in the bladder, varying from the size of a pin point to one centimeter in diameter. In most cases fresh, fluid blood was also seen coming from the ureters. Pathological examination of tissue removed from the bladder at the site of the hemorrhages showed no inflamma-

tion, there being merely a transudation of whole blood. The nature and cause of this peculiar condition, which constituted fifteen per cent. of all of the acute nephritic cases, was not determined. The evidence seemed to point to its being in part a renal affection. The work is being continued.

**The Inorganic Elements in Nutrition.**—Thomas B. Osborne and Lafayette B. Mendel (*Journal of Biological Chemistry*, April, 1918) prepared a number of salt mixtures in which one or more of the inorganic elements was omitted and replaced by increments of the remaining ones so as to maintain the acid base balances as nearly as possible. The foods were all carefully analyzed, and all contained small measured contaminations of the elements which it was desired to exclude. The animals were given distilled water to drink. With diets low in calcium and phosphorus there was a characteristic slowing of growth of the animal, which was quickly altered when calcium in the inorganic form was added to the diet. With diets low in sodium, potassium, magnesium, or chlorine, growth was not inhibited, though when both sodium and potassium were decreased at the same time growth ceased, and recommenced when only one of the elements was missing. No conclusions were reached with the magnesium free diets. They conclude it is not necessary to consider the presence of calcium, phosphorus, and iron in natural foods to the degree that is generally believed, as their experiments show that the growing animal can supply its need of these elements from inorganic sources. Under ordinary circumstances it is possible to supply any shortage of an essential inorganic element by the use of its salts. In feeding farm animals, where there is a lack of calcium and phosphorus in their grain, the authors say that the fact that complete nutrition can be attained upon diets in which the inorganic ingredients are supplied in the form of their commercial salts has a significance just beginning to be appreciated.

**The Nutritive Value of Maize Protein: Phosphorus and Calcium Requirements of Healthy Women.**—H. C. Sherman, Lucile Wheeler, and Anna B. Yates (*Journal of Biological Chemistry*, May, 1918) studied the nitrogen, calcium, and phosphorus balances in two healthy women during seven consecutive periods of four days each, using in the first series a diet of wheat bread, butter, peanut butter, milk, meat, apples, and grape juice, and in the second series with one subject a diet which included 200 grams of corn meal a day, about one-third of the protein thus being derived from maize, and with the other woman a diet largely made up of wheat bread for twenty days, and then for eight days corn meal was substituted for much of the wheat flour used in the bread and also for part of the sugar previously used, so that about one-fifth of the protein of the last period was derived from maize. Unless eggs or milk were used plentifully in cooking it was difficult for one unaccustomed to eating maize to live on the diet without a disturbance of appetite or digestion. However, the conditions of the experiment were very severe, so that the authors regard the results as very favorable to the use of maize pro-

tein in normal adult nutrition, because on a continued low protein diet, where forty-seven per cent. of the total protein was from wheat flour and thirty-one per cent. from corn meal, the latter was used efficiently in maintaining the nitrogen equilibrium, and also because when maize protein was substituted for wheat protein to an extent affecting one-fifth of the total protein intake, there was no unfavorable effect on the nitrogen balance. The minimum output of phosphorus per day of 0.71 to 0.69 gram in these subjects, who weighed sixty and fifty-four kilos respectively, would correspond to the minimum requirement of an average sized man per day (0.83 and 0.89 gram respectively in a man weighing seventy kilos). In both subjects there was a constant negative balance for calcium and no tendency to equilibrium.

**Influences of Extrarenal Factors on the Renal Functional Test Meal.**—W. G. Lyle and H. Sharlit (*Archives of Internal Medicine*, March, 1918), in studies in normal and nephritic subjects, found that extraneous influences might modify the results of the meal test for renal function in the form suggested by Mosenthal. Two such factors definitely identified were: the state of water reserve in the tissues and chilling of the body surface. These influences affect chiefly the fluid element in the test meal reaction, mainly because the skin and lungs make a preferential demand on body fluids, while the excretion of solids by the skin and lungs is practically negligible. They are sufficient to demand caution in judging of the renal functional efficiency on the basis of Mosenthal's method of test meal interpretation, especially: on the basis of a single test meal; in individuals well enough to be about and who are exposed to the diverse influences of temperature, humidity, and rate of metabolism; where no strict control of the dietary of the test meal is attempted. Early diagnosis of renal insufficiency by this test meal method is hazardous unless frequent tests consistently show renal involvement.

**The Renal Function in Cardiac Insufficiency.**—Achard and Leblanc (*Presse médicale*, March 14, 1918) note that in cases of heart disease with diminished output of urine, urea often tends to accumulate in the blood, lessening, however, when diuresis is started. Ambard has ascribed the urea accumulation directly to the reduced output of urine; the kidneys are held still capable of concentrating urea without difficulty, but the outflow of fluid is insufficient. The authors have found that so simple an explanation of the condition does not always answer, for upon fractionating the urine one sees at short intervals the urea being eliminated in very different degrees of concentration, the latter increasing progressively as the output of urine rises and the degree of albuminuria falls. These facts can be explained on the basis of variations in the circulation of blood through the kidneys; stasis, when it becomes accentuated, temporarily lowers the power of the kidneys to concentrate urea. After the onset of polyuria, on the other hand, one can observe an increase of the concentrating power to above normal. Similar observations may be made in acute diseases.



**Relation between the Tetanoid Symptoms of Guanidine Administration and the Condition of Acidosis.**—C. K. Watanabe in this, his third, study (*Journal of Biological Chemistry*, April, 1918) administered sublethal doses of guanidine hydrochloride to rabbits, with a resulting marked acidosis, as evidenced by the increased hydrogen ion concentration in the blood, and the decrease in the alkaline reserve. After the injection the rabbits showed symptoms of tetany. A hypoglycemia was also produced, as a secondary phenomenon of guanidine poisoning. No parallelism between the severity of acidosis and hypoglycemia appeared to be present. The injection of guanidine produces symptoms analogous to those of tetania parathyreopriva, so that the assumption that guanidine plays an important rôle in the development of tetany would appear to be strengthened.

**The Basis of Measurement of Antagonism.**—W. J. V. Osterhout (*Journal of Biological Chemistry*, May, 1918) says that in order to measure antagonism it is necessary to know the additive effect, which he defines as the effort which would be found if no antagonism existed. He discusses and illustrates by means of diagrams methods of determining the additive effect and of measuring antagonism. When it is impossible to determine the additive effect with sufficient accuracy to be of value one may only be able to determine whether antagonism exists where it can be shown that the effect of any combination of substances is less than that produced by the most strongly acting substance in the absence of the others and at the same concentration at which it exists in the combination. If the effect is greater than this it may be due to antagonism, additive effect, or the opposite of antagonism.

**Cardiac Disturbances in Scarlet Fever.**—Florand and Paraf (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 7, 1918) report that in a series of twenty-seven cases of scarlatina seen in the Val-de-Grâce Hospital since August, 1917, no less than fourteen developed unmistakable cardiac complications. In a few instances the heart sounds were observed to be distant and muffled upon admission, *i. e.*, on the second to the fourth day of the disease. Usually, however, the cardiac disturbances appeared only from the fourth to the eighth day. Evidences of impaired cardiac function were, as a rule, absent or but slight, only three patients complaining of precordial distress and slight dyspnea. Thus, as in rheumatic fever, cardiac trouble in scarlatina can be satisfactorily traced only by daily auscultation. The mitral valve was that chiefly affected; in fact, none of the fourteen cases showed any aortic involvement. The physical signs were precisely those met with in rheumatic fever, the initial muffling of the heart sounds being followed by the appearance of murmurs, often irregular, with or without lengthening of the first sound and reduplication of the second. Likewise, as in rheumatic fever, the murmurs often disappeared from one day to the next, and returned permanently, in a few cases, only in the terminal stage. In four cases the condition passed into a chronic mitral insufficiency or double mitral lesion. The

remaining cases left the hospital merely with tachycardia and instability of the pulse. During the course of the heart disturbance the pulse always remained good, and was often accelerated. There were never any arrhythmia nor signs of myocardial fatigue, though in one instance bradycardia was present for a few days.

**A Case of Anaphylaxis.**—G. H. Waugh (*British Journal of Children's Diseases*, January-March, 1918) reports the case of a girl, aged seventeen, who presented the clinical picture of diphtheria. The mother stated that the child had had diphtheria ten years previously and the injection had made her very ill. She was given 4,000 units of antitoxin and died within five minutes. The visible effects at the time of death were: deep cyanosis; great difficulty in breathing; frothing at the mouth. At autopsy the only condition found was a general stasis with well marked congestion of the lungs. The girl was a catarrhal subject but had never had asthma.

**Intermittent Fever from Meningococcal Septicemia.**—Arnold Netter (*British Journal of Children's Diseases*, January-March, 1918) concludes that meningococcal infection may assume the clinical appearance of typical intermittent fever, quotidian, or tertian. The attacks often coincide in such cases with the appearance of an eruption, such as, erythema nodosum, erythema multiforme or purpura. These eruptions, which might arouse attention, are often absent. In the majority of cases symptoms of cerebrospinal meningitis succeed these febrile attacks but they may not appear for one or two months or more. Meningitis may be absent altogether. The diagnosis must be made by bacterial examination. Blood cultures and cultures from the nasopharynx will supply valuable information. The intermittent attacks give way rapidly to serum treatment. Serotherapy may cause an alarming reaction soon after the first injection. Intrathecal injection is less dangerous than intravenous.

**Gastric Secretion during Fever.**—J. Meyer, S. J. Cohen, and A. J. Carlson (*Archives of Internal Medicine*, March, 1918) studied this question in dogs with Pawlov accessory stomachs, producing fever by intravenous injection of sodium nucleate or a killed culture of *B. prodigiosus*, feeding meat with water five or ten minutes later, and then observing and testing the gastric secretion. Striking and constant results were obtained. The gastric secretion during fever was found to be diminished in volume and in total and free acid. The percentage of chlorides is constant or only slightly reduced, and the pepsin relatively increased. The secretion isropy and mucous in character. External heat, when sufficient to raise the temperature by from 2 to 4° F., was found to cause the same changes in the gastric juice as are produced by fever. Both in fever and in temperature elevation due to external heat, gastrin—a product which when injected subcutaneously causes a definite secretion of gastric juice in which psychic factors play no rôle—proved incapable of inducing gastric secretion. The authors suggest that during fever toxins are elaborated having a direct depressor action upon the secretory cells of the stomach.



# Proceedings of National and Local Societies

## MEDICAL SOCIETY OF THE STATE OF NEW YORK.

*One Hundred and Twelfth Annual Meeting, Held at Albany, May 21, 22, and 23, 1918.*

The President, Dr. ALEXANDER LAMBERT, in the Chair.

**Etiology of Nephritis.**—Dr. CHARLES JACK HUNT, of Clifton Springs, presented a study of 342 cases of nephritis, sixty of which were studied by the methods outlined by the author. Of these sixty, forty-seven were submitted to corrective and dietetic measures and were subsequently restudied. The longest period of observation was two years and the shortest twenty-six days, following corrective measures. Correspondence with the home physicians of the groups secured replies from the majority of them or from patients, and in a few instances from both. Of the twenty-three cases uncorrected, three had died from nephritis and sixteen reported advance of the disease or no improvement; four were not noted. Of forty-seven cases submitting to corrective measures, nine had not been noted, six reported little or no change, and thirty were much improved or apparently as good as ever. The latter quotation, "much improved," appeared frequently enough to be used as a general statement.

The group of nephritics in whom no other etiological factor, except bacterial toxins, formed chronic foci, were studied by recognized renal functional tests under control diet both before and after removal of discoverable foci. Culture study showed the streptococcus mucosus as the principal pathological evidence. Of forty-seven cases restudied, other bacterial forms, in the order of frequency, were a diphtheroid organism, bacillus mitis, streptococcus candidus, streptococcus viridans, and pneumococcus. Thirty-six were reported prior to the presentation of the paper. Of these thirty were improved and had resumed normal modes of living. Of twenty-three cases not corrected, nineteen were reported, three having died, and sixteen showing advance of the disease.

The work in chemistry was carried out personally by Mr. Roger S. Hubbard; that in bacteriology by Mrs. C. Brogden and Dr. M. S. Woodbury. The management of diets and the technical clinical work was entirely under the direction of Miss Lillian Bradley, to whose assistance the author was indebted for the detail of such work, requiring as it did both time and patience.

Dr. CHARLES G. STOCKTON, of Buffalo, stated that he did not know just how carefully or how radically Doctor Hunt classified his cases of nephritis, but it did not seem to make very much difference, because as these cases were seen they were either primarily from infection alone or from a mixture of infection and metabolic defects, and in the management of all cases it was up to the practitioner to get rid of infection and correct the metabolic defect. The paper was very important, and the author's view of nephritis ought to be very thoroughly appreciated and methods carried out such as

had been described. It was surprising to find how much benefit might come in some apparently hopeless cases. He had seen rather acute types of nephritis, with marked metabolic disturbances following infection, the infection producing anasarca and cerebral symptoms of a grave character; yet he had seen those disturbances pass off without any apparent effect on the kidney remaining. He had in mind a woman who went safely through a gestation, who at one time seemed to be a hopeless nephritic. In her case he felt convinced the reason for relief was the removal of the tonsils, and subsequently the careful regulation of diet and studies of the blood.

**The Diagnosis of Nephritis.**—Dr. ALBERT A. EPSTEIN, of New York City, stated that on the basis of our present knowledge a diagnosis of nephritis was confronted with two distinct problems; first, the determination of the pathological processes involved; and secondly, the evaluation of the kidney function. An accurate diagnosis of nephritis, therefore, entailed a circumspect and complete analysis of all the morbid conditions present; the probable etiological factors involved, the disturbance in function, and other disorders which arose therefrom. To regard nephritis as an independent condition was a fallacy.

The problem in the diagnosis of acute nephritis was essentially different from that of chronic nephritis. In acute nephritis there was acute damage to normally functioning organs, which having been previously sound were again more or less quickly restored to normal, provided they were not overwhelmed by the destructive agent. In the diagnosis of acute nephritis or subacute nephritis, a consideration of the etiological factors involved was very important; they were usually bacteria or their toxins, or as he believed to be the case with certain subacute types, constitutional disorders of metabolic or endocrinous origin.

The existence of acute nephritis, excepting, of course, the chemical nephritides and the types occurring in pregnancy, therefore pointed usually to an antecedent infection. But renal disorders with urinary signs frequently occurred in febrile diseases of all kinds, which did not represent true nephritis, and thus the problem of differentiation often arose. In this latter group of cases, of course, the signs usually were not so pronounced. There was an albuminuria, at times, with casts. Functional disorders also arose. But there was not as a rule that marked evidence of renal involvement such as was found in the true cases of nephritis, nor did the disturbance last much beyond the duration of the febrile state. The difference, perhaps, was arbitrary and one of degree only.

In the matter of chronic nephritis, the problem of etiology as a source of information was much more difficult. No doubt, in a certain number of cases a history of acute nephritis or recurring infections might be elicited, and a diagnosis made, but the connection between the two was not always clear. Chronic poisoning, tuberculosis, or syphilis might

be contributory factors, and required consideration in the diagnosis. There was one difficulty that presented itself from the clinical side in investigating the question of the connection between acute, sub-acute, and chronic nephritis, and that was, that acute and subacute nephritis might appear during any infection without the development of symptoms other than the urinary signs. Furthermore, in the chronic nephropathies it was the possibility and the frequent occurrence of compensatory processes that created difficulty in arriving at a diagnosis. This was particularly true when the question was viewed from the functional standpoint.

In the application of functional tests in the diagnosis of nephritis, two points should be borne in mind, namely, that a number of the different functional tests should be made, and that they should be repeated in each and every case. As a prerequisite to the proper interpretation of the results obtained by functional tests, extrarenal factors which were capable of modifying or influencing them should be definitely excluded.

Nephritis was rarely an isolated or independent condition. The accurate diagnosis of nephritis involved the consideration of many different factors which entered into the production of its clinical manifestation. Improved methods of investigation permitted us to get a much more comprehensive analysis of the disease, and enabled us to understand its menace and variable features. Reliance should not be placed on any one method of analysis or investigation; all of them should be used to attain the one end, namely, a proper diagnosis. Attention was called particularly to the heretofore unrecognized importance of changes in the protein and lipid composition of the blood as a means of diagnosis of certain types of renal disorders.

**Pathology of Nephritis.**—Dr. HERBERT U. WILLIAMS, of Buffalo, stated that the pathology of nephritis was in a rather confused state. Efforts were now being made to connect the diseased conditions that were found and their structures with the causes of these diseased conditions on the one hand, and on the other hand, to connect these diseased conditions with changes in substance. He passed over those cases of nephritis that were due to obvious focal infections such as were found in an ascending pyelonephritis or in tuberculosis. These by rather common consent were omitted in a consideration of this character. Taking up nephritis in this sense, the old fashioned classification was simple, but it had been considerably modified in the course of time to secure a more exact classification, and almost every one divided nephritis into tubular or glomerular subdivisions. The chronic form of glomerular nephritis was by many held to be identical with chronic interstitial nephritis. There was great difficulty in separating these from the arteriosclerotic kidney, which resembled it closely in many cases. As a matter of fact, it was exceedingly difficult to draw a hard and fast line between the different types of nephritis, not only clinically, but anatomically. To be perfectly safe, one should call a case of nephritis, diffuse, in almost all instances. The epithelium of the tubules underwent postmortem change. The kidney of a normal

subject which had had time to undergo postmortem changes frequently showed alterations that it was quite difficult to differentiate from what was usually called cloudy swelling. The epithelium of the convoluted tubules was exceedingly sensitive, and in various conditions of bacterial toxemia or in poisoning by metals and other agencies there were marked degenerative changes in the epithelial cells. Albuminous degeneration of the epithelial cells, fatty degeneration, desquamation, were seen frequently in this class of cases. It was seen in mercuric chloride poisoning, in the acute toxemias like diphtheria and septicemia, in acute yellow atrophy of the liver, and so on. In many cases there were clear evidences of inflammation in the form of exudation into the tubules, and frequently leukocytes in and around them, and sometimes blood. Many of these cases would show alterations in the glomeruli at the same time. The moderately pure type of this form of nephritis was more common than glomerular nephritis.

In recent years there was a tendency to attribute the granular contracted kidney to earlier attacks of glomerular nephritis. The formation of new fibrous tissue in a kidney, leading to chronic interstitial nephritis, seemed more and more to be attributed to the formation of fibrous tissue in response to a loss of substance rather than as a result of irritation.

We were not able at the present time to connect the pathological anatomy very closely with changes in function. The classification of nephritis into glomerular, tubular, the late glomerular, the chronic interstitial, and the arteriosclerotic was quite generally adopted, and the most interesting point was that of determining the relation of focal infection to glomerular nephritis by ascertaining that it was actually caused by bacterial emboli and not entirely through the agency of toxins. Finally, a number of very high authorities (Stengel, Mallory, and Ophuls) were of the opinion that granular contracted kidney was closely connected with the arteriosclerotic kidney, and difficult to distinguish from the latter, and was very largely the late results of an earlier glomerular nephritis, possibly repeated attacks of glomerular nephritis. He quoted Mallory as saying that a patient who recovered from his toxemia and from his acute attack might suffer almost equally from the reparative changes which occurred in the kidney.

**Treatment of Chronic Nephritis.**—Dr. JOHN R. WILLIAMS, of Rochester, stated that the most common type of kidney disease seen was that of the middle aged adult who complained of some or all of the following symptoms: tiring easily, occipital headache, shortness of breath, high blood pressure, with little or no physical evidence of kidney disturbance except frequent and excessive urination at night. The blood was commonly low in urea, creatinine and phosphates; the blood sugar might be high. Edema was usually not present. Death was rarely caused by uremia, rather by cerebral hemorrhage or failing heart. This was the well known cardiorenal type.

The next most frequently seen type was the middle aged or even younger adult who might have

pronounced eye symptoms, edema, low or high blood pressure, very little kidney reserve, urine loaded with albumin and casts, blood containing two or three times the normal amount of urine, a high blood sugar, increased blood creatinine and phosphate retention. Death was commonly preceded by convulsions and the phenomena associated with uremia.

The last and much less frequently seen type was that of the young or middle aged adult who complained chiefly of edema, weakness, and pallor, with no albuminuria; blood urea and sugar would be found low, perhaps lower than normal. The cholesterol content of the blood might be greatly increased; edema might or might not be influenced by the salt content of the diet. The functional capacity of the kidney was fairly normal to the usual clinical tests. The patient suffered very little from headache or from other symptoms commonly seen in failure of the kidneys.

The first and one of the most important steps in the treatment of any type of kidney disease was to rid the body of all focal infections. The investigation of suspicious tonsils, crowned teeth, and diseased prostates could not be overemphasized.

In the treatment of the cardiorenal type, if it was certain that the patient was not harboring infection, the most important measure was rest, both mental and physical. If the patient had a good functional kidney capacity he should be put on a low general simple diet. All chemical irritants in the way of spices, mineral acids, alcohol, and foods containing quantities of animal extractions, bacteria, and bacterial products should be excluded from the diet. The patient should be allowed to have some meat and eggs.

The second clinical type demanded quite a different therapeutic régime than did the cardiorenal type. In severe cases the best internal measure was to put the patient at rest and give him a limited milk fluid diet as first suggested by Karel. The author prescribed for the first few days one quart of milk, one pint of water, and either another pint of lime water or some salt of calcium, either the carbonate or lactate in half gram doses several times daily. The tincture of iron or ferrous carbonate in liberal doses was also given.

In the third and last common type of chronic kidney disease the diet should be more liberal, and should contain a large amount of protein. As many as eight to ten ounces of meat might be very helpful. Fluids should be restricted. If there was evidence of salt retention its use should be curtailed, otherwise it might be sparingly permitted.

**Discussion.**—Dr. ARTHUR F. CHACE, of New York, agreed with Doctor Jones relative to treatment, that in parenchymatous nephritis physicians now gave a larger protein diet than formerly. His experience confirmed that of Doctor Epstein, that in these cases, weakness, anemia, and deficiency of the blood could be overcome by large amounts of egg, meat, and albumin. A radical change had taken place in the treatment of parenchymatous nephritis. He had been surprised how few cases of parenchymatous nephritis he had come in contact with. He did not see them as a sequel of organic

disease or blood retention, and he did not give a large protein diet owing to the number of cases of mixed types. In the interstitial type of nephritis, where there was considerable retention of products of nitrogen metabolism in the blood, a low protein diet should be given to maintain body strength. There had been great danger in the treatment of diabetes as well as in nephritis, in giving too low a diet. The pendulum had swung too far in efforts to eradicate sugar from the urine quickly, and by lowering too quickly the amount of protein in the blood. For this reason he did not agree with Doctor Williams in giving too low a diet, because one must consider the patient's bodily strength. There was a distinct advantage in giving mineral salts. A patient with interstitial nephritis should take a large vegetable diet, with an ample amount of mineral salts in the right proportion, both antiscorbutics and vitamins, to overcome the tendency to anemia. In this type of cases profound anemia was not given sufficient attention. The reason the general practitioner did not give heavy vegetables in nephritis was because the patient would not take them, but vegetables that were puréed, thoroughly mashed, and put through a colander could be given an intelligent patient. In this way a large variety of vegetables could be used. The speaker gave calcium in adequate quantities to eliminate phosphates.

Dr. A. A. JONES, of Buffalo, said that in discussing the pathology of nephritis the changes which occurred in the kidney in cases classified clinically as purely interstitial, purely cardiorenal, or purely parenchymatous, must be kept in mind. Some years ago we were apt to disregard the glomerular element in chronic nephritis, and to look upon the cardiorenal cases as primarily interstitial cases. The glomeruli did not suffer early from the changes occurring around the tubules. The interstitial changes followed cellular changes in the glomeruli, and there was destruction of many of the glomeruli before an abundant interstitial new formation occurred. In the treatment one should include careful consideration of the causes of the disease if they could be discovered; so that focal infections should receive attention just as carefully as dietary regulations.

CAPTAIN THOMAS W. JENKINS, of Albany, stated that they had had several cases of acute nephritis among the soldiers. One patient, who died following an attack of mumps, had only albuminuria. His kidneys did not show any marked change. One case which interested him more than any other was a man who, fatigued by intensive training for a commission, became ill after paratyphoid inoculation, and developed one of the worst cases of nephritis he had ever seen. His urine was loaded with epithelium, and he died in the second week of illness.

Dr. ALBERT E. LARKIN, of Syracuse, said that many of these patients were affected in more than one part of the kidney, and for that reason each case was a demand for treatment according to the case in hand. It was difficult to lay down any hard and fast rules to treat these cases of nephritis. The best treatment for these cases of nephritis was



the same as for arteriosclerosis, namely, prevention of the disease before it has formed. Along this line we were probably going to accomplish a great deal more by taking care of cases of acute infection, and cases of overeating, and overwork, and guarding against putting extra strain on the circulatory and renal apparatus. In this way we would eradicate many of the diseased conditions.

DR. JOSEPH R. WISEMAN, of Syracuse, said that the work of Doctor Hunt was particularly praiseworthy in attempting to find out in advance whether a particular tonsil or other focus was apt to be the cause of the symptoms in a given case, or whether they might not be coincident. The technic of perfectly drying the tonsil and painting it with iodine, and aspirating from the tonsil contents, and making cultures from the material obtained was excellent. In those cases in which a streptococcus was found Doctor Hunt thought that the tonsil was a dangerous one and should be taken out, and according to his case reports he had achieved splendid results, although most practitioners had been disappointed after removing foci of infection that looked like etiological factors. Sometimes in patients with chronic nephritis and diseased tonsils the removal of the tonsils was not followed by improvement. Other patients with similar conditions would improve remarkably following the removal of the tonsils.

DR. M. S. WOODBURY, of Clifton Springs, said there were certain individuals who were susceptible, but looked as though they could carry a certain amount of infection as long as their resistance was good, but when their resistance was lowered they began to show evidences of arthritis or hypertensive symptoms which indicated the possibility of the presence of toxic material. He had yet to discover an individual who did not believe in the possibility of damage from infection and who had been able to give him a satisfactory reason for the conservation of pus. He did not believe there was any good reason for conserving pus, and if there was no objection to getting rid of it, it should be removed.

DR. J. WEINSTEIN, of New York, was always under the impression that nephritis, like a degenerative process in any other organ, was due to some infection. He had noticed that certain diseased conditions of particular organs seemed to run in certain families. In two or three generations of one family one would find that the offspring were apt to suffer with nephritis, as if there was a specific liability of some particular tissue to disease. With regard to diet, he had put patients on a rather low protein diet and was never afraid of using meat. He allowed a patient to have good steak or poultry, provided it was not taken in excessive quantity. The Kareli diet was a well established therapeutic procedure in cases of nephritis with edema. In cases with high blood pressure one should not forget to employ digitalis in spite of the high blood pressure.

DR. ALBERT A. EPSTEIN, of New York, in closing, stated that there was uniformity of opinion regarding the type of renal disease in which the disturbances were purely metabolic. There was

no reason why the renal function should not be concomitant with the metabolic disorder; so that there were cases in which there were mixed conditions. In such cases the method of treatment must be somewhat different from the one set down originally.

DR. HERBERT U. WILLIAMS, in closing, stated that with regard to the influence of syphilis in nephritis, he knew of the work of Stengel, published in the *Journal of the American Medical Association* some three or four years ago. He (Stengel), however, furnished no proof in the way of findings. In cases of congenital syphilis the body was found riddled with organisms, and there were gummata in the kidney. With reference to focal infections, one method of great value which might be used to prove the importance of focal infection would be to examine carefully the urine for long periods for organisms.

DR. JOHN R. WILLIAMS, in closing, said that he attached a great deal of importance to the removal of infection wherever found if it bore any relation to the disease in question. All foci of infection did not exist in the mouth. A diseased process in the cervix or in the cervical glands might account for the trouble.

**The Clinical Significance of Congenital Anomalies of the Kidney and Ureter; with Notes on the Embryology and Fetal Development of the Kidney.**—DR. JOSEPH R. LOSKE and DR. HENRY G. BUGBEE, of New York City, described the development of the organs of the upper urinary tract in man, and traced their relationship to various anomalies. Among the twenty-two cases of anomalies reported by the authors were one case of single kidney, one case of calculus obstruction of the ureter, three cases of horseshoe kidney, one case of fused kidney, one case of duplication of the kidney pelvis, and one case of incomplete duplication of the right kidney pelvis and colon bacillus infection. Cases of anomalies of position of the kidney were reported. In one case the right kidney was low, and had not rotated. In another case the kidney had migrated to the opposite side. Cases of anomalies of the ureters had been reported.

The surgical treatment consisted in relieving pressure, placing the kidneys in their normal position, removing any obstruction to renal drainage, and removing the diseased kidney, when destroyed beyond repair, if the opposite kidney was able to carry on its function. If it was not possible to make a positive diagnosis of the extent of the lesion before operation, operation should include exploration of both kidneys.

**Congenital Hydronephrosis.**—DR. JOHN T. GERAGHTY, of Baltimore, said there was a group of cases which had been puzzling practitioners for years. He referred principally to so called primary hydronephrosis. The term primary had been used in these cases because there had been no etiological factor that could be easily determined as the cause of this kind of hydronephrosis. Many of the cases had been considered congenital, and the opinion had been held until recently that most of the cases in which we could actually determine any cause for this extreme process were congenital. Recent studies, however, had shown that this was incor-

rect. There were two types of aberrant vessels which were most apt to cause hydronephrosis. In one instance the vessels arose from the aorta behind the ureter and entered the lower surface of the kidney at its lower pole. In the second case the vessel arose from the vena cava, crossed the anterior surface of the ureter, and entered the posterior surface of the kidney. These two conditions gave rise to a condition which produced obstruction. In a series of fifteen cases, in only two was he able to find aberrant vessels as the cause of hydronephrosis. The vessel crossed at the ureteropelvic junction, but further studies showed that this possibly was merely a coincidence. Marked kinking of the ureter or pressure of a vessel crossing over the ureter was not sufficient to produce hydronephrosis. However, in some cases of unusual mobility, where the kidney dropped down over the aberrant vessel, that vessel might play an important role. Even though aberrant vessels were found, it was well to bear in mind that they might not be the primary cause. There might be other factors that played a causal role. Renal mobility was put forward as a common cause, and most urologists gave it first place. In the author's experience it had been the most common cause of hydronephrosis.

In the series of fifteen cases, in ten nephrectomy was performed. The tissues were studied, and sufficient of the ureter was removed to study the cause of the hydronephrosis. In three cases plastic procedures were carried out, and in two cases aberrant vessels were divided. In a study of these ten cases, with one exception, there was found at the ureteropelvic juncture, or in the upper part of the ureter, an inflammatory infiltrate. Most of these cases were previously considered congenital, but sections through the ureter in studying the pelvis showed varying amounts of infiltration. Hunner, he said, had called attention to pyogenic infiltrations in the lower ureter, and he had found them common in women in the region of the broad ligament. These infiltrations of the ureter caused dilatation of the ureter and pelvis which were frequently seen, and which Doctor Braasch had considered an inflammatory dilatation. It represented a narrowing rather than a definite stricture, with obstruction rather than dilatation of the process in the kidney and ureter itself. Inflammation did not give rise to dilatation, but rather a contraction.

The diagnosis of hydronephrosis was not difficult. With the methods now at our command it was possible to make a diagnosis of hydronephrosis by pyelography and to demonstrate the exact point where the hydronephrosis began. In most cases the kidney was destroyed when the patient was first seen. At any rate, it was either badly infected or the kidney was destroyed. Nephrectomy was the proper treatment.

**The Prognosis in Surgical Renal Tuberculosis.**—Dr. WILLIAM F. BRAASCH, of Rochester, Minnesota, stated that in considering nephrectomy for early unilateral tuberculosis the factors to be considered were age, sex, coincident tuberculosis in other organs or tissues, the duration of the symptoms, the severity of the infection of the urinary tract, and whether there was or was not bilateral

involvement. The statistics of the Mayo clinic were given. Age was a factor of considerable importance in the diagnosis. The incidence of renal tuberculosis was from twenty-five to forty years of age. Beyond the age of sixty or seventy years renal tuberculosis was of rare occurrence. They had operated in three cases up to ten years of age. In the meantime they had seen forty cases in children up to ten years of age, and these had not been operated upon, because renal tuberculosis in children was very frequently a part of a general tuberculosis. The children on whom they had operated were seen early and tuberculosis was not found present elsewhere. It was not customary to operate on children at once because the majority of cases sooner or later showed other evidences of tuberculosis and their resisting power would be low.

As to the time to operate, it was between twenty-five to forty years of age, as the mortality increased steadily with the advance in years. The greatest mortality occurred in patients from fifty to seventy years of age. The lowest mortality from operative intervention occurred in patients from fifteen to twenty.

The influence of complications on the mortality was important. The majority of cases had evidences of tuberculosis in other organs of the body. In only five per cent. was the renal tuberculosis complicated by acute pulmonary tuberculosis. Ninety per cent. of the cases of renal tuberculosis had evidences of an old pulmonary tuberculosis. Of the cases of pulmonary tuberculosis complicated by renal tuberculosis, twenty-one in number, forty per cent. died, which was twice as high as the mortality from renal tuberculosis uncomplicated by pulmonary tuberculosis. However, if they had not operated on patients with both pulmonary and renal tuberculosis all would have died. It was inconceivable to think of a spontaneous cure of renal and pulmonary tuberculosis.

The removal of the epididymis when enlarged or markedly inflamed, with secondary infection, was unquestionably advisable following nephrectomy. It was their experience at the Mayo clinic that the caseating kidney offered a much better prognosis and a lower mortality than miliary tuberculosis. In miliary tuberculosis scattered over the surface of the kidney the mortality was higher than where caseation was present. It was almost twice as high.

**Discussion.**—Dr. BENJAMIN S. BARRINGER, of New York, pointed out the importance of not operating on the kidney without the previous use of the cystoscope. He had cystoscoped every patient that came for operation for the last two or three years, and recalled only one case in that time in which he had operated without cystoscopy and that patient had but one kidney. The fact that one often saw enormous vessels of the kidney and comparatively infrequently observed hydronephrosis, showed there was something wrong with the anomalous vessel theory.

Dr. ERNEST WATSON, of Buffalo, stated that the pyelogram with a shadow casting substance was the only measure we could rely on with any certainty in making an absolute diagnosis. It was well to make more extensive use of shadow casting substances,



the pyelogram and ureterogram, in these cases, particularly if they did not show evidence of infection. Often a dilated ureter and dilated pelvis would not give evidence without examination of the ureter.

Dr. GEORGE STARK, of Syracuse, believed that a ureter that was bent over an artery or was kinked by ptosis of the kidney produced thickening or induration of the ureter. He recalled sixty cases of renal colic with hydronephrosis that had been cured by dilatation.

Doctor BRAASCH, in closing, said that so far as ptosis was concerned, very few of their cases of renal ptosis had a large hydronephrosis. He was under the impression that they did not find the large hydronephroses described by Doctor Geraghty. Frequently slight dilatations of the pelvis of the kidney were found with ordinary renal ptosis.

**Trench Fever.**—Major ALEXANDER LAMBERT, of New York, read this paper, an abstract of which will be published in the JOURNAL.

**The Psychology of the War.**—JAMES M. BECK, LL. D., of New York, delivered a scholarly address on this subject. He selected the play of *Hamlet* and by analogous reasoning each principal character represented a nation. An abstract of the address will appear in the JOURNAL.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Radiologie de Guerre. Le Refugé des Projectiles.* La Collaboration radio-chirurgicale. Par LOUIS DELHERM, Chef du Laboratoire d'Electro-Radiologie de l'Hôpital de la Pitié, radiologiste expert d'une Armée, et J. ROUSSET, Licencié ès-sciences physiques manipulateur. 134 figures. Paris: A. Maloine et Fils, 1918. Pp. viii-355.

This book is a veritable encyclopedia of the localization of foreign bodies, not only by the x ray but also by means of the electromagnet, the electrovibrator and the telephone. And not only is the localization studied in distance and direction from a definite mark upon the surface of the body, but valuable tables are given showing in just what organs a foreign body lies for each geometrical location. One principle of x ray localization consisting in marking, under fluoroscopic observation, surface points of entrance and exit for two rays passing through the foreign body at widely different angles but in the same vertical plane. The foreign body manifestly lies at the intersection of these two lines. Several different apparatuses are described for making the x ray observation to determine the proper place for the surface markers, and for calculating or expressing graphically the position at which the two lines intersect and where the foreign body must lie. Various "compasses," frames with arms of adjustable length and an indicator which shows the distance and direction of the foreign body, may be placed upon the patient at the time of operation in a position determined by the previous x ray localization.

Another principle is that of making two radiographs with the patient and the plate in the same position but with the tube shifted a definite distance and direction, in a plane parallel with the plate before the second exposure. Of course the foreign body lies at the place where a line from the first position of the anticathode and the image resulting from the first exposure intersects the line representing the second exposure. Numerous appar-

atuses are described for making the radiographs and calculating the position of the foreign substance in distance and direction from a mark upon the surface of the body, or by representing the position graphically, by crossed wires for example. Various compasses are useful at the time of operative removal.

Stereoscopic radiography is described and so is Tauligne-Maio's radiostereometer, a special apparatus which enables one to measure anteroposterior distances in a pair of stereoscopic radiographs. The electrovibrator is a powerful electromagnet, originally activated by an alternating or an interrupted current of sixty amperes, but now by resonance with only ten amperes. It is held close to the skin and the nearer one comes to the location of the foreign body, the more the finger held upon the surface feels the vibration of the foreign body under the alternate attraction and repulsion of the electromagnet. Iron and steel give the best results but most metals respond to some extent. The modern telephonic test detects metallic foreign bodies at a distance while the telephonic bullet probe invented by the late Doctor Girdner, of New York, long before the discovery of the x ray, only recognizes the presence of the bullet upon actual contact with it. The book is complete and most practical.

*A Diabetic Manual for the Mutual Use of Doctor and Patient.* By ELLIOTT P. JOSLIN, M. D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital; Collaborator to the Nutrition Laboratory of the Carnegie Institution of Washington, in Boston; Major, M. R. C. U. S. Army. Philadelphia and New York: Lea & Febiger, 1918. Pp. ix-187. (Price, \$1.75.)

To quote the author's opening sentence in the preface, "for one diabetic patient who knows too much about his disease there are unquestionably ninety-nine who know too little." It is to aid the physician in imparting the desired knowledge to the ninety and nine that the present manual has been written, and it is admirably adapted to the work. While intended primarily for lay perusal, the volume contains so much thoroughly modern information and the manner of presenting it is so suitable for use in dealing with patients that it will undoubtedly prove extremely popular with medical readers also. The development of the modern therapy of diabetes has involved such demands on the intelligent cooperation of the patient that there has been a great need of just such a book as this—not so long or so technical as to affright the layman, but yet sufficiently detailed and authoritative to furnish a reliable guide. There are four parts to the manual. The first covers the general idea of the nature of diabetes and the principles to be followed in its treatment. In the second the details of the treatment are described at greater length. The third gives cooking recipes and menus suitable for diabetics, and in the fourth the more important laboratory tests required in following the course of the disease are described. There are many ingenious and helpful diagrams and tables.

*Epidemiologia: Datos Historicos Sobre La Peste Bubonica.* Por ANTONIO BUTRON Y RIOS, Delegado Especial del Consejo Superior de Salubridad Para Combatir las Epidemias de Peste Bubonica en el Estado de Sinaloa, etc. Mexico: Andres Botas, 1916. Pp. xvi-270.

This volume of 270 pages consists of a very detailed account of the epidemic of bubonic plague occurring in the State of Sinaloa, Mexico, in 1902 and 1903. The prophylactic measures employed, as well as the histories of a considerable number of cases, are given at much length, and the favorable results of treatment with Yersin's serum are reported.

## Births, Marriages, and Deaths.

### Died.

DRURY.—In Asbury Park, N. J., on Tuesday, July 9th, Dr. Alfred Drury, of Princeton, aged forty-six years.

GRAY.—In Worcester, Mass., on Sunday, July 7th, Dr. George R. Gray, aged fifty years.

LANE.—In Boston, on Friday, July 5th, Dr. John G. Lane, aged sixty-four years.

McAVINNE.—In Lowell, Mass., on Sunday, July 7th, Dr. Frank McAvinnue, aged sixty-five years.



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## Original Communications

### MODERN OBSTETRIC TECHNIC.

*Compared with the Teaching of Twenty Years Ago.*

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Within a short time after the completion of two years of general hospital training, I had the good fortune to spend two years, 1895 to 1897, as resident obstetrician in the Sloane Maternity Hospital, the best service to be had at that time in the country, the college and hospital instruction being given by Dr. James W. McLane and Dr. E. A. Tucker. Two years' service under the teaching of Doctor Tucker was an experience for which I shall always be very grateful, and, many times in the past few years, in thinking over the technic used at the Sloane twenty years ago, I have thought it might prove interesting to compare the methods then in vogue with the present ones.

Thinking first of the antepartum or prenatal work: There was no daily routine more rigidly insisted upon or supervised than the careful, systematic examination of the pregnant woman. Increasing experience completely justified the painstaking examinations, which included palpation, auscultation, and pelvimetry. In the conduct of normal labor, during my earlier months, at the Sloane Hospital, no sterile gowns were used, and even in 1897, rubber gloves were unheard of. At the present time, both gown and rubber gloves are worn, and many of us wear a cap and face mask, as in general surgery. The greater the precaution taken, the less the danger of septic infection. At the Harlem Hospital and in our private work the rectal examination is used in all cases, unless there is very good reason for entering the vagina. We believe that far more harm than good results from vaginal examinations, and, in my opinion, there should be clear indication for making a vaginal exploration. Presentation and position can usually be determined by external examination, and a large number of our hospital and private patients have been delivered with no internal examination, except per rectum. For the rectal examination, no preparation of the patient is necessary, the gloves need not be sterile, thereby saving much time and with a little experience, a vast amount of information is obtained. In border line cases, where Cesarean section may be the ultimate operation, the rectal examination is almost a necessity. I can almost hear some of you say, "Yes, but how about prolapse of the cord?"

This is a rare obstetrical complication, and, unfortunately, a frequently fatal complication, in spite of any treatment, but in many patients the vertex is engaged at the beginning of labor, and the cord cannot prolapse; but in cases where the membranes rupture, the head being unengaged, the vaginal examination should be made principally and practically only to ascertain if the cord has prolapsed. Upon careful consideration, it must be admitted by all open minded men that the vaginal examination is frequently unnecessary, and even with thorough preparation forms a possible channel of infection.

At the end of the labor, after the expulsion of the placenta, it was our rule to administer ergot, and such is the teaching of many obstetricians today. We believe with Hirst and others that ergot, if given, should be administered at the moment of birth, and for many years we have done so, with only good results. In other words, the drug must be given in time to control hemorrhage, by contracting the uterus before the bleeding is likely to occur. so we give it immediately after the child is born, without waiting for the placenta to be expelled.

It was our custom to invade the uterus for retained membranes. During my last year there retained membranes were left in the uterus, and so satisfactory were the results that I have never explored the uterus for retained membranes since. The retained portion will come away in small pieces, or perhaps in one large mass, and I see no reason to attribute hemorrhage or sepsis to the mere retention of chorion. During the puerperium, the patient was catheterized every eight hours if she could not void spontaneously. This I feel was a great mistake, for as a rule, patients need not be catheterized, if a longer time is allowed, or one c. c. of pituitrin be given hypodermically, or the woman be allowed to sit up on the bedpan or chamber, or even allowed to get out of bed on a commode. Sometimes an enema will produce the desired result, and, when there is no distention, the patient may be allowed to wait eighteen to twenty-four hours with no discomfort, and no bad results.

Pituitrin is one of the most valuable additions to the obstetrical armamentarium. Used in postpartum hemorrhage and before Cesarean section, it is invaluable, and as a substitute for forceps, in properly selected cases, has no equal. We have also administered it successfully in small doses, two to five minims, to accelerate a slow and tedious labor. For the induction of labor, we have

had, as a rule, very unsatisfactory results. Personally, I believe with the head at the outlet, the forceps, in skillful hands, is a safer procedure than the use of pituitrin. We have also used pituitrin in cases of inevitable and incomplete abortion with satisfactory results in a fair number of cases. There is merit also in the suggestion made by Furniss that pituitrin be given before performing curettage in abortion, with the idea of contracting the uterus, and lessening the hemorrhage. This gives excellent results.

Before taking up the operative phases of modern technic, just a reference to puerperal septicemia. In our hospital and consultation work we still see many cases of sepsis and I am sorry to say that, in my opinion, we shall always have more or less of the condition to deal with. Lack of personal cleanliness in the patient, combined with careless and ignorant vaginal examination, will always account for a certain number of cases. Conversely, the cleaner the surroundings, and the greater the care taken by the accoucheur, the less will sepsis be met with. The patient who is infected, will have a much better chance for life, if treated conservatively, with good drainage, good food, and an abundance of fresh air.

Taking up operative procedures; one of the smallest, episiotomy, was never performed during my service at the Sloane, but a few years later, I was impressed by its value, and have been using it ever since. It has not received the degree of attention it deserves, yet it is so simple, so devoid of danger, and so successful, that we believe it is performed far too infrequently. The late Professor Jewett, said that episiotomy substitutes for a posterior laceration, which is often difficult of complete repair, incisions through less important structures which can easily and perfectly be closed by sutures, and that "no method yields better results for the ultimate integrity of the pelvic floor than episiotomy rightly timed and properly executed. The ultimate condition of the pelvic floor after the operation, correctly performed, is even better than after many natural deliveries in which the parts escape rupture." Among indications for the operation, are: rigidity of the perineum, so common in elderly primiparae, edematous soft parts which we know are easily torn; cases in which large fetal heads must pass through small vulvar outlets; any condition such as the passage of meconium in vertex presentation, or a rapidly failing fetal heart necessitating speedy delivery through a small outlet; cases in which there is a large amount of cicatricial tissue in the perineum, and, finally, and of great importance, the operation is indicated as a prophylactic measure in breech presentation.

The operation is performed by making two incisions, one on either side, at a point about one third of the distance from the fourchette to the anterior commissure. An ordinary straight blunt pointed scissors may be used and the incision should be made horizontally, about one half to three quarters of an inch in depth. The skin should be pulled outward so that the incision will be largely through the mucous membrane. Occasionally one lateral incision is sufficient. The incisions are easily repaired with catgut sutures, and usually heal readily.

I attribute the fact that I have never had a complete laceration of the perineum in a vertex case, to the beneficial result of episiotomy, without which, in many cases, I feel certain that the sphincter would have been torn. The writer confesses, however, to a considerable number of complete lacerations of the perineum in breech cases, but he can remember no instance in which the sphincter was torn after an episiotomy. During the past few years, I have performed the operation, in a number of instances, as a prophylactic measure in breech cases, where the child was evidently of large size, and the outlet small, and I believe that, in these cases, the operation will not only facilitate the introduction of the hand in order to bring down extended arms, but will save the patient in nearly every instance from a complete laceration. The operation is harmless, and so very useful that I urge its more frequent performance for all the indications mentioned, believing that complete or severe laceration of the perineum will seldom occur.

Median perineotomy consists in incising the perineum, in the median line down to, or down toward the sphincter, thus gaining a considerable amount of room. I have only a limited experience with the median line operation, but men who have used it frequently, claim that it is far superior in that the incision is single, more easily repaired, and there is less probability of tearing up into the vagina. The bilateral operation would naturally give more room in breech presentation, and would be preferable. My last median operation resulted in a tear through the sphincter in spite of very careful extraction and at present I am inclined to advise the bilateral episiotomy only.

The low forceps operation has steadily increased in favor, while the high has been performed less frequently in recent years, owing to the prominence given to Cæsarean section. With the head low in the pelvis, the cervix completely dilated, and failure to advance within a reasonable time, the low forceps operation is safe, and will save the patient, in some cases, at least, hours of unnecessary pain. The high forceps operation in former years was attended by so great fetal mortality, and such serious maternal morbidity, that Cæsarean section was hailed as a solution of the problem of what to do when the head remained above the brim. No doubt the abdominal operation is performed needlessly at times, but there can be no question of the brilliant results obtained, where formerly we were doomed to failure when using the high forceps operation.

The instrumental rotation of persistent occipito posterior positions of the vertex, scarcely known twenty years ago, but insistently taught by Tucker has become a recognized obstetric procedure of the greatest value. Version still remains an exceedingly valuable and necessary operation, the advantages of which it is unnecessary to enumerate.

Craniotomy has been performed far less frequently than formerly, because of the good results obtained in Cæsarean section, but it is my belief that craniotomy should be done much more than it is. We still hear of many deliveries being completed by the high or median forceps operation, or by podalic version, where craniotomy would have been a much safer operation. This is partly due to



the fact that general practitioners are as a rule not provided with a cephalotribe, and, hesitating to call a consultant, will continue to attempt delivery by the nonmutilating methods, often to the very great detriment of the patient, who could have been more quickly, easily and safely delivered by craniotomy.

In placenta previa, great advance has been made in the use of the De Ribes bag, followed by forceps or version, or in selected cases by Cesarean section. The writer recently reported to the Sloane Alumni Society, a case of Cesarean section for complete placenta previa, and he is confident that in years past he could have saved many more babies had this been done. In preparing a paper on Cesarean section in placenta previa, we have collected records of thirty-five operations, with the loss of four infants, three of whom were seven months, a mortality of eleven per cent., which is extremely low for the condition. The maternal mortality was fourteen per cent., the five deaths in desperately sick patients. Contrast these figures with statistics of nineteen cases of placenta previa, occurring in the service of the New York Post-Graduate Hospital, collected for me by my associate Dr. George H. Pierce, which show a maternal mortality of 10.5 per cent., but a fetal mortality of 62.5 per cent.

During my two years at Sloane, Cesarean was never performed, but in recent years the operation has come to occupy a prominent place in obstetric technic. Among the indications have been, contracted pelvis, relative disproportion between head and pelvis, placenta previa, toxemia of pregnancy, eclampsia, accidental hemorrhage, and contraction ring dystocia. It is impossible in this short paper to go into the merits of the operation for these different conditions, but the writer is convinced that there is an important field for the operation in primiparæ at or near term with eclampsia. The fetal mortality will be very much smaller, and the maternal considerably less. We have recently collected a series of nineteen Cesarean operations for eclampsia, seventeen of which were in primiparæ, with two maternal deaths, 10.5 per cent., and no fetal mortality. Recently the writer had a unique experience in which he performed a Cesarean for a breech presentation with contraction ring dystocia. The patient, a primipara at term, had dilated her cervix completely, and after an hour and a half of frequent hard second stage pains had succeeded in forcing the frank breech into the brim, where advance ceased. Thinking that it would be an easy matter to seize a foot, and extract the child, an attempt was made to do so under deep anesthesia, but, at about the level of the internal os, a thick tight constriction ring was found, through which it was impossible to pass the hand. Cesarean section was performed successfully, and the mother left the hospital with her baby, both in good condition.

Vaginal section, unheard of twenty years ago, has been extensively performed, and has been found invaluable in properly selected cases. From the third to the seventh month, when it is necessary to interrupt pregnancy for cardiac, renal, hepatic, pulmonary, or other pathological condition, it is frequently the easiest, quickest, and best mode of delivery. In eclampsia, it has not been conclusively proven in my opinion to be the best form of treat-

ment, but in many instances we have used it with very satisfactory results. Nitrous oxide, to relieve the pain of the first stage, has become a great boon, and marks a great advance in modern obstetrics. Great relief can be given, and in competent hands, the method appears to be safe and extremely useful.

I have touched but lightly on the many subjects of interest which have come to mind, but present day obstetrics, with its numerous surgical aspects, is a field of greatest interest, and well worthy our conscientious endeavors.

50 WEST FORTY-EIGHTH STREET.

## THE EPILEPTIC ATTACK IN DYNAMIC PATHOLOGY.\*

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The analysis of the epileptic attack has begun to yield results, and a practical working basis for its understanding is slowly evolving. So long as the human organism was considered a thing unto itself, an independent unit, capable of explanation of and by itself, in terms of perversion of the functions of its individual organs, no advance was possible. This limited view has led to the search for disease as an entity in this or that organ and the naive remedy of trying to cut it out, as though it were something encysted and wrapped up in an ovary or an eye, or in the stomach, or intestine, or what not. As the dynamic view of man's function as an energy transformer grew—as it was recognized that man like all other living things, captures his energy from the cosmic energy of the known universe, transforms it, and then discharges it in function; be that metabolic, reflex action, or human behavior—then only and for the first time, flashed the idea that the faulty energy discharge, which is termed the epileptic attack, is a function of the entire human being, and not that of any isolated organ or part of an organ. The environment immediately takes on a new aspect so soon as this dynamic view is conceived. Living now becomes, not a special series of processes of the individual organs, but a series of interactions between the individual and the environment, in which the environment supplies the energy, man the means for capturing it, transforming it, and releasing it.

What does the organism get out of this release? Teleology says satisfaction! Satisfaction exists at all kinds of levels. Undoubtedly the concept can be stretched to include the idea that when the sugar molecule falls into a regular crystalline shape, an inherent law of form is satisfied. The pure mechanists, as Loeb for instance, see it that way. All of the physicochemical processes follow this general type of law, and satisfaction is undoubtedly the teleological answer at the physicochemical level. Physicochemically man is a mélange of such dispersed solutions—protoplasm an enormously complex colloidal factory with the tools of countless centuries lying about ready to be used if the environment supplies energy material which it can utilize.

A practical working basis for the understanding of the epileptic attack has ever been an aim of

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medical effort. Throughout the whole history of medicine there has been a vain groping for efficient therapeutic measures really applicable to this maladaptive discharge of purposeless motor effort. And still it remains obscure in nature and causation, for the most part inaccessible to cure or amelioration—a puzzle to the physician, whether he seeks knowledge of it in anatomical lesions, metabolic disturbances, or what not. Much emphasis has come of late, because of the failure of so many of these explanations of the disturbance, or of efficient attack upon it through these channels, to be laid upon psychogenic elements as contributing factors in producing the classical symptoms and the necessity for including this aspect of the patient. Through this mode of approach it is thought to gain a larger view of the conflicts with his surroundings and the regulation of these to suit his more limited capacity or constitutional peculiarities, or defective anatomical substratum.

Yet even this psychological approach, which begins to discern certain potent factors at work in producing health or disease, fails of success and is not truly illuminating of this baffling malady unless it is a psychology which enters within the psychical life. It may even in its zeal exclude other factors which have been long recognized in playing their part and which cannot be denied but await illumination from the right kind of interpretative investigation and treatment. There must be therefore behind and through all future work upon epilepsy an insistence upon the energy concept. This viewpoint alone serves to unify the heterogeneous factors present throughout the literature and stressed in theory and in treatment, now to the exalting of this one, now of that, with the resultant neglect of others perhaps equally important or perhaps much more potent and responsible. The energy concept not only unifies these conflicting data but it also directs to the point of attack in the very stronghold of the disordered activity and finds as well further unrecognized manifestations in which it expresses itself in lesser degree. Therefore the adoption of some such concept is imperative if we are ever going to advance to the position of understanding and control of this menace to the health of a vast number of individuals whose wellbeing and social usefulness is threatened with the utter isolation and oblivion which is the final goal of an unchecked epileptic deterioration.

A word then about ourselves in terms of energy. This is a very simple concept after all. Viewed from the standpoint of structure, the nervous system consists of receiving organs designed to come into contact with the outside world. Out of the combined information derived through these receiving organs a knowledge of reality is built up. More however is accomplished. These receptors, exteroceptors as they come into contact with environment outside ourselves, proprioceptors as affording communication between the different parts of our own organism, obtain and transmute cosmic energy, which is manifested in the variety of ways which we know as, heat, electricity, gravity, chemical energy, sound, etc. There is no new energy for the nervous system or for human activity. There are properly

speaking no energy reservoirs, save from the standpoint of structural memories, etc. The ganglion cells should not be viewed as energy containers, or condensers, if thereby is meant an autonomy within the cells themselves. There is rather but an appropriation and redistribution of energy constantly streaming in from the external world which may be utilized for the needs of the human organism. The nervous system is merely the transmitter and transmuter of such energy. This system is further extended through effectors to enable the body to act upon reality through muscles and glands and continue the individual's life and accomplish his life purpose.

Both the incoming stimuli and the outgoing activities are diverse and multitudinous. What constitutes the health of the individual is to be able to distribute the outgoing energy in a harmonious series of activities adjusted to life's demands. This involves the three levels of activity, or of energy distribution, the physicochemical, the vital, and the psychical. On the first level we have the distribution in metabolic processes, where the hormone acts as the chief energy carrier. The vital distribution of energy manifests itself in sensorimotor activity through the reflex, while the psychical transformation of energy takes place through the symbol.

Under such a concept we have at last some reasonable explanation of the variety of epileptic phenomena and the predominance sometimes of one, sometimes of the other, which has led to the exclusive adoption of any one of the end products of faulty distribution as the cause even of the entire disturbance. The exaltation of eye strain, prolapsed stomach, adhered clitoris, or any other of the naive but actually adopted attempts to explain and work a cure becomes impossible when through the energy concept one enters upon a search for the misdirected energy and the reason for its harmful distribution.

No one level is therefore likely to be involved alone, nor can there be successful therapy in an exclusive effort to lop off one of these end products which perhaps results in checking artificially this particular energy manifestation and thus driving back, "repressing," the explosive force for a fresh onslaught from its secret gathering places. The problem becomes a far more comprehensive and a much more rational and effective one, if we approach it from the dynamic side. Thus it may be seen how even the psychological approach, broad as it may seem in comparison with more limited physiological attempts, is incomplete except in the light of this all inclusive grasp of the situation.

Psychological description of inadequate reaction to difficulties becomes, therefore, but a small part of the problem, and lacks practical therapeutic value. It has gone a long way toward suggesting a suitable watchful régime, for example in institutional life, and forms a certain intelligent background for the social and therapeutic handling of the epileptic. It receives its chief value, however, as it has been carried further into a psychological interpretation involving the shifting of the patient's interest, and understanding of his extreme egocentric attitude, the limitation and hampering of his

interest through this, and the peculiar measures which must be employed to seek out and entice this interest from its hiding places and guide it to a broader reality which means health. It is to the studies and the practical clinical work of Clark and MacCurdy that we owe such a setting forth of the problem and such a practical approach to it.

This is but a beginning, however, of the more extensive occupation with epilepsy to which the medical profession must direct its energies. These men have proved it worth their while to devote to the psychical aspect the effort which still knows not where to attack efficiently upon the basis of physiological symptoms. Other investigators also have thrust in opening wedges to a better understanding of the reaction which makes for epilepsy and of all the psychic character which underlies it. These are all, however, but indications as to where we must press forward. They guide us in the direction of the search for the energy gone astray. They suggest that only a thorough analytic research into the epileptic's psychical nature will discover the wrong adjustment of that energy, the reason for a reaction at odds with the real world. It is necessary to discover why the symbol carrier of this energy is other than that which would so distribute it that in the physicochemical sphere, the vital sphere, and the psychical there would be perfect harmony and efficiency. Therefore, there is fond reason to hope that what Freud has so concisely designated "the most exhaustive occupation with the complexes, and making them fully conscious" will prove itself the ideal for obtaining knowledge of this deeply grounded epileptic reaction, and for releasing the victim from a fate of inevitable deterioration to a life of usefulness and health.

This will mean the following of no royal road of easy and quick discovery any more than of a ready substitution by the patient of a well directed life for one sorely at odds with his environment. It will not necessarily result in the complete well rounded life. The peculiarity of the epileptic constitution which has chosen its mode of reaction is too far reaching, perhaps, for that. But it does aim at a very workable adjustment, not the least, perhaps, because the method of psychoanalysis is such a thoroughly cooperative one on the part of the patient and makes the most reasonable and highest demand upon the guiding and controlling of his emotional and instinctive life by an intelligence which even sets this at a new value.

There is promise, therefore, both to patient and to the profession in this approach. It will involve infinite patience and the willingness to evaluate and handle details of psychic investigation and responsive aid on the part of the physician as circumstantial and minute as is the content of the epileptic thought and life. It necessitates, further than this, a keenness of attention and an alertness to the fascinating shiftings and interchangings of energy, which we are coming to realize do actually exist in this complex mechanism which we call the interrelation of body and mind. That, as has been stated, must never here, at any rate, be left out of account. The chief manifestation of epilepsy is the sensorimotor attack. No less actual, although less uniformly fre-

quent, are the disturbances of metabolism, while behind these is always the possibility of the organic lesion which is perhaps the original mark of the insufficiency of the organism for its task, or which may later accompany the distinct psychic inadequacy. These, as we have said, represent the variety of manifestation of the imperfect energy distribution, the very concrete pathways of its faulty discharge, as well as the results of it. Impairment or lack of development offer easy pathways of discharge for the equally imperfect, undeveloped wish.

For with our knowledge of the unconscious and the harboring there of infantile wish impulses and immature tendencies seeking expression in a world of reality to which they do not belong, we cannot be surprised to find in the field of our search not only a strong infantile wish tendency fighting for fulfillment, but a complex entanglement of such wishes in the case of the epileptic, even more intensively and exclusively egoistic than we have come to recognize generally in the investigation of the unconscious mental life. The profundity of the unconsciousness in the classical epileptic convulsion is an indication of the depths of the ego unconsciousness to which the impulse of the psyche drives the patient, and which not only exercises periodically such an overwhelming power over conscious control, but which colors all his modes of acting, speaking, and thinking, even those which might be accounted trivial and unimportant in a superficial estimate of the personality.

It seems well worth while, then, to submit the epileptic's problem to the investigation and therapy of psychoanalysis. Peculiar difficulties will be met with in the way of accomplishing a thorough analysis, but we believe also that peculiarly important results will be obtained. The approach to the heightened egocentricity of the epileptic personality is not a ready one, or, superficially and apparently easy, it is found to be based upon an openness on the part of a shallow egoism which makes a quick, but meaningless rapport with the superficial features of the environment. There is a certain offhandedness which bespeaks a superficiality of affect as well as a limitation of interest to the egoistic point of view. This is not alone a trait of advanced epileptic deterioration, but impresses one when the patient is yet fairly active in his environment and the disease has not made itself manifest beyond the periodic attack. This demands of the psychoanalyst greater expenditure of interest or libido on his part in order to stimulate and maintain interest, as well as to create for himself enthusiasm in his research, and in his attempt to rouse the patient to cure. There is not the same readiness toward the transference as found in other conditions, and which forms so important a recognized factor in the psychoanalytic treatment.

This, on the other hand, by no means signifies that there is no emotional content to be reached here. There is just as great complexity of the affect life, with its strivings for expression, conflicts which this creates, and compromise attempts at solution as is found in the building up of other psychic disturbances, but within it all the ego centre magnifies itself to the shutting out of other interests



which might afford healthful occupation for the libido, and to the causing of an inability to follow the avenues which would afford a saving contact with reality. It does not form a phantasy world which holds a satisfying substitute for reality, as in certain psychoses, but, thwarted in its ego, reactions must retire deeply within an unconscious world which probably corresponds rather to the earlier infantile condition where even phantasy formation is not yet exercised in any great measure of variety.

Maeder in particular has pointed out in detail how this poverty of the affect life is yet accompanied by an apparent effulgence of emotional life, but at the same time he reveals the lack of depth and reality in these manifestations. So that religiosity and not religion, effusive piety instead of sincere morality become marked characteristics. A compulsive form of epilepsy evinces a concern for elaborate devotion to the detail of confession and of ceremonial prayer, is an excessive devotee of these external forms of the Church, measures everything according to its formal standards of "sin," but manifests no evaluation of actual workable moral values. The manner of life is one of strict observance and rigid morality, but there is no sense of a duty which would involve an outgiving of self in service toward others. Indeed, the compulsive form of religion, closely bound with the attacks, both grand mal and petit mal, so occupy the patient and so incapacitate her for an active life that she is kept quite dependent upon the support and ministrations of her family.

The love life, as Maeder also shows in his discussion, manifests the same traits. There is an excess of infantile activity in all of its forms, but not that depth toward which, according to Freud, the various stages of development of the love life must contribute. The adult goal of a profound channeling of love into a life of creative service is not the epileptic ideal. Hence the infantile enthusiasm which expends itself again in the superficial expressions of love and erotic enjoyment, not only selfcentred and autoerotic, but incapable of seeing beyond the horizon of such pleasure, winning into the mutual relationship which adult love requires. Maeder has called attention to some of the grosser manifestations of the various forms of the infantile erotic as they appear in those patients advanced to a greater or less degree in their dementia. Some of the cases which present themselves for analysis long before such a stage is reached present a less gross, but no less significant illustration of these same tendencies. Indifference to serious marital difficulties, in one patient, exclusive emphasis upon the pleasant externalities of love with another, an excessive childish pleasure in motor activity, and more an extravagance of urinary enjoyment, a veritable urinary megalomania, in dreams, and in actual practices, are some of the superficial forms of enjoyment which seem to have usurped the place in which normally deeper more adult pleasure should have come to its own.

The unsatisfactoriness of such libido outlets in the face of a hard reality with its demands for something of far greater abiding depth already grants an insight into the reason why only the re-

mote unconscious goal of the profound attack provides a sufficient refuge for such infantile seeking. It forms a yielding background to the inevitable conflicts of life, conflicts multiplied and rendered less supportable by such an infantile nature. It is necessary, however, to discover more in detail in just what the conflicts themselves lie.

Here once more we shall find that we are dealing with the universal unconscious. There is no sharp distinction, clinically considered, to be made between one class of persons and another. Perhaps, after all, it is merely this constitutional difference of the exaggerated ego and the shallowness which that spreads over the personality, which separates the epileptic reaction from that of the forms of reaction in other psychic disturbances or in those we call normal. "We all have traces," MacCurdy says, "of the epileptic reaction when we give way to temper, choose the easier path, or allow our egoism to sway our judgment." Still more might we say that we all have the same conflicts arising out of the impulsive and instinctive tendencies of the (unconscious) affect life, and the effort of the conscious to control these for useful and social purposes. Though the epileptic's form of reaction may be peculiarly his own in its absolute control by the unconscious, at times, of his sensorimotor and even metabolic processes, we can best understand the reason for this absolute power on the part of the unconscious and its increasing domination toward final dementia if we examine by detailed analysis each individual set of complexes and conflicts as each individual patient presents them. Only thus can we come to a better knowledge of the epileptic reaction itself, and finally to a control over it.

Various writers have recognized the emotionally psychical character which underlies the disease manifestations. Flournoy has reported in detail the emotional history of a patient who repeated in her attacks the details of a scene of violence with her husband, who was the precipitating cause in the first place of the epileptic disturbance. He believes from the unconscious material discovered in hypnosis that the crises "represent in the beginning, like so many other emotional manifestations, certain reactions of defense." Flournoy separates out thus, a special form of epilepsy which he distinguishes as "emotional epilepsy," and discusses a hystericepilepsy or epileptiform hysteria, and also the possibility of a mixed form. Stekel likewise, who has published some very instructive analyses of epileptic convulsions due to psychic conflict, believes "that a goodly number of so called epileptics are doubtless only neuroses and hysterias." Other authors show the same tendency to designate the epilepsies which prove themselves thus unmistakably psychogenic as hysterias rather than true epilepsies.

This distinction seems not well founded, and, indeed, needless, in the full acceptance of the energetic concept. For this necessarily recognizes the psychogenic basis for the epileptic condition (as the most essential thing), and may perhaps in time prove it for all genuine epilepsy, while at the same time it admits of a complexity of reaction. From the point of view of the complex psychogenic determinants one could not even look for a simple



form of symptom phenomena, but should rather expect that variety of emotional reaction which is met in practically every psychoneurosis.

Besides, for the practical purposes of an analytical investigation and therapy, this distinction is of little moment. The problem remains the same, namely, whether or not such a method of "exhaustive occupation with the complexes" is going to discover and redirect the wrongly distributed and applied energy, and it is here that the valuable detailed reports of just such work, under whatever name, come to our aid and point the way that we must follow.

Jung and others have utilized the association tests for an approach to the epileptic character, while Maeder, Sadger, Stekel, Riklin and other psychoanalysts have subjected the same character to detailed observation and analysis. The results which they have reported emphasize the egocentricity, its diffusiveness and the consequent superficiality of emotional states even in their apparent extravagance, and the poverty of interest in external objects. The epileptic seizure reveals itself as a substitute for deeply concealed impulses of an infantile and asocial nature. In Stekel's cases a strong criminal tendency reveals itself through the analyses. Strongly repressed from consciousness it had therefore created the disturbance of the unconscious which resulted in seizures. The analyses brought to light murder instincts or incest wishes for which compulsive thoughts and actions had to atone in consciousness; or a strong sadistic masochistic nature was revealed which also defended itself in part by a symptomatic manifestation. When the entire complex, however, was strong enough to break through, an epileptic seizure was the result.

In some instances the convulsion represents a direct flight into sexuality, the loss of consciousness being comparable to an orgasm, a conclusion which has long been held and which is further confirmed by Maeder's studies in the sexuality of the epileptic. These particularly stress the infantile character of the sexuality of the epileptic, with whom any one of the infantile undeveloped forms of the psychosexual life are exaggerated and form a barrier to adult development and reveal his difficulty in attaining to the normal sexual life or to a sublimation of it.

64 WEST FIFTY-SIXTH STREET.

**Blood Pressure in Gout.**—Jacob Rosenbloom (*Journal A. M. A.*, June 29, 1918) says that there are few data in the literature relative to the blood pressure in gout, although it has been fairly well established that certain of the purin bases are hypertensive in action. The general understanding is that there is high blood pressure in gout, with an increase during the acute attacks, while hypotension develops in the later stages with cachexia, cardiac weakness, and acidosis. Four cases have been studied frequently during the past ten years and their blood pressure records show that there was no hypertension in any of them, except during the acute attacks. In all the blood pressure was rather below the normal between the attacks.

## THE CLINICAL VALUE OF PUPILLARY CHANGES.

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In the study of the pupillary phenomenon we must carefully observe the following conditions: 1, Form and color of pupil; 2, size of pupil; 3, contents of the pupil; 4, asymmetry of the pupils; 5, reaction of the pupil; 6, associated ocular conditions. By carefully observing in a systematic manner the condition of the pupil, as thus outlined, very important information can be obtained by the physician both as to the local condition of the eye and as to some general constitutional disease. We shall first consider the form of the pupil and learn of what clinical value it may be to the physician.

*Form of pupil.*—It is well to recall the simple anatomical fact that the pupil is merely an opening or foramen in the centre of the iris surrounded and controlled by the sphincter of the iris. Normally this opening is round and is situated approximately in the centre somewhat inward and downward as seen through the transparent cornea. Any change in the pupillary form must be accounted for by alterations in the structure of the iris tissue. This change may be either congenital or acquired. It may be due to some trauma, or it may be caused by some inflammatory process. As long as the iris is in a normal condition and the sphincter is intact the pupil will be found to be round. Whenever the pupil is not circular in form we are dealing with some anomaly or inflammatory condition of the iris or some adjacent ocular tissues involving the uveal tract. Congenital alteration in the form of the pupil is seen in the so-called cases of coloboma of the iris in which a portion of the iris is missing. It closely resembles an artificial iridectomy. The pupil is pear shaped, the narrow portion pointing toward the periphery of the iris. In the vast majority of cases, this coloboma is in the lower half of the iris in contradistinction to the coloboma caused by an iridectomy, which is usually in the upper half. The key-hole pupil is a coloboma of the iris, but the apex is much narrower, so that the pupil resembles a key-hole. From the clinical point of view, however, the pupillary changes resulting from some inflammatory process are of more importance than those of the congenital variety. An irregular pupil is always significant of some inflammatory or engorged iris or some multiple tears in the iris.

During an inflammatory process the iris, as a result of some exudation, becomes adherent to the lens capsule in various places; the form of the pupil takes a clover leaf shape especially so after the instillation of atropine. This is of special diagnostic value and is the chief and only reliable symptom in differentiating iritis from acute glaucoma.

A pear shaped pupil, not congenital in origin, is always indicative of either some trauma that caused a perforation of the cornea or some perforated ulcer of the cornea where the iris is caught in the perforation and becomes adherent to the corneal tissue. Some alteration in the form of the pupil is also seen in arteriosclerosis, increase in the intraocular

pressure, as well as in ophthalmic migraine. In these conditions the pupil is found often to be more or less oval and eccentrically situated; the associated ocular and other symptoms are essential for diagnosis. In iridodialysis where a rupture of the iris has taken place the form of the pupil necessarily undergoes some change depending upon whether the radial or horizontal fibres of the iris have been torn. Such a pupil is apt to have the shape of a half moon. The same may be said of tumors situated in the anterior chamber and on the iris where the pupillary opening loses its rotundity.

*Color of the pupil.*—Normally the pupil is black in color and appears as a dark round circumscribed spot when seen through the cornea. Changes in the pupillary color indicate some deep seated trouble. In glioma of the retina the pupil appears yellowish red in color. A whitish gray pupil is practically always the result of a cataractous lens. A slightly greenish pupil indicates a glaucomatous condition. In fact glaucoma is known among the Germans as the *Grüner Staar*. In retinal detachment we also notice a slight grayish pupil with some light red streaks passing over the detached retina. A golden reflex around the pupillary periphery is diagnostic of subluxation of the lens anteriorly. A red pupil indicates hemorrhage in the anterior chamber.

*Contents of the pupil.*—In health the pupil is not only round and dark in color but is also free from any substance. Under abnormal conditions, however, the pupil changes in form and color and may show distinct masses of tissue filling it partly or completely. The pupillary opening may be filled with blood and thus appear red instead of black. Blood in the pupillary opening always denotes some trauma either from some perforation, or as result of a severe contusion where some of the vessels of the iris have been ruptured. The blood may fill the anterior chamber, the vitreous, as well as the pupillary opening. Not infrequently, however, only the pupil is filled with blood while the anterior chamber is free from blood. The trauma may be the result of an accident or it may be the result of operative interference. The blood may come from the superficial vessels or it may be deeply seated, when it is very serious not infrequently necessitating the removal of the eye ball. Spontaneous hemorrhage into the pupil without trauma is rare indeed. The pupil may contain a dislocated lens. This can be diagnosed by the associated symptoms, especially the circular golden rim around the lens. This may be accompanied by marked inflammatory symptoms but often there are no inflammatory signs. Dislocation of the lens may be traumatic in origin, may be caused by a blepharospasm during an operation but it may also occur spontaneously as a result of some sudden strain.

The pupillary opening may also contain pus. This can be seen in some form of keratitis or iritis when the color of the pupil appears yellowish. Occasionally there are some brownish deposits in the pupillary area as a result of some iritic exudation. The pupil may also contain a very delicate membrane known as the pupillary membrane; this may be congenital or acquired as the result of some iritic inflammation. The pupil then appears grayish white

and must be differentiated from the pupillary reflex due to lenticular sclerosis. Occasionally a tumor or cyst may be seen in the pupillary opening. Such a tumor is usually attached to the posterior surface of the iris or ciliary body projecting into the pupillary area or it may be a glioma pushing its way to the anterior chamber. A syphilitic gumma or a tubercle or a metastatic abscess encapsulated may also be seen in the pupillary opening. Of course the contents of the pupil are only of local diagnostic significance, excepting perhaps in syphilitic gumma or inflammatory deposits that are of some constitutional origin. The treatment in some cases is purely medicinal while in others surgical means have to be employed to clear the pupillary field. Of course the syphilitic cases usually yield to anti-syphilitic measures and do not require operative procedures. Blood in the pupil and anterior chamber due to some contusion usually disappear. All that is necessary is to put the eye at rest with atropine and apply hot compresses to hasten absorption. Pus in the anterior chamber may also sometimes require surgical means for its evacuation.

*Size of the pupil.*—The size of the pupil is of considerable importance in the study of the pupillary phenomenon. Ordinarily the size of the pupil is about three millimetres in diameter. Hyperopes have a small pupil, while myopes have larger pupils; so that the refractive status of the eyes markedly influences the size of the pupil. The pupil is somewhat smaller in childhood, becomes larger in the adult and becomes smaller again as age advances. The pupillary size is also markedly influenced by the degree of illumination, so that the pupil is smaller in the daytime and in bright light than it is in the evening and in a badly illuminated place. These are of course physiological variations and must be remembered before pathological causes are considered or decided upon. We must also bear in mind the fact that pupillary changes are often artificially produced either for therapeutic purposes to examine the eye ground or for mydriatic purposes to correct some refractive errors. Changes in the size of the pupil may be accompanied by inflammatory symptoms or they may be present without any inflammatory changes and symptoms.

*Miosis.*—The pupil is not infrequently found to be small and when accompanied by inflammatory symptoms it usually points to an engorgement or inflammation of the iris. It is also to be found in corneal inflammations, especially in those forms that are usually complicated with iritis. When not accompanied by inflammatory symptoms and not the result of the use of some eserine or pilocarpine it points to some spinal lesion or some disease in the cerebrospinal system. Resection of the cervical sympathetic or traumatic destruction of the same ganglion will give us a small contracted pupil. It is also seen in syphilis of the cerebrospinal system, in tabes dorsalis. Spastic miosis is also seen in meningitis, especially in children. Paralysis of the sympathetic also presents a contracted pupil. Trauma may also be considered as a cause of miosis. It must be remembered that a contracted pupil is found in various forms of poison, such as opium and tobacco. Eserine and pilocarpine produce the greatest degree of spastic miosis. Miosis caused by



spinal trouble can usually be distinguished by the fact that while the pupil is small it does not react to light but contracts synchronously with accommodation and convergence. Small pupils that do not react to light are diagnostic of syphilis.

**Mydriasis.**—The pupil may be found to be dilated merely as a result of markedly reduced vision. Complete dilatation of the pupil may be artificially induced by the instillation of a mydriatic. A dilated pupil points to a paralytic condition of part of the third nerve. Irritation of the sympathetic will produce mydriasis. The pupil may be dilated as a result of toxic elements within the blood. This we see in postdiphtheritic paralysis of the accommodation. In optic nerve atrophy, partial or total, the pupil is usually found dilated. Occasionally trauma produces paralysis of the iris sphincter and hence a dilated pupil. Dilatation of the pupil is also seen in syphilitic conditions of the eye involving the oculomotor nerve. In acute glaucoma the pupil is partially dilated as a result of pressure upon the sphincter. Of course in these cases there are associated symptoms of inflammation and this dilatation of the pupil is of utmost diagnostic importance. Dilatation of the pupil, when purely local in origin, is either due to an instillation of some mydriatic or caused by trauma. Whenever these causal elements are excluded we must think of the constitutional conditions that produce some parietic condition of the oculomotor nerve. Syphilis, diabetes, nephritis, general paresis are the constitutional conditions to be considered. Tumors of the brain also give rise to dilated pupils due to changes in the optic nerve. We must also remember that the various inflammatory diseases of the retina, choroid and optic nerve also produce mydriasis.

**Anisocoria.**—Inequality of the size of the diameters of the two pupils is not necessarily a pathological condition, but should always stimulate diligent search for a cause, although it is occasionally seen in otherwise healthy persons. It is sometimes congenital, but more often acquired. It may be the result of differences in the refractive status of the eyes. It may also be seen in unilateral amblyopia when the ambliopic eye has a slightly dilated pupil. Inequality in the size of the pupil may also be seen in cases where there is a marked difference in the visual acuity of the eyes. It may also be seen in unilateral chronic iritis as well as in unilateral chronic glaucoma or unilateral diseases of the retina and choroid. Where local causes can not be demonstrated some constitutional condition must be thought of. Syphilis, tabes, progressive paralysis, multiple sclerosis, diseases of the kidney, liver and some nervous condition, as neurasthenia, may give rise to pupillary inequality. In studying these cases it is essential to determine first whether we are dealing with a unilateral miosis or unilateral mydriasis. This can be determined in most cases by finding which of the eyes is pathological by studying the reactions. It is necessary to study the associated local ocular phenomena in order to enable us to arrive at a proper understanding of the underlying cause. It may be said, however, that while slight degrees of anisocoria may be seen in healthy persons, a marked degree of pu-

pillary inequality is always pathognomonic of either some local or general constitutional disease.

**Pupillary reaction.**—The most essential pupillary phenomenon from both the ophthalmological and general diagnostic standpoint is the pupillary reaction. In healthy and normal eyes the pupil reacts to the stimulus of light, accommodation, and convergence. In some diseased conditions this reaction may be either absent or diminished. Any disturbance in the pupillary reaction, however, must be regarded as pathological. The pupil may react to light and remain rigid to accommodation and convergence or vice versa. Absolute immobility of the pupil when not caused by a cycloplegia or by some local inflammatory adhesions points to some constitutional condition. We speak of absolute immobility when the pupil does not react to either light, accommodation, or convergence. Relative or reflex immobility on the other hand means an abrogation of the light reflex, but reaction to convergence is still present. This condition of pupillary immobility may be unilateral or bilateral. Absolute reflex immobility points to syphilis while reflex immobility is diagnostic of tabes and general paralysis. The anatomical site of the lesion in pupillary immobility and its various forms is still a matter of discussion, and the phenomenon must be studied in association with either miosis or mydriasis. The study of this pupillary manifestation is a valuable aid to the neurologist and internist. The reaction to light may be absent in diseases of the optic nerve and optic tract. Iritis and total posterior synechia gives rise to immobility. In iritis and acute glaucoma there is an abeyance of the light reflex. It is also seen in syphilis of the nervous system, nephritis, diabetes. There is another pupillary change known as the hemianopic pupillary reflex, where only part of the optic nerve fibres are involved, so that irradiation of that part will give no reaction while irradiation of the unaffected part will be followed by prompt reaction. This serves to differentiate between cortical lesions and lesions in the optic tract. These are the principal pupillary disturbances of diagnostic import.

**Associated ocular phenomena.**—A careful study of these incomplete observations on pupillary manifestations will soon convince us that the clinical value of pupillary changes can only be determined by studying the pupil from various angles, such as form, size, contents, color, symmetry, and reaction, and this in association with other ocular symptoms. It is the combined observation that will give such a symptom complex as to aid us in diagnosis. For instance, a dilated pupil alone cannot point to a definite pathological condition. But a dilated pupil associated with inflammatory symptoms of the eye ball, a steamy cornea and reduced vision and high tension at once points to a definite clinical condition, *i. e.*, acute glaucoma. On the other hand, a dilated pupil that does not react to light, not accompanied by inflammatory symptoms and associated with paralysis of the internal rectus, and accommodative disturbances points at once to paralysis of the oculomotor nerve. A partially dilated pupil with lateral nystagmus and temporal atrophy of the optic nerve is pathognomonic of multiple sclerosis. A contracted



pupil that does not react, associated with inflammatory symptoms of the eye is diagnostic of acute iritis, while a contracted pupil that does not react to light, which is slightly irregular and shows signs of adhesion accompanied by a diminution of vision is indicative of chronic iritis. On the other hand a contracted pupil that does react to light, but is round, whether associated with a reduction of vision or not, is practically always diagnostic of cerebrospinal syphilis. I could multiply examples to show the necessity of studying the pupillary changes in association with other ocular phenomena. This is, however, not the place and I feel that these few examples chosen are sufficient to demonstrate the idea expressed in this paper.

917 SPRUCE STREET.

### ILEOCECAL INSUFFICIENCY.

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The object of this paper is to draw attention to a condition within the abdomen which is one of considerable importance and a definite clinical entity more or less overlooked up to the present.

Ileoceleal insufficiency or incompetency is a condition characterized by a dilatation of the ileocecal valve, thus allowing a regurgitation of cecal and colonic contents into the ileum, and in marked cases, even further. As the small intestine possesses a greater absorbing capacity than the colon, it is logical to conclude that the regurgitation of colonic contents into the small intestine is bound to be accompanied by the absorption of some of the end products of digestion which normally are excreted.

Among the more common causes of this condition are repeated attacks of appendicitis with the formation of adhesions and bands involving the ileum and cecum; trauma to the valve during operations in this region seems to be an important factor, as about ninety per cent. of all cases of ileocecal insufficiency are to be found in patients who either have a chronic appendicitis or have undergone a laparotomy. The remote causes are intestinal atony associated with marked anemia, rapid emaciation, relaxed abdominal wall, following frequent parturition or advanced age, lesions distal to the cecum causing reverse peristalsis, or interference with the normal emptying of the small intestine.

Normally, the ileocecal valve is formed of two semilunar segments, an upper and a lower, which project into the large intestine. These segments are formed by a reduplication of the mucous membrane, and contain circular muscle fibres. When the valve is incompetent, these segments disappear and the ileum empties directly into the colon by a large funnel shaped opening which allows of the passage of intestinal contents in both directions. Associated with this condition there is always a dilatation of the terminal ileum and of the cecum, accompanied by a moderate degree of passive con-

gestion, the extent naturally depending on the severity of the individual case. The local clinical manifestations usually consist of a burning pain in the right iliac fossa and moderate tenderness in this region. The abdominal walls are usually very flabby and allow of easy palpation of the ileum and cecum, which are generally found to be distended with flatus. Occasionally patients also complain of pain in the left iliac fossa. Alternating attacks of diarrhea and constipation is probably the most constant of the general manifestations. Persistent pains in the various articulations and muscles, severe and frequent headaches, dizziness, general malaise, weakness, lassitude and tympanites are among the more common general symptoms.

A positive diagnosis may be established by röntgenographic examination. All cases presenting symptoms suggestive of incompetency of the valve or of chronic intestinal absorption, especially if associated with a history of repeated attacks of appendicitis or occurring some time after a laparotomy, should be submitted to a careful röntgen examination, which consists in injecting a certain amount of bismuth or barium into the rectum and determining the height to which this passes. Normally, it should not pass the ileocecal valve.

All cases of ileocecal incompetency should be subjected to proper medical treatment before resorting to operation. After a careful trial of various methods of treatment we believe that the most satisfactory form of medical treatment consists in repeated intestinal lavages by means of the duodenal tube. The tube is slowly inserted up to the third ring mark, with the patient in the sitting posture. The patient is then instructed to recline on a table or sofa on his right side in order to facilitate the passage of the tube into the duodenum. It is necessary that the stomach should be empty at the time of the treatments. After four or five minutes, an aspirating bottle is attached to the distal end of the tube in order to determine whether or not it has passed into the duodenum. The aspiration of a stringy or bile stained fluid usually suffices to establish the position of the tube in the intestine.

After it has been determined that the tube is in the proper place, it is connected with an irrigating funnel and the desired solution introduced directly into the duodenum. The solution used varies with the individual case, but ordinarily, a solution containing sodium chloride, sodium sulphate and about thirty drops of a saturated alcoholic solution of phenolphthalein is used. The total quantity used also varies, as some patients will tolerate more than others, but ranges from six to twenty ounces or more.

The tube is then carefully withdrawn. The fluid introduced into the duodenum passes quickly through the intestinal tract, flushing it out completely and patients usually have from one to three or more copious watery movements of the bowels within one to two hours after the treatments. The frequency of these transduodenal lavages depends naturally on the individual case, but varies from two to three times a week. It is also necessary to give associated attention to the diet and general health of the individual. Adrenalin administered in

the form of the nucleoprotein seems to produce beneficial results, by increasing the intestinal as well as the general body tone. In selecting the diet for individual cases, it is essential to determine whether the products of carbohydrate or protein metabolism are at fault.

The restoration of the true mechanical function of the valve can only be accomplished by a plastic operation. This operation, which was originally suggested by Dr. Lewis Gregory Cole, is really a reconstruction of the valve by invagination of the ileum into the cecum and is performed as follows: The abdomen is opened by a right rectus incision at the level of the cecum. The appendix is removed, if this has not already been done at a previous operation. The fat is dissected away from the ileocecal junction for about three quarters of the circumference of the bowel. When this is done, there is revealed the termination of the ileum which can always be detected by an elliptical white line which runs transversely across the left side of the cecum. The ileum is then invaginated into the cecum for a distance of about three quarters of an inch and held in place by Lembert sutures of Pagenstecher which are placed above, below and on the anterior wall of the ileocecal junction, running from the wall of the cecum to that of the ileum, about three quarters of an inch from its end. It has been shown by roentgenograms, taken after operation that this proceeding gives excellent mechanical results, but, of course, enough time has not as yet elapsed to prove these results permanent.

The following is a brief report of a few of the cases that have come under observation:

CASE I.—J. C., male, thirty-five years old. Was operated on for chronic appendicitis six months before onset of present symptoms. Complained of persistent headaches, pains in the shoulders, burning pain in the right iliac fossa, eructations of gas, and frequent attacks of diarrhea alternating with marked constipation. Had lost fifteen pounds in six months. Roentgenograms showed a moderate degree of insufficiency. Urine contained a marked trace of indican. Physical examination negative, except for slight tenderness over the terminal ileum and cecum and flaccid abdominal walls. Transduodenal lavages were given three times a week and patient was put on a carefully selected diet. Under this treatment he gained nine pounds. Weakness, malaise, and pains in the body disappeared and headaches became less frequent. Bowels moved regularly and urine showed only a faint trace of indican.

CASE II.—M. J., female, thirty-four years old. Operated on for chronic appendicitis eight months ago and made an uneventful recovery. For the past six months complained of a constant feeling of weakness and inaptitude for work, persistent headaches, constant pain in both right and left iliac fossae, but chiefly in the right. Bowels constipated and urine showed a faint trace of indican. Physical examination was negative, except for slight tenderness in the right iliac fossa. Transduodenal lavages were given twice a week at first, then once a week for three months. Her symptoms have completely disappeared and the patient now leads a normal life, except that she must pay careful attention to her diet, eliminating meat as much as possible.

In the following cases the patients have been operated upon:

CASE III.—E. R., female, twenty-six years old. Three years ago began to have attacks of pain between the shoulders and in the epigastrium. This was followed shortly afterwards by vomiting after each meal. At this time patient remained in a hospital for three weeks under treatment for appendicitis. After this her symptoms disappeared, but began again three months later. By July, 1916,

the pain had disappeared from the shoulder region but there was a burning and severe epigastric pain occurring about two hours after meals. This was immediately followed by vomiting. She was very constipated and had lost about twenty pounds in weight in the last year. From a roentgenographic examination, at this time, Dr. L. G. Cole reported that there was a minute punctate ulcer on the lesser curvature of the stomach, about four inches from the pylorus, a definite veil or membrane involving the cecum and ascending colon, and a moderate degree of incompetency of the ileocecal valve.

She was operated upon August 1, 1917, at the French Hospital, by Doctor Hoguet. The appendix was removed, the valve repaired, as described above, and the gastric ulcer excised. She made an easy recovery and reported in January, 1918, that she had no discomfort whatsoever after eating and was not troubled at all with constipation. She had gained twenty pounds in weight. Roentgenograms made at the time showed that the barium passed all the way back to the cecum, the left side of which was flattened and the indentation of the ileocecal valve was distinctly seen; there was no evidence that any of the barium had passed into the ileum, indicating that the valve was competent and that its repair had been complete.

CASE VI.—Aviator, age twenty-eight years. This young man had been perfectly well up to within two months of the time when he was first seen. He then began to complain of burning pain over the right iliac region and of a diarrhea which seemed uncontrollable. He had from three to ten large, watery movements a day. Physical examination was practically negative. Radiographic examination by Doctor Cole showed that there was an incompetency of the ileocecal valve with an influx of colonic contents into the ileum. The left side of the cecum seemed to be very irregular. He was operated upon September 17, 1916, at the French Hospital. A long, slightly kinked appendix was found and the valve easily admitted the tip of the index finger. The appendix was removed and the valve repaired as described above. The patient's recovery was uneventful and the diarrhea stopped immediately. When seen in May, 1917, he reported that since the operation he had but one or two stools daily and complained of no abdominal discomfort whatsoever.

CASE VII.—E. E. V., medical student, male, age twenty-six years. For the last two years had had attacks of cramp like pains in the right iliac fossa. These attacks were at irregular intervals, not associated with fever or abdominal tenderness, and seemed generally to be brought on by indiscretions in diet. Patient was exceedingly constipated and was forced to take cathartics almost daily. Radiographic examination in February, 1917, by Doctor Cole, showed that there was an incompetency of the ileocecal valve with a moderate regurgitation of the colonic contents into the ileum. There was also some deformity of the left side of the cecum. He was operated upon February 26, 1917, at the Hospital for the Ruptured and Crippled. The appendix, which was rather thick and long, was removed. The valve, which easily admitted the tip of the index finger, was repaired in the usual manner. The patient made an easy recovery, his bowels moving without cathartics on the second day after operation. In December, 1917, he reported that his bowels moved daily, that he had no abdominal discomfort whatsoever, and that his physical condition was improving rapidly.

**Conclusions.**—1. Ileocecal insufficiency is much more frequent than is ordinarily recognized and should be suspected in all cases presenting symptoms of chronic intestinal absorption. 2. It is an indication of local enfeeblement of the intestine and is usually associated with a chronic inflammatory process in the ileocecal region. 3. The most characteristic symptoms are burning pain in the right iliac fossa, alternating periods of constipation and diarrhea, headaches, lassitude, and arthritic manifestations. 4. General hygienic, dietetic, and tonic treatment plus frequent duodenal lavages, in the most satisfactory method of medical treatment. 5. Surgical intervention is often necessary.



## SURGICAL DIAGNOSIS.

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Difficulties of diagnosis are too well recognized to merit extended comment. They have been strikingly demonstrated by the published necropsy reports of the Massachusetts General Hospital. Yet the decreasing proportion of diagnostic error revealed by these reports indicates, perhaps, the salutary influence of routine postmortem examination. The present discussion is concerned with various phases of surgical diagnosis, in an endeavor to determine who is best qualified, in each instance, to recognize such pathology, and, having recognized it, whether further diagnostic effort is essential.

The acute traumatic cases which come into the wards ordinarily present no serious diagnostic problem to the surgeon. We must except, however, in cases of gunshot and stab wounds, and blows or falls upon the abdomen, that there may be doubt in regard to visceral injury or hemorrhage. I recently saw such a case in consultation. A bullet had entered the chest wall at the level of the eighth rib in front, slightly external to the nipple line, and emerged at a corresponding point in the back. The pulse was 120, the lips were blanched, and the urine smoky. On the other hand, there was no restlessness nor air hunger, the conjunctivæ were not excessively pale, and the pulse was of fair quality. Operation was deferred, and the patient recovered, unoperated. The surgeon in charge of this case, a man of wide experience, said to me: "Whatever is done here is good judgment if this patient gets well, and poor judgment if he dies."

The diagnostic value of lumbar puncture in obscure head injuries, as pointed out by Wyeth and Sharpe (1), and the emphasis placed by Elsberg (2) and Kearney (3) upon the importance of examining the eye grounds in fractured skull should not be forgotten. The term "diagnosis" should be broad enough to include not only a recognition of the lesion itself, but also the effects of such lesion. For example, in fractured skull the examination of the eye grounds, just noted, indicates whether or not intracranial pressure is increasing and helps decide for or against operation.

Another type of acute case, the so called "acute abdomen," if considered as such, offers few difficulties in diagnosis, it is so obviously surgical. A specific preoperative determination of the underlying pathology, however, is usually difficult and often impossible. The surgeon merely recognizes the existence of some intraabdominal catastrophe demanding immediate surgical intervention. The perforation of a typhoid ulcer exemplifies this class of surgical emergency. Here we recognize the diagnostic importance of a sudden sharp rise in blood pressure, but we must not be deceived by its absence. Even in the diagnosis of acute cases the surgeon cannot be entirely independent of medical aid.

Mistakes in diagnosis are more frequent, however, in chronic conditions. Take, for example, a definite case of flatulent dyspepsia. To the surgical mind gastric or duodenal ulcer, cholecystitis, appendicitis or pancreatitis suggest themselves. In the

case under discussion the gastric distress came on immediately or soon after eating. There was no tenderness over the appendix nor any history of attacks, and the symptomatology was not suggestive of ulcer. The flatulent dyspepsia was of the type encountered in gallbladder disease, and, although there had been no pain or tenderness in the gallbladder region, the surgeon, nevertheless, considered the probability of cholecystitis. The internist, on the other hand, made a diagnosis of functional gastric disorder, proved to be correct, which subsequently led to improvement under dietetic measures. Undoubtedly, the diagnostic judgment of the internist is much freer from bias than that of the surgeon.

The internist, however, either through actual distaste for, or mere indifference to, surgical work, too rarely visits the operating room, where the opportunity would be afforded him to check up preoperative symptomatology and diagnosis with operative findings. The writer believes that the actual increase in diagnostic ability gained thereby, and the added confidence which the surgeon could place in that ability, would amply compensate the internist for the time consumed. The surgeon learns diagnosis to a degree, by reasoning backward from the "living pathology," so called, to the symptomatology. The internist considers the symptomatology first. The method of the latter is the more logical, but cannot be thoroughly efficient unless supplemented by operating room observation. Surgeons have contributed largely to the sum total of diagnostic knowledge, as evidenced by the saying of Moynihan that duodenal ulcer can be diagnosed by correspondence. Although not to be taken literally, Moynihan thus gives us an unforgettable reminder of the unique value of subjective symptomatology in ulcer diagnosis. The simultaneous occurrence of gastric or duodenal ulcer, cholecystitis, appendicitis, or pancreatitis, or mistaking the one for the other before operation, is too frequent to require discussion, although typical of diagnostic difficulty. In a restricted sense, therefore, most diagnoses are tentative and the majority of laparotomies exploratory.

Peterson (4) indicates the value of the diagnostic incision by his statement that, during the course of 1906, in abdominal sections undertaken primarily for gynecological conditions, gallstones, unsuspected in all but a few instances, were discovered incidentally 135 times, or in 12.66 per cent. of the cases. Mayo (5) states that cholecystitis without gallstones may be recognized after the abdomen is opened by the presence of enlarged lymph nodes along the cystic duct.

This fact, the diagnostic nature of laparotomies, has unfortunately led to ill advised operations hastily undertaken upon insufficient evidence. Lichty (6), as an internist, and Connell (7), from the surgical standpoint, among others, have noted the frequency of error in the diagnosis of chronic appendicitis. We recall how often the excised appendix has been opened, seeking justification for operation in those hemorrhagic areas of the mucosa which Moscovitz (8) tells us are not pathological, but are the result of operative trauma. Nevertheless, it must be borne in mind that occasionally symp-



toms suggestive of appendicitis are entirely relieved by appendectomy although the appendix shows no definite lesion.

The surgical significance of pain is predominant, and therefore prone to overaccentuation. Its reflex and referred nature is recognized, but may be misinterpreted and lead to erroneous diagnosis if relied upon exclusively. In this connection Elsberg (9) reports several cases previously operated upon for appendicitis or ovaritis, without relief, in which the lesion was a tumor of the cord pressing upon the nerve roots. A simple neurological examination determined the diagnosis. Again, Braash and Moore state that when the pain of stone is localized to the area of the lower ureter, particularly on the right side, it may so closely simulate appendicitis that, given a normal urine, "an exploration of the appendix might be justifiable without preliminary roentgenographic examination."

Noble (10), referring to the indications for gynecological operations, reminds us that "it is in the study of the psychic functions of woman and their influence, and more especially of the influence of emotional states upon the health of women and in the causation of functional sexual disturbances, that the general surgeon and the average family doctor fail in comprehension and insight, as to whether particular symptoms have a local morphological basis, or, on the other hand, are caused by morbid emotional states, acting through the sympathetic nervous system and through the ductless glands."

Of course, operation should never be undertaken upon the sole indication of pain in the female pelvis. This occurs occasionally, however, either because of overaccentuation of the pain symptom, previously mentioned, or through lack of confidence in the negative findings of bimanual examination. If one who has acquired a fair degree of manual perception is doubtful whether he feels something abnormal in the pelvis he had best accept that doubt rather than subject his patient to the chance of negative exploration. On the other hand, Wall (11) warns us that pelvic varicoele, for example, is frequently overlooked. The symptoms are few and the soft broad ligament tumor may escape detection entirely unless examination is made with the patient standing. Many of these women, according to Wall, are classed as neurotics. The gynecologist and the general surgeon appear to be best equipped to make gynecological diagnosis. Neurological diagnoses, however, had best be entrusted to the internist, neurologist, or neurological surgeon rather than to the general surgeon. In this connection Wyeth and Sharpe call attention to the point that in epilepsy "the patients operated upon are selected ones only, according to the presence of a marked increased intracranial pressure and with definite localizing signs."

It must not be assumed from the foregoing that a determination of the more or less obvious complaint is anything more than a partial solution of the diagnostic problem or that any specialist is diagnostically selfsufficient even in his own field. Nevertheless, the evident difficulties of diagnosis are not to be overemphasized, but, rather, stress should be laid upon the means of overcoming them. Bevan (12), in discussing the problem of intestinal stasis and its

surgical relief, states that the cooperation of the internist, the neurologist, the physiologist, the pathologist, the roentgenologist, and the surgeon is the essential factor. In group diagnosis then, as evolved from modern hospital practice and specialization, lies the remedy for minimizing diagnostic error. Unfortunately, an extremely large class of patients are neither rich enough nor poor enough to enjoy the full benefits of this efficient plan. Possibly a solution of the difficulty may be found in the diagnostic clinic as described by Birch (13). Here individual examinations are made by each staff specialist with subsequent consultation of all examiners including the family doctor who referred his patient to the clinic. A moderate fee is charged.

It is perhaps superfluous to state that the success of any group plan depends necessarily upon a discriminating use. The assignment of ward cases by the senior house officer is undesirable. Every ward case should receive a routine examination some time during his hospital stay from each attending staff specialist. The diagnostic system should be automatically thorough. The internist, of course, is better qualified to assume charge of surgical diagnosis (hence diagnosis in general) and coordinate the diagnostic talent of other specialists than is the surgeon, for the internist is, essentially, a diagnostician and the surgeon should be, essentially, a technician. It is manifestly unscientific and unfair both to the patient and to the surgeon to charge the latter with sole responsibility for the diagnosis and treatment of some surgical lesion which may be only one of several factors contributing to the patient's ill health. On the other hand, the surgeon cannot shift the responsibility for undertaking a surgical procedure to the shoulders of a colleague. The recent evolution of specialization with the consequent refinement of diagnostic methods has relegated the diagnostic activities of the surgeon to a position of secondary importance, but it has not eliminated him from the scheme of diagnostic team work.

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Physicians who have joined the army are becoming accustomed to make use of clinical laboratory reports to an extent to which few have been accustomed in private practice, and when they return to civil life they will demand the laboratory service the value of which they will learn in the army.

## DIAGNOSTIC HINTS IN GASTROINTESTINAL DISEASES.

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In an orderly examination observation of the patient is the first and most important step to diagnosis. Observing does not mean merely looking at a patient in an absent or careless manner, but close attention to his demeanor, gait, nervous stability, obesity, emaciation, and color. Very often a patient will come in complaining of gastric disturbances and observation will show the laborious breathing and cyanosis of a cardiac condition. In these cases you may confine yourself almost at once to his heart and discard all other symptoms. As a student I remember seeing a case at dispensary treated by a good physician. Because the patient complained of gastric disorders, the doctor sent her to the stomach department ignoring the casual observation that she was slight in build and rather emaciated and had a proportionately large rounded abdomen. She was promptly sent back with a diagnosis of ascites with advanced cardiac disease.

We must not forget to find out a man's occupation, age, and address. Occupation will often give a clue to symptoms. For instance, lead colic and aniline dye poisoning are very important diseases under present industrial conditions. Again, does the patient's occupation demand constant sitting or standing? Does he travel or is he confined to a small dingy office? Age is an important factor. While most of the gastrointestinal diseases are usually classified as to certain ages, these ages often overlap and some diseases that should normally come in old age are often seen in the young. I have seen a case of gastric carcinoma in a girl nineteen years of age, proved at autopsy. The family history in cases of gastrointestinal troubles is not an essential element. It is not necessary to go into detail as it is in nervous or mental diseases. Heredity plays an important part in this class of cases. The only interesting facts are whether the parents were syphilitic, alcoholic, or perhaps tuberculous and thus transmitted a lessened resistance to their offspring. A more important part is the previous history of the patient—the influences to which he was subjected as a youth, his general mode of living, diseases of youth and adolescence and how far back his present complaint began. The fact that his history began a number of years ago may rule out many diseases. Even the fact that the patient suffered with frequent attacks of conjunctivitis, pharyngitis, or laryngitis may show that at those times there was a toxemia probably dependent upon an intestinal stasis.

I remember a case where a careful taking of a previous history might have saved a man's life through necessary operative interference. The patient was treated by a number of eminent physicians and specialists for what seemed an obscure gastric condition and eventually died of multiple abscess of the liver. About two weeks before his death, on carefully going over his previous history, we found definite evidence of cholelithiasis. In his youth he suffered for some time from intense upper abdominal cramps which would be relieved only by

hypodermic injections. This put us on the right track, but too late for an operation. Even where the present history obtained is confused because of a variety of complications and the inability of an ignorant patient to differentiate the finer points, the history of pain or discomfort of previous years may be given correctly and easily recognized.

There is a possibility of trauma, which may mean nothing more or less than a constant irritation due to hot and highly spiced foods or constant intake of very rough and indigestible ones. Last, but not least, do not forget to make special inquiries of previous infections, not only syphilis, but typhoid, influenza, pneumonia, or any bacterial infection. I have a patient now under observation who has been treated for all kinds of gastric troubles; when one line of treatment did not produce results another was taken up. The patient was really sick. A course of salvarsan and mercury seemed to relieve him. His Wassermann reaction is at present negative and the stomach symptoms have disappeared.

Now we are ready to hear the patient's story. As a rule I allow him to tell his story in his own words. It takes a few more moments, but I get an idea of the ailment and am able to question him more intelligently.

He will tell you first that he suffers pain, but pain being a subjective symptom and only a relative term I closely question him. He is, say, about thirty-five years of age, bright and well fed, and is beginning to take up abdominal corpulence that is common to men of that age who eat well and do very little physical work. He states that after an indiscretion of diet about ten years ago, he had a sudden attack of abdominal pains located for the most part in the centre of the abdomen. He was in bed for one day, was given an enema, and never had a recurrence of the pain. He felt well for a number of years. For the last five years, however, he has complained of bad taste in his mouth and pain across the abdomen. Now we ask as to the relation of the pain to his meals. It may come before, during, or after meals, or at an indefinite relation to them. Let us understand the causes of pain in gastrointestinal diseases.

Pain in the gastrointestinal tract is caused by increased tension of the muscular wall either by dilation or spasm (1). Hence we can see that any spasm of the pylorus from whatever cause will produce pain in the upper abdomen. The degree of spasm and its time relation to meals will therefore determine the character and time of the pain. Glassner and Kreuzfuchs, quoted by Carlson, have shown that, while the pylorus may contract suddenly in spasm and cause pain, the fundus may be atonic and quiescent (2). Pain is also produced in peritoneal irritation. The visceral peritoneum is insensitive to pain but the parietal peritoneum is very sensitive (1). The mucous membrane of the stomach and intestines is insensitive to pain. Experiments by Carlson on himself and others substantiate this (2). A 0.5 per cent. solution hydrochloric acid causes no pain if introduced even at the seat of an ulcer. Hence the number of latent ulcers and also the absence of pain in the Dieulafoy ulcers. When, however, the ulcer is caused by infection, as has been proved by Rosenow in many instances, then the resulting toxemia will cause a



hyperexcitability of the sensory nerve endings. This will cause the spasm with its pain signal. Now, when the ulcer has penetrated further into the peritoneum, and, through irritative exudates, has attached itself to the parietal peritoneum we get irritation pain. Remember, also, that similar irritation is the cause of pain in visceropropulsion; it is simply the pulling upon the parietal peritoneum. There is pain due to spinal causes and referred to the stomach and abdomen. Any disease of the seventh to tenth dorsal segments may be referred to the stomach. Another cause of gastric pain in disease is the so called hunger pain. The feeling of wanting to eat is designated as hunger. It is nothing more than the hunger contractions of a normal stomach. This hyperexcitability is caused by inflammation due to a gastric or duodenal ulcer and in cholelithiasis to the spread of bacterial toxins along the branches of the vagi nerves (2).

To return to the patient: his pain is indefinite but has a tendency to come on about three to four hours after meals, also at times immediately after meals. The pains are so indefinite that he does not give a clear history of hunger pain. Another fact that we must take into consideration is that he has never vomited and so does not know whether it would relieve his pain. He has taken soda to relieve the burning but has never learned to take food for his pain as is sometimes done in uncomplicated duodenal ulcers. Food does not increase his pain immediately. There is no difficulty in swallowing. A very important fact is that when he takes physic, has a movement, and expels gas, he feels relieved and the pain practically disappears for some time. He does not complain of pain or pressure under his chest but does complain of precordial pains especially when suffering with gas distention. Another very important fact is that the pain does not radiate to his shoulder. The patient does not vomit nor is he ever nauseated. He is constipated for weeks in succession, having a bowel movement only on taking physic. During the time when he is not constipated, his appetite is good. Stool is of normal consistency and there is no pain on defecation. Urine is normal in color and amount, although very red, and there is no pain on urination. He does not arise at night to urinate.

In an examination for a suspected gastrointestinal disease always take the blood pressure first. Arteriosclerosis and chronic nephritis are by no means rare even at the age of our patient. Again tuberculosis, myocarditis, gastric carcinoma, and diseases resulting in hemorrhage will often give a low blood pressure. Simple intestinal toxemia may give a high blood pressure. Our patient has a blood pressure of 126 systolic and seventy diastolic. His eyes are clear, color good, no enlarged glands about the neck or throat, thyroid normal in size, heart and lungs negative.

Now comes the abdominal examination. We may have an idea of our patient's trouble, but should not jump at conclusions, but examine that part of the abdomen suspected. In this connection observation again comes to the fore. First he is put in the upright position, then in the prone. In this way one can often diagnose a tumor, ascites, pregnancy, or prolapsed viscera.

Now we come to palpation, which should be done in an orderly manner. I usually go over the abdomen lightly at first to feel any special resistance or tumors of any kind, then more carefully. With deep palpation, my usual routine is to examine the left lower quadrant, the left upper quadrant, the epigastrium, the right hypochondrium, the right lumbar region, the right lower quadrant, and finally the special points. Our patient presents no pathological signs upon observation. The entire abdomen moves freely with respiration. Percussion elicits nothing exceptional. The liver is normal. The stomach percusses to the umbilicus. Percussion of the colon seems normal, perhaps a little tympanitic. Light palpation shows no resistance and no tumefaction. Deep palpation shows some tenderness over the sigmoid; the spleen is not enlarged; there is tenderness over the epigastrium; the liver is not tender; gallbladder is not felt; right kidney is not felt. I also look for the left kidney but only as a matter of routine as it is rarely prolapsed. There is an indefinite tenderness over the right lower quadrant. There is some tenderness over McBurney's point. Morris describes tender points in differentiating chronic appendicitis. They are situated in a line drawn from the umbilicus to the anterior superior spines of the ilia and about one and a half inches from the umbilicus. This falls over the right and left lumbar ganglia of the sympathetic. He states that in chronic appendicitis the right point alone is tender. When the right and left points are tender it would prove to be a pelvic disease. When neither is tender, the trouble would be cephalad from the pelvis and the appendix (3). This sign is good when present in uncomplicated cases. Our patient has no tenderness over these special points. Robson's point, midway between the ninth costal cartilage and the umbilicus, is negative. This sign is usually present in gallbladder diseases. In testing for these special points of tenderness be on the lookout in thin patients where the spinal column comes right up. In those cases tenderness will be elicited all over. A very important diagnostic point when present is the localization or Head zone. Ordinary pinching of the skin is not painful. In disease of the internal viscera we often get a hypersensitive condition of that portion of the skin having nerve connection to the same segment of the cord as the affected viscus. Our patient does not show it. Much has been said of the Roas point in cases of upper abdominal disease, but it is so inconstant and so easily mistaken for general spinal tenderness always present in neurotics that I place no reliance upon it.

Sometimes where tumors are suspected or where a gastroptosis is present we will wish to make out the exact boundaries of the stomach. Pump a little air into the stomach or blow it up with a seedlitz powder, and the tumor, if present, will then become more palpable. Perhaps for the boundaries it is better to give the patient one or two glasses of water to drink and then percuss the outline according to the Conheim method (4), but not in this patient because his symptoms do not point that way. As he sits up we will make sure of his patellar reflexes and shin tenderness which will tend to exclude tabes or syphilis. Do not forget to pal-



pate the abdominal rings for hernia; often a right inguinal hernia may give rise to abdominal symptoms similar to chronic appendicitis. The final step of physical diagnosis should be a rectal examination. Osler has stated that the difference between a general practitioner and a specialist is that the specialist examines the rectum.

Laboratory findings are very important. By this time we have excluded many diseases, but we must complete our examination. A gastric test is at once suggested. This should be divided into two parts. The empty stomach secretion should be extracted to show a hypersecretion, and then the regular test meal to show the hyperacidity. I have my patient come in the morning on an empty stomach. I extract any secretion present, and then give him a test breakfast, a roll and two glasses of water. One hour later I extract again, and test. The interpretation of the results is very important. The first extraction is examined for free hydrochloric acid, Opler-Boas bacilli, and lactic acid; the second for free hydrochloric acid, total acidity, blood, lactic acid, when hydrochloric acid is absent, and occasionally for pepsin, rennin, and bile.

Microscopically we examine the solid portion and note the findings. The different tests can be found in any good textbook on clinical medicine. A very important point should be cleared up; that is, that the presence of the Opler-Boas bacilli does not always mean carcinoma. It may be present in any case of lactic acid fermentation due to stagnation. Again, carcinoma may exist without the Opler-Boas bacilli, because no stagnation is present. Also, sarcini simply mean stagnation without destruction of the secreting cells, *i. e.*, hydrochloric acid must be present for their development. Stasis can easily be detected by asking the patient to eat a handful of raisins the evening before the test meal is given. Their presence in the extraction of the fasting stomach would indicate retention. On finding occult blood, make sure that it is not due to injury of the delicate mucous membrane caused by the stomach tube. As a rule, gastric tests should not be made during the menstrual period because the chemism of the stomach contents at that time varies from the normal. No examination of the gastrointestinal tract is complete without examination of urine and stools, but, as a matter of fact, the urine should be examined in every case of chronic disease, because the body chemistry is more or less changed, and the urine gives the first sign of these changes. I have a little patient under treatment now who has been complaining of symptoms diagnosed as chronic appendicitis, but a careful history of the pains and an examination of the urine discloses evidences of renal disturbance, probably caused by a stone in the pelvis of the kidney. She also had definite tenderness in the right costovertebral angle, a very good sign in differentiating kidney disturbances. The feces should be examined for occult blood and undigested material. Never forget to look for ova, for intestinal worms will often give symptoms of more serious diseases.

On extraction nothing is recovered from the fasting stomach of our patient, and it is well known that the fasting stomach may contain ten to fifteen

c. c. of acid fluid and be normal. Rhexus, Bergeim, and Hawk assert that they have proved that the normal stomach may contain as much as 100 c. c. of fluid (5). This patient's stomach secretion was extracted one hour after his test was given; the free hydrochloric acid showed a value of sixty and a total acidity of seventy-six. The presence of hydrochloric acid precluded testing for pepsin or rennin as they are always present with hydrochloric acid. Occult blood was not present. Microscopically nothing was seen but a few starch granules. The urine was negative except for a large amount of indican. The stool, was negative as to blood, ova, or undigested material. The examination of our patient's blood showed a normal leucocyte count and the hemoglobin was eighty-five per cent. The Wassermann test was negative. The man had no hemorrhage, hence we did not take a red cell count.

It is almost impossible to make a final definite diagnosis of any chronic disease of the gastrointestinal tract without a complete x ray examination. Carman reports about eighty-five per cent. diagnosis of duodenal ulcers and ninety-five per cent. of gastric carcinomas with the aid of the x ray. The findings in the Brooklyn hospitals are not so high, but are high enough to warrant an x ray examination for every patient giving symptoms of gastric ulcer or cancer. Even in cholelithiasis, where the stones may not always be seen, evidences of adhesion or position of the stomach may prove their presence. In order to be of any value it must be thorough and complete, merely taking a few plates after a six hour meal is not sufficient. The actual working of the stomach must be observed under the fluoroscope; plates should then be taken to help in the diagnosis and for record purposes. A practice to be decried is the sending of a patient for an x ray examination without making any other physical or laboratory examinations, simply because he complains of stomach trouble. The x ray alone is of no value and is of diagnosing import in gastrointestinal diseases only when an entire examination as outlined above has been made.

Our patient was thoroughly x rayed. First in the upright position we found a slight retention after a six hour meal. The bismuth filled the entire ascending and transverse colon showing a hyperactivity of the entire tract. After a full meal the gastric and duodenal outline shows no defect, but the stomach shows a hyperperistalsis, that is, it works too fast. In the horizontal position we also find bismuth in the appendix. Twenty-four hours later we find the entire colon filled and the appendix still visible. Forty-eight hours later the colon is empty except for some bismuth in the rectal ampulla, but the appendix still shows bismuth retention. In the entire history this is the first real definite evidence of his trouble, but this is fortunate for us because in all cases we do not get such direct evidence.

Here is the summary and diagnosis: 1. We notice that while his pain is periodic, that is, coming on at definite intervals of a few months, there is at all times some epigastric burning and feeling of fullness, especially after meals. He has frequent attacks of constipation lasting for two or three

weeks at a time, and at those times suffers with loss of appetite and belching. 2. While his pains come on two or three hours after meals there is always a blending or overlapping from time to time and no definite history of pain before meals. 3. Food does not relieve his pain, as it would in duodenal ulcer, nor does it increase pain, as it would in gastric ulcer. 4. There is entire relief of symptoms after a bowel movement. 5. The gastric findings are not conclusive. The acidity is too high for a duodenal ulcer and is rather indicative of a nervous dyspepsia or irritation from an outside source. We must not forget that in chronic appendicitis we may even get occult blood in the stool. This, however, is not so in our case. 6. The urine shows an increased amount of indican which means intestinal stasis. After the hyperperistalsis, the muscular walls are tired out and hence stasis results. 7. Direct x ray evidence shows inability of the appendix to empty itself in forty-eight hours. We may conclude, therefore, from the foregoing evidence, that our patient has chronic appendicitis.

George and Gerber claim to have visualized the appendix in about seventy per cent. of their cases. Another method is the indirect one. The insufficiency of Bauhin's valve or the presence of adhesions about the appendicular region will give us the correct diagnosis. In this connection a very important observation by Brown, Moynihan, and Finney (6) cannot be too strongly emphasized. "In all cases of gastric dyspepsia of long duration especially if they show an exacerbation from time to time with no success in treatment as nervous, the underlying cause is chronic appendicitis without local manifestations."

It is not often that a physician is called upon to use all these stratagems in order to make a diagnosis of chronic appendicitis. In fact, a few careful observations will rule out a number of diseases, but, when a patient comes into my office for the first time, I cannot tell what the ailment is until I make some investigation. Very often from the patient's brief history and incomplete description you wonder whether you are dealing with a case of *tabes dorsalis* or, perhaps, a Meckel's diverticulum, until further examination proves the contrary. Again, not at all times are we able to make a correct diagnosis even with all the means at our command. However, in the majority of cases by careful study of the patient's history and a subsequent study of findings we can arrive at a definite diagnosis. Even in duodenal ulcer it is not true, as Moynihan has said, that the diagnosis can be made from the history alone. We must make a study of the clinical findings and a careful x ray diagnosis.

The man who makes an incorrect diagnosis after exhausting every means should not be censured. Such errors are excusable and the physician making them will be benefited. The man who is dogmatically positive and jumps at conclusions without due deliberations is the man who deserves censure (7).

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## SOME SURGICAL PROBLEMS AND PRINCIPLES.\*

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Certain elementary principles of surgery are of great importance to the general practitioner. Often greater success is obtained by bringing minor conditions to a speedy and favorable issue. The education of the profession in these minor principles is, however, still deficient. Although the experience of two men may not be identical, both may be correct if the same result was obtained in similar cases. One often hears, too, discussion of similar symptoms and diseases when upon careful investigation there may be no resemblance at all. The title of this paper allows wide latitude of discussion, but there are a few salient points derived from experience that I hope may be of interest. While some of the topics may seem trite and not sufficiently technical, these points have been of great assistance in bringing to a final cure many cases under my care.

Probably the one aid in surgery that has been most often misused and misapplied is gauze in daily routine. It has been, and is still, the universal custom to pack abscess cavities and infections day after day for weeks and months; this keeps them open and prevents their healing, thus unnecessarily postponing the ultimate healing. The first principle, then, is that gauze does not drain. It dams up secretion and prevents healing. An ischiorectal abscess, after the first four or five days, requires no packing at all. The best method of treating these cases is to pass cotton with the solution of choice on an applicator to the bottom of the wound. It effectually prevents healing from the top, and the medicament is carried to the depths of the wound. The wounds heal more quickly and the patient is relieved of the much dreaded and painful gauze packing. The time required to heal any infection depends on its size and situation, but the course of treatment is much shortened by this method. It also applies especially to abscesses in the right iliac fossa following an operation for acute appendicitis. In this region I have often noted that the discharge was encouraged and the wound prevented from healing by prolonged packing. It is with the greatest difficulty that resident physicians can be kept from stuffing these wounds daily with gauze, thereby disturbing healthy granulations. When I entered my service a few days ago at the Jewish Hospital two cases of compound comminuted fracture of both bones of the leg were brought to my attention. They had become infected and had been packed every day. The packing was stopped at once, and the following day, upon inquiry, I was told that the discharge had been practically nil. It is very poor technic to pack infected bones and joints. Joints that have been packed will become ankylosed. Infected joints should never be drained. They require a Buck's extension apparatus to keep the joint surfaces separated.

The first few days after operation in appropriate cases, however, there is an undoubted field for

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gauze packing on account of its hemostatic action. After gall bladder operations where many adhesions have been encountered, especially after secondary operations, gauze placed over and packed around denuded surfaces, which cannot be ligated, is a welcome hemostatic. The same may be said of difficult pelvic cases with adhesions where raw surfaces are left oozing.

The treatment of pus in any situation has been revolutionized by the use of dichloramin-T. It has demonstrated that gauze packing of abscess cavities is of less utility than ever. There is no question that the chlorine compounds have an especial affinity for pus. They have the power of decreasing the quantity of pus by diminishing the virulence of the germs and finally destroying them. These controls have been demonstrated by us in the laboratory with the able assistance of Doctor Rubenstone. A smear of the discharge is placed on a glass slide each day, and the number of bacteria in a given field or fields is counted. Thus when the number of bacteria in given field reaches fifty or sixty the wound is not yet ready for further treatment. When the fields under the microscope show from four to five bacteria to a field we may then sew these wounds without compunction. It takes considerable courage to sew palmar abscesses and infected abdominal wounds, for instance, long before it is time for the skin edges to close these spaces by the prolonged and natural processes of repair, but with this scientific method of observation and the perfect cooperation of surgeon and laboratory no fear need be felt as to the failure of the procedure just mentioned. A new epoch has been attained by the introduction of this new Dakin compound, and the chapter on the treatment of infections will have to be rewritten.

It is not possible to discuss this oily compound, dichloramin-T, without referring to the Carrel-Dakin watery solution. The former is to be preferred in the large majority of cases because no elaborate method of application is necessary. With the oily solution one treatment a day is sufficient, whereas with the Carrel-Dakin solution the nurse must be ready every two hours to irrigate the wound. The Carrel-Dakin solution will irritate the skin more readily than the oily solution. The latter does not irritate unless free hydrochloric acid has been evolved. This can be detected by the formation of crystals in the bottom of the container. One objection to the chlorine compounds is the ease with which they disintegrate into other chemical constituents.

We now come to the consideration of fractures. They are first seen in the majority of cases by the general practitioner. They cannot be reduced properly without an anesthetic. The best anesthetic is ether, although nitrous oxide gas, on account of its safety and ease of administration, may first be tried. An x ray is then taken, and if the fragments are not in apposition ether should be given to insure perfect relaxation of the muscles. The treatment of fractures is not the simple proposition that it seems. Many suits for malpractice are due to the poor results and the poor restoration of function following fractures. In the treatment of fractures splints may be used the first few days, until the

swelling has subsided. Afterward a plaster of Paris cast or a moulded plaster splint is to be preferred. All plaster casts should be cut down the centre after they are applied. This serves a two-fold purpose: 1, it allows freer circulation and ventilation of the part bandaged; 2, the cast can be easily removed, and the parts inspected from time to time and massaged. The same cast is then replaced. Massage and passive motion of the fractured part should not be done until the first two weeks have elapsed, and then every four or five days thereafter. Much harm can be done by too much and ill advised massage, but if gently done no harm can follow, provided the fragments are in apposition and union of the fracture has taken place. The x ray and the fluoroscope are indispensable in the treatment of fractures. At times the x ray picture is at variance with the position of the bones as derived by the examination of the parts involved. In other words, if the x ray shows the bones not in perfect line, and physical examination reveals that function will not be disturbed, it is justifiable to allow the fracture to unite in this position. If the deformity is too great, however, and the fracture cannot be reduced, then an open operation is permissible.

While I wish to avoid technicalities as far as possible in presenting this subject to general practitioners, the open operation for fractures must be briefly considered. I am old fashioned enough not to treat any fracture by the open method when a good result can be obtained without it. The main indications for the open method are inability to keep the fragments in line, and a fracture that will not unite within a reasonable time. Open operations should not be performed unless the surgeon has been trained perfectly in the no contact technic. By this I mean that his fingers must never touch the wound or the fractured ends. This is all important if one wishes to avoid infection. Remember also that an instrument once used must be resterilized. These precautions are taken because bones have a peculiar susceptibility to infection. There is a tremendous field for the treatment of fractures, but less than one per cent. are treated by the open method. Excellent results are obtained by the conservative methods outlined.

In gynecological practice dysmenorrhea forms a considerable percentage of the numbers of cases seen by the physician and surgeon. It may be due to many causes, such as maldevelopment, blood dyscrasias, faulty position of the uterus, and occlusion of the cervix. One cause of dysmenorrhea, rarely described in the textbooks, is a condition of varicose veins of the broad ligaments, which cannot be diagnosed by vaginal examination. After the abdomen is opened, the veins are seen to stand out like cords and feel not unlike a varicocele in the male. A ligature is placed above and below the course of the veins, the intervening section is excised, and then the free ends are tied together. I have performed this operation on two virgins for severe dysmenorrhea; in one the symptoms were so agonizing as to cause fainting spells at the time of menstruation, while in the other the symptoms compelled the patient, a school teacher, to lose several days each month. On vaginal examination in



both of these cases the condition found was a retroversion. Upon opening the abdomen, in addition to the retroversion, enormous veins were noted in the left broad ligaments. These patients were operated upon, respectively, in May and October of last year, and up to the present time they are enjoying perfect health.

Surgeons are often asked whether a patient suffering from adhesions following an operation will be benefited by a secondary operation. As a rule, one can advise operation and promise success even if secondary adhesions are formed. In many cases adhesions do not reform. It has been my good fortune to have operated in cases for other conditions following a secondary operation for adhesions. In two cases absolutely no adhesions were found at the third operation. The formation of abdominal adhesions with the subsequent symptoms is a most annoying complication. It is a fact that has not been satisfactorily explained that after a severe gallbladder operation the patient often suffers less from adhesions than from those following a one inch incision for the removal of a chronic appendix. The great mass of experimental work done on adhesions has not cleared the situation as to their prevention.

One great class of cases has interested the profession comparatively recently since many diseases formerly treated by the internist have been relegated to the surgeon. These borderline cases naturally require in many instances a consultation between the internist and the surgeon. Although these conferences in the main have not been neglected, there ought to be a closer affiliation between the internist and the surgeon in the study of their respective cases. Borderline cases may be divided into those that are purely surgical and those that may be considered medical and surgical. A group of pure borderline cases that occupy the attention of surgeons alone are the many cases of breast tumors, the majority of which are found in women. It requires the finest judgment to differentiate between the apparently benign tumors and those bordering on malignancy. It may be stated that tumors of the breast in women over thirty years of age may be looked upon with suspicion, although malignancy may occur in individuals much younger. Cysts with clear fluid are benign, but those that contain a brownish or muddy liquid are malignant. Here the radical operation should be done. In a rather large experience with breast tumors it has always been my rule where doubt exists to have the pathologist present at the operation, so that a frozen section can be made of the tumor. This is done while the patient is still under the anesthetic. The pathologist's report guides the surgeon as to the character of the operation to be performed.

Exophthalmic goitre is a type of a medicosurgical borderline group that has elicited considerable discussion in the past few years. The internist believes that these cases should be treated with rest, bisulphate of quinine, thymus gland, and a host of other drugs. Medically, the disease may be arrested for a time, but ultimate cures cannot be recorded. The surgeon believes that with very cautious surgical procedures the patients can be greatly benefited and many cures obtained. In these

cases the surgeon must first classify his patients very carefully as to the degree of toxemia present. Toxemia varies in each case, and the kind of operation, whether a ligation of one or both superior or inferior thyroid arteries or lobectomy, depends on the amount of toxic material in the system. The best results in my experience are obtained by the primary ligation of the superior thyroid artery, and then three to six months later, if the patient has gained sufficient weight, and he usually will have gained from fifteen to twenty-five pounds, a lobectomy may be performed with greater safety.

In conclusion, certain anemias have opened a field in surgery at which a few years ago the internist would have looked askance. These patients present great difficulties to the surgeon on account of the existence of degeneration in the cardiorenal systems, in addition to the poor quality of blood. The best results have been obtained in the syndrome called Banti's disease, splenomyelogenous leucemia, and pernicious anemia. Medicine has failed to cure these diseases; the surgeon has often arrested their progress and prolonged the lives of these patients by a timely splenectomy.

In closing, the main points that I wish to emphasize are that infected wounds must not be packed indefinitely with gauze; that the chlorine compounds exert a specific influence on pus; that with the laboratory controls infections can be treated scientifically and the wounds may be actually closed by suture. In the treatment of fractures an anesthetic is important in reduction and, while nitrous oxide gas may be used, ether is preferable on account of the thorough relaxation procured from its use. Plaster of Paris is superior to the wooden splints universally used. The open operation should not be used unless the fragments are in poor position or there is no union at all. Secondary operations for abdominal adhesions are often curative. Borderline cases should always be studied thoroughly by both internist and surgeon.

1427 NORTH BROAD STREET.

**Cuneiform Fracture of the Upper Extremity of the Tibia.**—Bec and Hadegree (*Paris médical*, April 13, 1918) report the case of a soldier with a history of twisting of the right knee in falling into a hole. The parts were swollen and pressure caused pain especially at the outer aspect of the upper end of the tibia, which seemed distinctly broadened. X ray examination revealed a cuneiform or vertical fracture at this point, splitting off about one half of the right articulating surface of the tibia. The fibula was intact, doubtless owing to its elasticity. The portion of bone split off was, however, adherent, as in most similar cases hitherto reported, to the epiphysis of the tibia and the head of the fibula owing to the fibroperiosteal sheath and the joint capsule. This is the first case of this type met with by the authors among thousands of fracture cases examined since the beginning of the war. Before the discovery of the x ray such fractures were mistaken for sprains of the knee.

## THE FOOD VALUE OF MEAT.\*

BY EDWARD H. NIES,

New York,

Associate Editor of *Hotel Gazette*.

The essential in increasing meat value is to make it go further. It gradually became the custom to economize on expenditure for food in restaurants by buying only meat. This, together, with bread, which was gratis, constituted a meal. Vegetable and farinaceous foods were absolutely ignored. When meats were cheap this was practicable, but now that they have so risen in price and diminished in portion, while in addition bread must be paid for, other expedients must be employed in order to retain even a memory of meat flavor.

The entrance of women into the industries, their disinclination to cook, and the pernicious poisoning of the chain lunch rooms, undermined the good habits of our people by making it possible to get along and keep alive without all the labor and expenditure of time that must be devoted to healthful cooking. And moreover the disordered lives so many of us live with the pretense of keeping up appearances beyond our means have led us into the error of cheating our stomachs which are invisible, in favor of gaudy clothes, automobiles, and rainbow drinks in cabarets. These and other practices, equally destructive, have resulted in our deserting the straight and narrow path of systematic and orderly living, and our lack of moral stamina.

As a result of this mode of living we are face to face with a food problem, since that supplied in the lunch rooms and mediocre restaurants is becoming so meagre, tasteless, nonsatisfying, and inferior in quality. Many of us who lack means would, like the prodigal, fain fill up on husks. Our poor wives and mothers at home try in vain to make ends meet. Lacking the necessary information they turn to those false prophets, the hall room epicures of the woman's page and household journals, who reward their confidence by a dinner of dead sea fruit. To follow their regimen would chain us to the cooking stove forever and test the resources of Park & Tilford to fill their recipes. The diet they have evolved, the mock duck, bean roast beef and alfalfa croquettes, if persisted in, would incite the land to rebellion. Their constant succession of reheats, starch repeats and their advocacy of robbing the baby's milk bottle of its top milk to furnish cream for adults can but result in disaster to ourselves, and degeneracy to our children, whose milk they rob of its butter fat. Recourse must be had to other means if we would be well nourished and healthy. How can we do this? I think my method may help. I do not claim for it any great originality. It is employed abroad and was in our homes before the low cost of meats lured us to the delicatessen store.

There are a thousand and one dishes of which each one is in itself a well balanced meal, and in addition is appetizing and nourishing. They can, even at the present high costs, be prepared for a reasonable price. They are made by a combination

of a small portion of meat with a larger quantity of grain, cereal, or other farinaceous substances, or vegetables. They are flavored from their essential ingredients so that their preparation requires no high order of culinary skill. With a judicious use of the ordinary fireless cooker they can be prepared in the morning, put in the cooker, and taken out ready to serve when the family returns in the evening; thus releasing poor women from the bondage of the cook stove, and, in addition, providing the family with better food than could be prepared by the old hurlyburly way, which is so wasteful of material, and consumes so much time.

These dishes are prepared so that all the substance of each ingredient is conserved for consumption. The shrinkage instead of evaporating into the air is absorbed by the parts of the combination and saved to the consumer. The pleasure which is derived from eating, is established first by sight, second by taste and smell, and lastly by the feeling of satisfaction after eating which brings with it relaxation of mind and body. If our food can be so prepared that it brings about all these things, and that with the homely means at the command of every housewife, much can be saved by thus abolishing the necessity of dining at restaurants and spending money, which economized, purchases many better and perhaps more needed things.

Let us take simple and well known combinations, found in the sunny south where the struggle for existence is not so keen and every woman learns how to cook: Hopping John or Jomblyla, the various Creole Gumbo, and many other savory Creole dishes. A little further afield in Persia and Armenia, we find Pilaff, a dish made with rice or cracked wheat combined with meat, fish or vegetables. It is most substantial, appetizing and nourishing, and it can be prepared in an infinite variety of ways.

We all know how appetizing macaroni, spaghetti, or noodles is when properly cooked in broth, and then combined with the flavor or gravy of meat. Stews largely composed of potatoes and various vegetables with only enough meat used to flavor them are better than meat stews. Potatoes cooked à la Boulangère with bacon, and sliced onions constitute a meal in themselves. Go into this idea thoroughly, and see how much you can improve your diet, and cut down your meat bill. A small part of meat or fish will give relish or flavor to the satisfying and nourishing cereal. The farinaceous or vegetable dinner will save you money and health.

**Adjusting Rations.**—The English doctors will themselves certainly need extra rations if they are so incessantly called upon to decide as to sufficient rations for invalids, working men, school boys, and the rich. They have also just had to decide concerning emergency food supplies for the air raided. Supplies, overriding ration rules, are to be available for air raid sufferers. An instruction is issued that district committees or executive officers can now provide food cards or take such other actions as may be necessary to meet an emergency, and it is pointed out that where a national kitchen is accessible food can be obtained there under official authority.

\*An address delivered to the Municipal Employees, New York, May 22, 1918, under the auspices of the Municipal Civil Service Commission, L. F. Fuld, Assistant Chief Examiner.



# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.

By CHARLES GREENE CUMSTON, M. D.,

Geneva, Switzerland,

Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London; etc.

### DIABETES AMONG THE TROOPS.

I send you some notes regarding the treatment of diabetes as carried out in the Austro-Hungarian troops. It would seem that the number of cases has been remarkably small in their military hospitals. Soldiers so afflicted are sent to hospitals as soon as the affection is recognized, and after thorough examination they are sent to the rear or employed in office work or some similar occupation. The Austrian physicians appear to find it difficult to decide to what extent corporal or psychic disturbances resulting from warfare enter into the genesis of diabetes.

According to von Noorden, whose experience has been confirmed rather more in Teutonic countries than elsewhere, the present war has not increased the number of diabetics. If this prove true from experience gained in all armies, the traumatism of warfare cannot be placed among the etiological factors of this process.

As far as I can learn, Lenné is the only Hun authority who sustains an opposite point of view, but the analogy which he puts forward with cardiac affections would seem to be contradicted by the frequency and the high percentage of these lesions. However, even if psychic traumata be recognized as etiological factors, it does not seem quite legitimate to admit a "war diabetes" on this foundation alone, as he would have it.

Therefore, as Roth points out, it is much simpler to divide diabetic soldiers evacuated from the front into two groups, viz.: light cases with unsuspected disease, and healthy subjects who are sent to the rear with what Albu terms a "diabetic predisposition," and who simply offer the symptoms of the affection.

The first group only composes light cases, because they do not offer subjective phenomena for the reason that the process is not advanced. Likewise, in the second group a certain percentage belong to mild cases.

Regardless of all this, the Austrian physicians have discovered a striking fact, namely, that the number of serious cases are far in excess of the mild or medium, to such an extent that Lenné records 152 serious cases as against ninety-nine mild ones. I note that in the statistics offered by Roth, out of a total of thirty-one cases sent from the front there is not a single mild case. This may be explained from the fact that some of the men had a latent diabetes at the time they were enrolled, and the process then rapidly developed in a predisposed soil. The lack of proper diet may unquestionably act on the metabolism of the carbohydrates, especially when it is recalled that diabetic soldiers continually receive more foodstuffs containing sugar than they can usually tolerate. The psychic factors invoked by Lenné may also participate in the

physical failure of these subjects. But it appears from all accounts that a most striking fact is elicited in the case histories of these soldiers, which cannot be accounted for by the above explanation. The majority of them state that they have been principally fed on meat, white bread, vegetables and carbohydrate substances have been given in small quantity. In the mild cases, which appear to have been more frequent at the beginning of the war, it might naturally have been supposed that, on account of a restricted diet, a tolerance would occur, yet nevertheless, the majority of patients entered the base hospitals in a bad general condition, and even with acidosis. At the Rózsáhegyer Heilanstalt, at Budapest, it was found that the disappearance of sugar from the urine and an increase in tolerance was much more difficult to obtain than in medical practice in peace time. It was, therefore, thought that albuminoid foodstuffs, particularly animal, might be, to a certain extent, the causative factor in the tenacity of the phenomena.

The experiments carried out by Roth in 1913 seem to have confirmed the nefarious influence of animal albumins, as opposed to vegetable albumins, on tolerance, and this unfavorable effect may possibly be connected with the different chemical make-ups of these albumins, and not to the extractive matter of meat, because in the above mentioned experiments Roth was unable to demonstrate that a similar effect could result from the simultaneous exhibition of vegetable albumins and extractive matter.

Therefore, in similar cases he was tempted to decrease the amount of animal albumin and to replace it by the vegetable. This done, he found that when the sugar could not be expelled by a meat diet with the addition of some carbohydrates, the sugar could be made to disappear when the meat was eliminated and replaced by vegetable albumins, upon the condition that the amount of carbohydrates was the same as with a meat diet. The tolerance increased slowly after the meat was cut out, and a complete disappearance of the sugar was finally obtained.

I cannot do better than offer the following case as an illustration: Soldier, aged thirty-three years, had been at the front for six months. He had lost weight regardless of a good appetite and a tremendous thirst. He had been treated in various hospitals for five months. Finally, when he returned home he was so weak that he could hardly walk. Under proper diet, as outlined above, he improved.

Roth has been able to show quite conclusively, I think, that in almost all cases the elimination of animal albuminoids is essential, both in mild as well as serious cases. It is well known that in some few instances a better utilization of the carbohydrates can be obtained by decreasing the albumin in the diet, although von Noorden looks upon such cases as exceptional. In these circumstances one is dealing with what the Huns call "*subjects sensitive to albumins*," who, according to their way of looking at it, react more to an increase of albumin in their diet than to an increase of carbohydrates.



According to Rubner, the cause is to be found in the specific effect of the albumin on metabolism, and more particularly on sugar metabolism. It would, however, appear that this property belongs rather more to animal than to vegetable albumin. In serious cases it may very well be questioned if the favorable result is not due to the exhibition of a special category of carbohydrates, such as vegetables, potatoes, farinaceous food products, and the like, but one cannot exclude the fact that in these patients the absence of animal albumin has quite as favorable an action. The explanation of this phenomenon is for the time being, at least, purely hypothetical, and even Teutonic "kultur" does not seem to be able to enlighten its benighted professional brethren of other less civilized countries than its own.

The Germans admit that the intestinal flora becomes more flourishing when a carbohydrate diet is allowed, and brings about a better utilization of these substances, because the sugar is transformed by the fermentative activity of the intestinal bacteria as well as by an oxidation product which can be utilized by the diabetic organism, so that the sugar is utilized as such.

This theory is backed up by the fact, discovered by Baumgarten that mucic acid given per rectum is assimilated by the organism, while according to Boer and Blum gluconic acid is completely utilized.

Besides these reasons, it is possible that the animal albuminoids possess a specific dynamic action, but, though all these questions are unsettled, that which seems to be certain is the unfavorable effect of animal albumin on the tolerance of these patients. It is with this factor that one must deal especially when soldiers are fed on an excessive meat diet, and in these circumstances more complete results may be obtained by the use of vegetable albumin.

Such, Mr. Editor, are the reigning opinions on the other side of the Rhine and in Austria. I offer them without comment as they actually are. In my next letter I shall endeavor to give you some idea of the work done in Germany and Austria in the question of the trench kidney, or, as they term it, "kriegsnephritis."

#### DIAGNOSIS OF ACUTE STAPHYLOCOCCIC INFECTION.

I will conclude this letter by giving a few details on the diagnosis of acute staphylococcic infection, a process which is uncommon, but during a year instances have occurred in the French army, and as the affection is not generally known what is to follow may not be devoid of practical interest. All things considered, the symptomatology of staphylococcemia enters into the symptomatic picture of bacteriemias in general. It is the early diagnosis of this generalized septicemia, without any marked predominance in any particular viscus, that gives rise to very great diagnostic difficulties.

All these patients offer a typhoid aspect, and with the headache, high temperature, general malaise, and abdominal meteorism one is quite likely to suspect typhoid rather than a general infection. However, the analysis of the various symptoms will allow one to differentiate between the two processes. In

staphylococcic septicemia there is one big chill, the temperature chart offers an irregular curve with marked oscillations, the affection undergoes its evolution quickly, while the patient's general condition rapidly becomes serious. The pulse soon reaches 180 to the minute and the temperature ranges between 103° to 104° F. In typhoid the initial chill is lacking, the temperature is quite characteristic, and the pulse corresponds with the temperature. The appearance of rose spots will remove all doubt. In epidemic cerebrospinal meningitis the headache, vomiting, and constipation may simulate those encountered in acute staphylococcic septicemia, but in the latter there is no strabismus nor unequal pupils, photophobia, or convulsions. When some viscus is particularly involved in staphylococcic septicemia the diagnosis becomes somewhat easier. In this case the general symptoms, the infectious character of the visceral lesions will be the means of attributing them to their just cause.

In cases of secondary staphylococcic septicemia the process may be overlooked, because during the evolution of a disease, or during convalescence from some affection, the secondary septicemia will be regarded as a recrudescence or relapse of the original disease. There is, however, an excellent diagnostic sign that may not be generally known to your readers, namely, that when a secondary staphylococcic septicemia is about to declare itself during some infectious disease, the temperature first falls to the normal, or even below, and this sudden defervescence is far from being a good sign because within a few hours it is followed by a rapid rise of temperature, which is also accompanied with profuse sweating and a tendency to collapse.

A septicemia, be it primary, consecutive, or secondary, having been diagnosed, it remains to discover what bacterium is at the bottom of the process. Since the clinical signs are not characteristic in any of the various septicemias, a diagnosis cannot be made with any degree of certainty, so that recourse must be had to bacteriology.

The only proper way to carry out this examination is to aspirate about ten c. c. of blood from a superficial vein of the arm with a suitable syringe and needle and directly inoculate gelose, gelatine, and potato, which will give rise to the development of characteristic growths of staphylococci in twenty-four to thirty-six hours, if this organism be the etiological factor of the process.

**Aviators and Blood Pressure.**—Dr. W. Hirschlof, speaking at a medical meeting at Königsberg, said (*Lancet*, May 25, 1918) that the blood pressure was raised after a flight, particularly in men over thirty. The amount of hemoglobin and the number of the red cells were invariably found to be increased in men who had been flying for some time. The lymphocytes also were more numerous. Flying provoked no organic changes in the heart other than those associated with athlete's heart. Another speaker suggested that the reason why mountain climbing might induce certain symptoms at an altitude of only 3,000 metres, whereas the airman did not suffer till he had reached a considerably greater altitude, was that the airman had not exerted himself much in getting to this height.

## THE PSYCHOLOGY OF THE WAR.\*

BY JAMES M. BECK, LL. D.,  
New York.

Doctor Beck selected the play of "Hamlet" in Shakespeare and by analogous reasoning each principal character represented a nation. Among other things Mr. Beck said: "Obviously, the usurping king of Denmark is Prussia. It was Prussia who, on July 31, 1914, found the whole world sleeping in the garden of civilization on an afternoon when there was general fraternity and peace between nations. Little did we think we were on the eve of this war! It was a time when two great conventions had been held at The Hague in which forty-four sovereign nations participated, in which there was greater fraternity between men than ever before and less cause for international friction. Yet at that moment, when the sun of universal peace seemed to beam upon the earth and hold it in its fructifying rays, Prussia swept down on sleeping civilization and offered the juice of cursed henbane. While the world was absolutely in ignorance that its peace would be torpedoed by submarine diplomacy, the masters of Potsdam had worked out in infinite detail this most brutal, this most treacherous scheme against the peace of the world, which has already cost, at least ten millions of men, women, and children in its awful work of destruction. If Prussia is this Claudius, wicked, unconscionable, who is Queen Gertrude in this stupendous world tragedy? It is Germany as distinguished from Prussia. Who is Laertes? It is Austria. When the whole history of this war comes to be written, what a pitiful object Austria will be. Austria, like Laertes, has been the toolmaster of Prussia, and like Laertes, it has perished on its own poisoned foil. Who is Polonius? The Polonius of this world tragedy is Russia. There crept into Russia those wise maxims and phrases that were the undoing of Polonius. It was peace without annexation and indemnities; down with capital; universal freedom; no order or discipline; peace without victory. All these specious phrases ran through the heart of Russia like poison. What was the result? This mighty Colossus of the north crumbled as no nation ever crumbled. Who is Horatio in this tragedy? I but anticipate your thoughts when I say France. The French people are so noble, so transfigured in the glory of self-sacrifice, that words are powerless to say what you and I think of France. Ophelia, caught in the vortex of this world tragedy, is obviously Belgium. Belgium can say with Ophelia, 'we know what we are, but we know not what we may be.' The Belgians with an army of 100,000 men against 750,000 Germans held the gate as the Greeks did at Thermopylae, and it required the German army sixteen days to go through Belgium where its schedule prescribed six.

"Who is Fortinbras? England. On the night of August 4, 1914, England said she was not concerned with the Belgium quarrel; that she was obliged to wait for something definite to take place. But when Belgium through the words of its noble

king appealed to the king of Great Britain for aid against the threatened invasion of the Germans, think of what that meant to England. There was no possible direct benefit to her in entering the quarrel, the ultimate outcome of which no human being could foresee. But England never hesitated when the king of Belgium sent an appeal to come to her aid. She sent her reply to Berlin that unless by midnight of August 4th she had a positive revocation of the order she would fight at all hazards. War began on August 4th and by August 8th, England had nearly 100,000 men crossing the channel. Who are Rosenkrantz and Guildenstern? Bulgaria and Turkey. Who is Hamlet? America is the Hamlet of nations. America has all the virtues of Hamlet and some of his faults. One can take all that is said in the phrases of "Hamlet" and in some aspects of our national life we will find it worthy of our own country. On the other hand, this country has the fundamental failing of Hamlet. It may not be true in the future because our country will be profoundly changed in character by this war. There has been a profound awakening on the part of the American people. We are not the same people we were three months ago. We have put aside our provincialism and are now taking a world view of affairs and all the latent power that is within us is struggling to take part in this Great War for the rights and freedom of mankind. I firmly believe that when the war is over, when our cause has triumphed, no fact can be more certain than that the United States is going to take the moral leadership of the world. It is not going to be by anything that is said, because words do not count in this world crisis. We will be judged by what we do on the fields of Picardy and Flanders, and if, as I believe, we are to be the determining factor in the battle in France, so surely will the kingship of Hamlet be recognized."

## TRENCH FEVER.\*

BY MAJOR ALEXANDER LAMBERT, M. D.,  
New York,

Medical Corps, U. S. Army; President-elect of the American Medical Association.

Major Lambert, said that early last summer Commissioner Murphy informed him that it was his desire that he (Doctor Lambert) should build up as good and scientific an organization as possible. He therefore formed a research committee. He obtained an appropriation of \$100,000 and said that they could use as much of this amount as in their judgment seemed best, without restrictions, and asked them to decide on what was best to be done. He obtained the cooperation of the Medical Corps of the British Army and of the French Army, and the three Medical Corps had met every month as a research medical society, and had given to the American, British, and French surgeons their best experience and ideas in the last three or four years and had placed our men in a position to go on with research work in medicine and surgery in 1918. Since, otherwise, they would have had to work out and struggle over the same problems that the French

\*Abstract of an address delivered at the annual meeting of the Medical Society of the State of New York, held in Albany, May 21, 22, and 23, 1918.

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and British had dealt with before. This cooperation had been of the greatest help and was one of the best things they could have done to solidify the Medical Corps and give aid to the army and to the surgeons that needed it.

As to trench fever, its transmission and origin had been solved. Trench fever was a curious backbone fever that had a sharp, shooting temperature. The temperature rose to  $103^{\circ}$  and  $104^{\circ}$ , with aches of an intense character in the insertion of the muscles, and then it dropped down. Again, it went up for four or five days later and took on the character of a regularly recurring fever. It could not be differentiated, except by blood cultures, from the recurrent infectious fever of Weil. No organism had been found for it. The disease had not yet been successfully transmitted to animals. All animals, even monkeys had been used and the fever had not yet been produced in any. Volunteers were asked for. A curious thing was that some of the men who worked with General Gorgas in Cuba in connection with yellow fever and were volunteers there, were with them. Colonel Ireland, who was on the research committee, worked out the line of research in conjunction with General Wood, and Colonel McCoy was chief of staff. Colonel Ireland took the necessary orders and asked for volunteers. Of the 500 men who offered to go, sixty volunteers were accepted, and within six weeks from that time through experimental work it was found out that trench fever was transmitted by the bites of body lice. Body lice in the trenches were used and perfectly tame and virtuous lice secured from London, whose habits and previous conditions of health were easier, and the problem was worked out with every possible method of control. Trench fever was the cause of ten per cent. of the English army in the last year being on the sick list when they ought to have been in the trenches. No man died of the fever, but it knocked him out for two or three months. This discovery of the mode of transmission had solved the question and it saved from eight to ten per cent. of the active force of the army. Credit must be given to the Red Cross for this achievement.

**Nervousness in Soldiers.**—Foster Kennedy (*Journal A. M. A.*, July 6, 1918) deprecates the use of the term "shell shock" to indicate a concrete and quite novel condition resulting from experiences of unimaginable horror. In its place he employs the term "nervousness" as less likely to play upon the suggestibility of the victims and more in harmony with his conception of the nature of the condition and its mechanism. In the vast majority of persons the capacity of adaptation to an existence in novel and abominable surroundings has been excellent, but in a certain number this adaptability has been less complete. The emotions of fear and pain make up our machinery of self preservation and in normal conditions of civil life but little call is made upon them. Constant exposure to imminent destruction in war, however, causes a constant strain on the nervous system. The instincts of self preservation do not often become conscious realizations—the nervous system

may be said to be frightened in great danger, but the man is honestly unaware of the fear. The normal submersion of these powerful forces below the threshold of consciousness is due to several causes, among which there is the powerful factor of morale. This morale is an expression of the herd instinct, of the willingness of the individual to sacrifice himself for the benefit of his kind and for the ideals of his countrymen and himself. It is an active component of the soldier's conscious life, while shrinking from loss and the fear of death are rarely scrutinized in their realities since they are antisocial in trend. These facts offer a clue to the genesis of the neuroses found in soldiers. It is commonly agreed that generalized psychoneuroses are almost never seen in soldiers who are also suffering from physical wounds. This is explicable on the grounds that the receipt of a wound is followed by a period of mental rest and relaxation; the man is for the time being honorably freed from his obligations to others and from his fear of death. The converse situation is found in those instances in which a man is subjected to stupefaction and profound bewilderment from the bursting of a heavy shell and yet suffers no wounds. Here the obligation of self-preservation remains, coupled with a prospect of indefinite repetitions of the experience, culminating in death or horrible mutilation after a time. Under these conditions the later developed qualities of conscious morale and idealism are overweighed by the rising desire for self preservation and life and his whole organism is surrendered to the phenomena of fear. He becomes an automaton both mentally and physically, impelled by a single emotion. This is the suggested mechanism of the condition which has been called shell shock, but which may result from a variety of harrowing experiences acting upon partly exhausted nervous systems.

#### MEDICAL NEWS FROM WASHINGTON.

*TNT Poisoning With High Explosive Shells.*—*Promotion of Temporary Assistant Surgeons in the Navy.*—*Refitting Stations for Volunteers.*—*House Objects to Consultant Physicians for the Army.*—*Naval Hospitals Now Sufficient.*—*Government Aid for Disabled Soldiers.*

WASHINGTON, D. C., July 22, 1918.

Special consideration lately has been given by medical officers of the navy to the increasing number of cases of poisoning resulting from the handling of trinitrotoluol in the loading of high explosive shells. The danger of poisoning is equally great with the new shellfillers in which seventy-five to eighty per cent. of the TNT is replaced by ammonium nitrate.

Reports received by the bureau of medicine and surgery from certain stations indicate that the simple precautions that experience has shown necessary are not being taken with sufficient thoroughness to protect the naval personnel. Of one detail of fifty-four men no less than thirty-seven showed symptoms of TNT poisoning within a few weeks, and more recently eight cases were detected in one day, of whom it was necessary to send three to the hospital. In view of the increasing number of men



engaged in handling the explosive, it is considered important that the precautions that are at all times practical should be urged by medical officers. Among these may be mentioned careful selection, in place of indiscriminate detail, for the work. Blondes are peculiarly susceptible and negroes very resistant to TNT poisoning, and men with any acute or chronic skin lesions should not be engaged in handling the material. Early detection and prompt removal of men showing headache and gastrointestinal symptoms should be practised. Compulsory change of all clothing, thorough cleansing of the body with soap and abrasive, with careful attention to finger nails after a day's work, are very important.

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Temporary assistant surgeons in the navy holding commissions dated January 19th, last, or before, are to receive temporary promotion to passed assistant surgeon, with the rank of lieutenant, from July 1st. It is probable, however, that some of these officers may not receive official notification of promotion at once, owing to pressure of work.

\* \* \* \* \*

A report, recently made available, of the physical examination of 20,000 volunteers for enlistment in the army by Major Clarence L. Cole, Medical Corps, and Captain E. W. Loomis and First Lieutenant E. A. Campbell, Medical Reserve Corps, states that fifty per cent. of all volunteers have important physical defects. A large number of these men could be cured of their ailments and made available for military service if proper provision had been made for refitting stations. The conclusions of the medical officers show the necessity of physical training and supervision of school children by government agencies. These are their findings: 1, practically fifty per cent. of all candidates volunteering for military service—20,000 men examined—have physical defects that incapacitate them for military service entirely or reduce efficiency; 2, the present method of examination requires acceptance of many defective men or rejection of many men that can be made capable of performing military service; 3, establishment of refitting stations with properly organized staff for medical treatment and military drill would afford time for observation of men before discharge or afford an opportunity for treatment of curable defect; 4, the number of men available for military service would be increased; 5, the military efficiency of the forces would be increased through the bringing of all men to a higher physical standard; 6, more efficient intensive training could be given at training camps through reducing the number of men admitted to camp hospitals for physical defects existing at the time of enlistment; 7, many physical defects exist in young men of military age that could have been corrected, by proper inspection and physical development, while the individuals were school children, if provision had been made for such procedure in our public schools.

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The provision of a Senate amendment to the army appropriation bill authorizing the employment by the Surgeon General of the Army of consultants

was opposed by the House conferees, and it does not appear in the measure as finally enacted into law. Objection to appointment of physicians to act in that capacity was the possibility of great abuse in such special contracts. It was believed by those who opposed the proposition that the only purpose such a contract could serve would be in the case of a soldier separated from his particular unit and where no army physician was available.

Those who were interested in the provision had in mind the fact that there are a great many medical men in the country that would be glad to devote a certain period of time to the Government service, but who were not willing to give their entire time thereto and thus neglect their private practice. By appointing such men consulting physicians the Government would have opportunity to call them for specific purposes at any time.

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For some time the navy has availed itself of the facilities offered in civil hospitals, particularly in large cities contiguous to naval stations, for the care of naval patients that could be accommodated readily in the naval hospitals. Owing to the various war activities in civil life, which have greatly increased the working population in some communities, it has become more and more difficult to utilize the facilities of civil establishments. Now, however, there is a reserve of beds in practically all the naval hospitals, due to recent extensions, and, as the health of the navy is excellent at this time, there is no lack of accommodations anywhere. Therefore, it is unlikely that the navy will have to rely on civil hospital facilities in the near future, unless there should be a great naval battle with an unexpected number of injured, as it is thought that the present and projected facilities will be sufficient.

\* \* \* \* \*

Several departments of the Government are preparing to extend aid to soldiers disabled during the war. The Surgeon General of the Army has made elaborate plans for physical rehabilitation, and mental reconstruction will go hand in hand with the distinctly medical work. The federal vocational board will give aid in cooperating with the medical authorities, and the Interior Department will have land ready for prospective settlers.

Many well-intentioned individuals have offered to take crippled soldiers into their service as watchmen, messengers, and in positions of similar character. While the spirit of these offers is appreciated, they conflict with the policy of the medical department of the army. From the time a wounded soldier is taken to the field hospital he is encouraged to understand that the seriousness of his wounds will not render him worthless for useful work. The work of reconstructing him both physically and mentally is carried on simultaneously.

At the present time there are many soldiers in the army hospitals in this country who have been crippled in the course of duty. In many cases these men are receiving the preliminary training that will be finished by civil boards authorized to continue the work begun by the Surgeon General. They will receive a training that will make them competent in the trade or profession they elect to follow.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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## THE PROTEINS IN THE CAUSATION OF DIABETES.

Whatever the dietetic errors that provoke the diabetic condition it now seems certain that it is not the carbohydrate alone that is at fault. Primarily diabetes occurs only in an individual whose metabolic organization is very weak, but it will not occur unless provoked by some gross and persistent dietetic abuse. Perhaps overeating is the most potent factor in its causation. On the other hand, in races that consume large quantities of farinaceous food with only a minimum of proteins or fats diabetes is very rare. Neither underfeeding nor poverty is a cause; it is rather a disease of the rich.

When the expensive proteins are consumed in large quantities by those who can afford them and by those who lead a sedentary life, diabetes is likely to follow. It is more than likely that even without a proper balancing of the food, a reduction in the total quantity of food consumed would in itself reduce the incidence of diabetes. It is the protein element that must be curbed

rather than the carbohydrates in diabetes. In the newer understanding of this disease this is realized, and far from withdrawing the carbohydrates they are often advocated as a cure for diabetes. It is from this that the so-called oatmeal cure received its reputation. Heretofore the dietetic treatment of diabetes contemplated an almost unlimited supply of proteins and a complete withdrawal of the carbohydrates. Yet it was understood that the threatening of an acid condition was a sign for the restoration of the carbohydrates, in spite of the increase of the sugar output.

Overindulgence is perhaps the most important factor in the production of a systemic hypoalkalinity. The taking of food in which the proteins predominate increases the acid production and increases the hypoalkalinity. The proteins, in fact, are acid foods. It is pernicious in any glycosuria to allow an excessive meat diet. Very often a marked limitation or even abstinence for a period will of itself cause the disappearance of the sugar. Moreover, the defective utilization of the sugar is not nearly as ominous to the organism as an increase in the acid state of the body as a result of protein intoxication or excess. Indeed, it is because of the defective utilization where only a small amount of sugars can be oxidized at one time out of the amount supplied, that the sugars must be pressed so that at least this small amount can always be carved out of the total supply. There is no harm in the presence of sugar in the urine. It is merely an index of the condition. The amount of sugar only shows how much of it the system could not utilize.

Before much improvement in the carbohydrate utilization can occur the nitrogenous equilibrium must be reestablished. The prescribing of a meat diet in this weakened metabolic organization but increases the nitrogenous inequilibrium. Those individuals who exist on the diet heretofore prescribed for the diabetic—that is, high protein and low carbohydrate—are the ones most likely to be attacked with diabetes. Diabetics get along much better on a normal well balanced diet than on any special diabetic dietary that has not the balancing as its chief purpose. Because the basic cause of diabetes is a weak metabolic organization the diet must be at a minimum in order to tax the metabolic process least, but the diet must favor the carbohydrates rather than the proteins. The diet is the provoking element in a damaged

organization. With normal metabolism no one can foretell how much abuse the organism can stand without injury. If organotherapy has any value in the treatment of diabetes it is because the basic metabolic weakness in diabetes is probably of glandular origin. It is most probable that not only the pancreas but also the other glands of internal secretion are concerned, and the gland extracts usually administered supply a deficiency that the defective glands cannot.

### CONTINUED TACHYCARDIA.

Continued tachycardia is an affection of adult life and appears to be unknown in childhood. The affection may be looked upon as the result of a bulbar or bulbospinal neurosis and some cases are undoubtedly of thyroid origin. However, the pathogenesis of the affection is most obscure.

The symptoms of continued tachycardia must be distinguished from those of the paroxysmal type. The symptoms belonging to continued tachycardia are two, namely, acceleration of the beats and a lowered blood pressure. The acceleration of the beats is certainly considerable, but never reaches the number occurring in the paroxysmal form, the pulse averaging from 140 to 150 pulsations, with a maximum of 185.

While the intensity of the cardiac contractions produces vibrations of the thoracic walls in paroxysmal tachycardia, in the continued form the apical shock remains perfectly perceptible and there is neither thoracic vibration nor thrill, the contractions maintaining their accustomed force. Moreover there is usually no cardiac murmur, the heart sounds remaining normal and with no change in their duration.

The other element in all cases of continued tachycardia is the lowered arterial tension, a distinctive symptom. The pulsations can hardly be felt, the pulse offering rather an indistinct undulation so that the cardiac contractions cannot be counted. Another distinctive feature is the absence of paroxysms, the affection being continued without variations once the maximum number of cardiac contractions has been attained.

The heart is often dilated and very marked venous pulsation is observed in the cervical region that may be mistaken for arterial upon a merely superficial examination. This dilatation of the right heart rarely causes death and even after the tachycardia has lasted for some time no albumin can be detected in the urine. There is little stasis in the various viscera, little or no peripheral edema, and an absence of an hepatic pulse.

There may be fever present for some time. Other

general disturbances are unequal pupils or myosis; occasional nausea or vomiting, and vasomotor disturbances, such as profuse sweating or high coloring of the skin, particularly of the face. The disease may culminate in asystolia, but this seems to be less common than a spontaneous recovery.

Rest is the first element in treatment. The most important cardiac indication is to sustain the heart against fatigue and to prevent the advent of asystolia. Digitalis is the most important in this respect, but caffeine, sparteine, and ether have their indications. Quinine at the dose of one to one and a half grams daily has given good results and some writers have advocated ergotine.

### GLYCOGENIC FUNCTION AND THE VEGETATIVE NERVOUS SYSTEM.

Investigations undertaken at various times and places have concurred in establishing the nervous regulation of the glycogen function of the liver through separate fibres belonging to the two divisions of the vegetative nervous system. These prove to be the fibres of the sympathetic which exert the secretory influence and those of the craniosacral [autonomic] division, that is in this instance of the vagus, which inhibit this action. *The Gazzetta degli Ospedali delle Cliniche* [Regulatory Nerves of Hepatic Glycosuria], May 5, 1918, devotes several columns to a discussion of these experiments and their mutual confirmation of results.

Reference is made to Langley's hypothesis that the centrifugal nerve fibres of the vegetative nervous system controlling the involuntary muscles and the internal secretions belong not only to those of sympathetic origin but also to the craniosacral or to what is also known as the autonomic system. This includes the oculomotor fibres which go to the intrinsic muscles of the eye, the vasomotor and secretory fibres of the fifth, sixth, seventh, and ninth and the centrifugal fibres of the vagus of the heart, bronchi, and digestive organs, and the sacral centrifugal fibres to the rectum and urogenital apparatus. In general the action of the one system is opposed to that of the other and the two systems respond in opposite manner also to the action of certain definite drugs.

The school of Von Noorden base certain conclusions in regard to hepatic glycogenesis upon this theory supported both by clinical and pharmacological experience. They believe that this function is promoted by the sympathetic and inhibited by the vagus. They find that adrenalin, which excites the organs supplied by the sym-



thetic fibres, produces hyperglycemia and glycosuria, irrespective of the diminution in the consumption of glycogen and that this glycosuria can be arrested by pilocarpine, which is stimulating to the organs supplied by the autonomic system, here the vagus. Moreover, in some cases, the uncertainty being apparently dependent on individual variation in tone, sympathetic or autonomic glycosuria can be caused by the administration of atropine, which acts to paralyze the organs supplied by the vagus.

Researches definitely applicable to the glyco-genic output of the liver have been made first by Vasoin and later confirmed by Farini, and again, with possible source of error removed, by Berti and Roncato. These experiments were made upon frogs in which in one group the vagus was cut, in the other it remained normal. At hibernating temperature in the frogs with cut vagus there was no evidence of change in the amount of glycogen retained in the liver or in the weight of the liver after several days' observation. In those frogs, however, which were roused from their dormant condition and kept in a higher temperature for twenty-four or forty-eight hours—both periods of time were tried—there was a marked difference. In those with severed vagus the diminution in the amount of hepatic glycogen was much greater than in the normal frogs. Also the weight of the liver in the vagotomized frogs diminished in far greater proportion than in the normal ones.

These experiments served to establish the theories of the inhibitory action of the vagus upon this function of the liver. The vagus inhibited the transformation of hepatic glucose, which was promoted by increase of temperature. Evidently it contains glycoinhibitory fibres.

#### THE MAYO IDEA IN MEDICINE.

Dr. William J. Mayo and his brother, Dr. Charles H. Mayo, have won an enviable and very deserved reputation as surgeons. As authors they have a remarkable gift for clear, concise, and illuminating description of their operations. For their work in these fields alone their names will be remembered long after they are gone, but their greatest achievement lies in another direction: that of the coordination of the work of other experts with their own. The experience at the Mayo clinics of Major John A. Hornsby, editor of *The Modern Hospital*, is told by him in lighter vein in a recent issue of his journal. The reader cannot but be impressed, as was the author, with the thoroughness of the clinical examinations and with the extreme to which speciali-

zation is carried. Even in so simple a thing as the use of a stomach pump a specialist has been developed, and in the hands of this specialist the stomach pump lost much of its horrors to the patient. Happily Major Hornsby had nothing more serious than a slight excess of adipose tissue and the treatment prescribed was one easily followed.

The salient feature of the Mayo idea in medicine, as observed by Major Hornsby and by thousands of physicians whose ailments have been helped at the Mayo clinics, is the employment of every possible means of insuring accurate diagnosis and the use of highly trained experts in their application. Experts alone are employed to make an x ray, analyze a test meal, or insert a stomach pump. With the data accumulated by such examinations the skilful surgeon is able to operate with intelligence and assurance. The use of these agents by no means detracts from the brilliancy of the work done by the Mayos and their associates in medicine and surgery, for even these most complete diagnostic reports are useless except as a basis for the work of a master mind in medicine. The work of these experts, however, does clear the field of cumbering details and leave the mind of the surgeon armed with the fullest possible information free to attack the problem of correct diagnosis. Hitherto the surgeon has depended too much upon personal observations; he devoted valuable time and thought to the accumulation of detailed information on points which modern methods relegate to specialists. It is the problem of the physician himself to correlate the findings of these special observers and to deduce from their observations the real significance of the phenomena observed.

The Mayo idea in medicine is not wholly new. It has been carried out to a certain extent in other clinics, but they have developed the idea to a greater extent, have been more liberal in the employment of experts, and have achieved such remarkable results that we feel justified in speaking of it as the Mayo idea in medicine. Along these lines the greatest results are to be achieved in the practice of medicine.

#### UNION AND REPRESENTATION.

Harley Street and the Royal Colleges of Medicine and Surgery in London have been awakened from their habitual somnolence and solemnity by a cry from the younger members of the profession for a union—in fact, a Trades Union—among themselves and for greater representation in Parliament. The censors of the Royal College of Physicians already shudder, but as pointed out in *The Medical Press*

and Circular, the unrest in the profession requires an outlet. Those in the service may not speak; those outside the service are too tired and disheartened to protest. True, a few of the universities may elect a doctor, but the only way for medical men to obtain seats enough to make the medical profession felt is to have a really strong trades union. The proposal is to increase the strength of the Medico Political Union, an organization which came into being because a few doctors who took service under the insurance act, could get no hearing of their grievances from the British Medical Association, and, realizing their utter helplessness vis-à-vis government departments, determined to band themselves together for corporate action. American physicians cannot realize what an uprooting of tradition the following sentence from a doctor means in England: "If we are not content to sink into the position of slaves to the proletariat and their underbred bureaucratic masters, then we must buckle on our armour to defend our elementary rights. *It is the duty of every selfrespecting modern medical man to join a trades union.* Let the fogeys of the College of Physicians fuss and fuddle in their futile feudalism. The future is with the present generation." We are afraid the infusion of American ideas by the United States doctors who have gone over to the mother country will render the potion redder in that goblet which the revolutionary doctors are preparing for their conservative early Victorian confrères to drink.

#### ASSUMING VICIES.

Though tremendously extolling the virile energy and perseverance which woman has brought to bear on the masculine work she is doing, there are those, particularly French doctors, who express anxiety because she is sometimes assuming the minor masculine vices, such as excessive cigarette smoking, drinking, swearing, and an irreverence for chastity. Such women pay men a high compliment in imitation, but the price is heavy. It would not matter so much if they had started out into the world of men with no special vices of their own, but to add the masculine weaknesses to their own emotional shortcomings, their cunning, their macroscopic view of microscopic trifles, spells abnormality to type of a rather sad nature. The doctors regard the menses and pregnancy as most useful ballast to stay her too rapid flight into masculinity. One she may refuse, and that is often disadvantageous to her real growth, but the other is her heritage and not at her own disposal. With regard to a possibility of her taking to fighting with talon instead of tongue, the muscular may prove to be a wholesome substitute rather than a vicious procedure, and researches into the relative strength of the normal man and woman have shown that there is no real difference as regards the "strength factor," though

desuetude of certain muscles has made a difference, but one which may be overcome, and will be overcome, now that woman is doing field and other manual labor. Periodic disability, in women without organic disorder, does not lessen their racial efficiency. As to swearing and slang, their powers in these are merely repressed, though perhaps their terms are not quite so varied in expression as that of sinful man, still, being more emotional and imaginative, she may even come to excel him. "War is hell" and Paradise is closed, where will Eve stand when peace comes once more?

#### OFFICERS' UNIFORMS AT COST—AFTER A WHILE.

A general order has been issued by the War Department adopting standard materials for officers' uniforms and providing that the cloth for these uniforms shall be supplied by the quartermaster corps at cost. Furthermore, the quartermaster corps will make contracts with tailors to make uniforms for officers. These contracts will require a guarantee that the garments shall fit. Any changes or alteration required to make them fit will be made at the expense of the contractor. The cost of the uniform to the officer will be the contract price plus the cost of the cloth. The officer will pay the local quartermaster, who will in turn pay the contractor. Should the officer prefer, he may have the uniform made by a private tailor, at his own expense, of course, but in any case he must use cloth furnished by the quartermaster corps, which will be charged to him at cost. While the order has been issued, the supply of cloth is not sufficient as yet to put it into effect nor have contracts been made with the tailors. It is stated that several months may elapse before it is practicable to put the order into effect. In the meantime, officers will have to purchase their uniforms from private tailors as heretofore.

#### News Items.

**American Nurses for American Soldiers.**—The American Red Cross Society has issued a notice to the effect that a Red Cross nurse's aide speaking both English and French has been assigned to every American Red Cross Hospital to act as interpreter to any American soldiers who may be received.

**Two New Orthopedic Wards in Army Hospital.**—Two new surgical wards for orthopedic patients were opened on July 12th at U. S. General Hospital No. 2, Fort McHenry, Md., and are under the care of Major Samuel C. Baldwin, Medical Reserve Corps, U. S. Army. Each of the wards will accommodate thirty-six patients.

**Infantile Paralysis at Dubuque.**—Dr. Edward C. Rosenow, with laboratory equipment from the Mayo Foundation, Rochester, Minn., arrived in Dubuque on July 9th, to aid the local health authorities in the work of checking the spread of infantile paralysis which is epidemic there. Since July 4th forty-two cases, with ten deaths, have been reported.

**Combating Venereal Disease.**—The War Department has issued a statement to the effect that owing to measures taken for the prevention of venereal diseases, the soldiers of the Expeditionary Force show a smaller rate of illness per thousand from these diseases than has ever been recorded heretofore for American troops. The figures of the United States are even better than those in Europe.



**Sisters of Charity Organize Base Hospital.**—The Loyola Unit, known as Base Hospital No. 102, has been organized by St. Vincent's Hospital, of Birmingham, Ala. The sisters will wear the habit of their order, but otherwise follow Red Cross rules.

**Army Hospitals on Philadelphia City Farms.**—Ten hospital buildings which will furnish accommodations for five thousand wounded soldiers are to be erected on the farms of the city of Philadelphia. The buildings will be of the type used in the army cantonments.

**Political Activity Forbidden to Red Cross Workers.**—Under a ruling made by the War Council the officers and workers of the American Red Cross will not be allowed to run for any public office in the coming general election or be active in the interests of any candidate.

**Unification of Physical Tests.**—The Surgeon General of the United States Army has announced that the standards for acceptance of men in the army will hereafter be uniform in all its branches. The changes involved in this are expected to prevent the occurrence of men being rejected for training camps and later being accepted in the draft.

**Women Wanted for Student Nurse Reserve.**—The government wants 25,000 young women to join the U. S. Students Nurses Reserve and to hold themselves ready in training for service as nurses. The students must be between the ages of nineteen and thirty-five. They will receive their board, lodging, and tuition free, and a small salary sufficient to cover the cost of books and uniforms. Enrollment may be made at any of the recruiting stations established by the Woman's Committee of the Council of National Defense.

**Rehabilitation Work in Philadelphia.**—In common with similar institutions all over the country, the hospitals of Philadelphia are doing good work in rehabilitating men who have been rejected for military service on account of minor defects. At Jefferson Hospital alone preparations have been made for the treatment of 300 selected men turned down by draft boards on account of remediable physical defects. This work is already under way, and the men will be treated as rapidly as the facilities of the hospital permit. This applies also to those who in future may have the same experience with the examining boards.

**All Doctors to Be Enrolled.**—At a meeting held in Washington on July 17th, the members of the committee of the Medical Section, Council of National Defense for the States of New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, and the District of Columbia, plans were formulated for enrolling every doctor in some one of the organizations for medical service, either the Medical Reserve Corps of the Army, the Medical Reserve Corps of the Navy, or the Volunteer Medical Service Corps. The latter organization intends to take in men who are above the age of fifty-five and therefore are not available for service in either of the other corps.

**Personal.**—Dr. Horace Russell Allen, formerly professor of orthopedics in the University of Indiana, now a major in the Medical Reserve Corps, U. S. Army, has received the honorary degree of doctor of laws from Little Rock, Ark., College.

Dr. William Coon, of Haverhill, Mass., has been appointed director of health and sanitation for the United States Shipping Board. He will have his headquarters in Philadelphia and will have charge of health and sanitation in all shipbuilding yards in the country.

Dr. Lewis S. Pilcher, of Brooklyn, was elected senior commander of the New York State Department, G. A. R., at its annual meeting on June 27th.

Dr. Henry Jackson, of Boston, and Dr. William C. Quinby, of Baltimore, have been elected president and secretary-treasurer, respectively, of the Harvard Alumni Association.

Major Albert E. Halstead, of Chicago, Medical Reserve Corps, U. S. Army, has been promoted to the rank of lieutenant colonel and placed in charge of Base Hospital No. 53, France.

Dr. Henrietta A. Calhoun has been appointed assistant professor of otology and bacteriology at the University of Iowa.

Dr. George F. Butler has resigned as medical director of Mudlavia and accepted a position as medical director of the North Shore Health Resort at Winnetka, Ill. He will take up his active duties there September 1st.

**A Drug Commission Asked For.**—Senator Frelinghuysen has introduced into the U. S. Senate a resolution providing for the appointment of a commission of three to examine into the subject of narcotics and habit forming drugs and appropriating \$50,000 for the expense of the commission.

**American Association of Medical Jurisprudence Dissolved.**—A petition in the Supreme Court for the dissolution of the association has been filed by a majority of the members. The membership has decreased from 200 to twenty-three members, and there is a general lack of interest in the organization.

**Openings for Physicians in State Institutions.**—Examinations will be held on August 31st by the New York State Civil Service Commission for the position of assistant physician, regular or homeopathic, in State hospitals, and for positions of a similar nature in various State and county institutions. The salary in State hospitals is \$1,200 a year, increasing \$100 a year to \$1,600, with maintenance. The examination is open to both men and women who are licensed medical practitioners in the State. An examination will also be held on August 31st for the position of resident physician, State Agricultural and Industrial School, Monroe County, open to men only. The salary is \$1,500 to \$2,000 a year, with maintenance. The appointee will not be required to live in the institution. For full particulars address the State Civil Service Commission, Albany, N. Y.

**U. S. Mobile Hospital Units Ready to Sail at Any Time.**—The mobile hospital units ready to sail now include base hospitals, evacuation hospitals, evacuation ambulance companies, railroad hospital trains, convalescent camps, and medical supply depots. All these are in addition to the regular medical department units with each army division. Each hospital train is composed of sixteen cars; each train has a capacity of 400 patients, with operating rooms, kitchens, personnel car, etc. Each base hospital comprises the personnel and equipment for a hospital of 1,000 beds; the personnel consists of thirty-five medical and sanitary officers, 100 army nurses (women), and 200 enlisted men. The evacuation hospitals have about the same capacity as the base hospitals, but because of their greater proximity to the fighting line there are no women nurses. To each evacuation hospital is attached an ambulance company with twenty ambulances and a personnel of one officer and thirty-seven men. The convalescent camps are each designed to care for 10,000 patients. Each camp includes a 1,000 bed hospital with a personnel of ten officers and ninety enlisted men. At the convalescent depot, with its capacity of 5,000 beds, those men will be taken care of in whose recovery time is the principal element.

**Vacancies in the State Health Department.**—Among the positions for which the New York State Civil Service Commission will hold examinations on August 31, 1918, are the following in the State Department of Health, Bureau of Venereal Diseases:

**Chief of bureau;** \$3,600; men only; preferred ages, thirty to fifty years. Applicants must have the degree of M. D. from a recognized medical school and fundamental scientific training in medicine, with knowledge of serology, and should also have had experience in administrative work, preferably in some branch of public health work, and must possess ability to address audiences in a convincing manner; they should also be familiar with health conditions in the larger communities of the State.

**Consultant in venereal diseases;** \$3,000; men only; preferred ages, thirty to fifty years. Applicants must have the degree of M. D. from a recognized medical school, and they must also have had special training and experience in the diagnosis and treatment of venereal diseases, including the taking of blood for the Wassermann test, and other specimens required for the diagnosis of venereal diseases, and the methods of administering salvarsan intravenously and intramuscularly.

**Hospital and dispensary organizer and inspector;** \$2,500; men only; preferred ages, thirty to fifty years. Applicants must have the degree of M. D. from a recognized medical school and practical experience in the treatment of venereal diseases. The appointee to this position will be required to organize venereal disease dispensaries in various parts of the State and to advise as to their proper administration when established.

**Lecturer on social diseases;** \$2,500; open to both men and women; preferred ages, thirty to fifty years. Applicants must have the degree of M. D. from a recognized medical school and be convincing public speakers with ability to address mixed audiences; they should also be able to write brief articles acceptable to the public press. Preference will be given to those having a general knowledge of venereal diseases.

For full particulars and proper application blanks address the State Civil Service Commission, Albany, N. Y.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SOME NOTES ON DRUGS AND TREATMENT.

#### *A Review of Recent Progress in Therapeutics.*

BY MARK SADLER, M. D.,  
Montreux, Switzerland.

#### II.

##### THE USE OF MORPHINE AND PANTOPON IN PERTUSSIS.

Wolkenstein has shown morphine to be the agent which most diminishes irritation of the superior laryngeal nerve by discovering, in the first place, its reflex power by measuring the time separating the excitations of the reflexes. Therefore, it is not unusual that morphine has been advised in whooping cough, an affection which is regarded, since its etiology is still unknown, as a neurosis of the respiratory apparatus, particularly involving the superior laryngeal nerve, although naturally this is not of necessity the specific causal factor.

Although the profession in general attribute to morphine an elective action on this symptom, they take good care not to advise it as a drug to be employed indiscriminately for whooping cough. This analgesic must not be allowed, by dulling the respiratory reflexes to too great a degree, to suppress a cough which, when moderate, is an excellent means of pulmonary defense. Therefore, the use of pantopon or morphine should be restricted to cases where the paroxysms are frequent and prolonged, and to those in which laryngeal complications, spasm of the glottis, etc., occur, just as in croup or asthma. In other words, the use of morphine should be restricted to the dangerous spasmodic periods of whooping cough. In these particular cases, Marfan has noted that there is, firstly, a decrease in the intensity of the paroxysms, and, afterwards, in their frequency, and this likewise applies to the polypnea and tachycardia. Therefore, morphine may shorten the duration of the period of severe paroxysms in some cases. Triboulet and Boyé have even maintained that in cases of uncomplicated whooping cough, morphine, after a few injections, will transform the characteristic double cough of the disease into a simple paroxysm. Triboulet even says that it is astonishing to see a whooping cough suddenly cease with morphine when it had been supposed that the case would continue for some time. Given these statements, it appears to me a settled question that morphine has a distinctly sedative action on the paroxysms, and perhaps on the duration of the affection as well, and also on both respiratory and cardiac rhythms.

Vomiting is an epiphenomenon of the paroxysm. Experimental physiology teaches that the gastric mucosa is the principal emunctory of morphine. And still more, considering the great frequency of vomiting in adults following injections of morphine, it would seem, *a fortiori*, that this alkaloid would increase, or, at least, facilitate vomiting. But such is

not the case, and, regardless of the emetic action of morphine, vomiting is almost always diminished or completely controlled, an evident advantage because it allows the general health to recuperate.

A more serious complication of pertussis is bronchopneumonia, which darkens the prognosis in very young children. But as I have already remarked, morphine, by calming the cough, destroys the salutary effect which is to disengage the pus contained in the small bronchi and pulmonary alveole. As a symptomatic medication, baths and revulsions are to be preferred. Therefore, the use of the alkaloid is to be prohibited in pulmonary complications with a defective defense of the lungs. There are other contraindications of a more general kind. Since the integrity of the excretory organs is a condition of success in the struggle against all disease, the condition of the renal gland must be ascertained, and whenever there is a renal edema or a small amount of urine the alkaloid must never be given. As Triboulet and Boyé advise, it is always well to look for albumin before prescribing the drug. Early life is not a contraindication; it is well tolerated in quite young children, but in an infant, say, eight months old, the dose should never reach beyond two milligrams. Lust, of Brussels, has even stated that the newly born are much more tolerant to morphine than the adult, particularly when the morbid phenomena are very distinct.

Morphine is a simple and stable medicament, always identical in itself, and with a perfect tolerance at present unquestionably demonstrated and admitted. There are three ways of administration, viz.: by the mouth, rectum, and hypodermically. The latter is by far the *modus faciendi* of choice. Lesage and Cléret employ a ten per cent. solution of morphine hydrochlorate, this representing one centigram of the alkaloid in each cubic centimetre. According to these writers, the dose to be employed is as follows:

One third cubic centimetre of a one per cent. solution during the first year.

One half cubic centimetre of a one per cent. solution during the second year.

Two thirds cubic centimetre of a one per cent. solution during the third year.

One cubic centimetre of a one per cent. solution above the age of three years.

For an infant, have a 1/1,000 solution made, and of this give one or several hypodermic injections of one c. c. every twenty-four hours.

Mouriquand prefers the rectal route, and gives the following formula:

R Morphine hydrochlor.,	0.05;
Aq. laurocerasi,	2.00;
Aq. dest.,	q. s. ad 10.00.

Each cubic centimetre contains a half a centigram of the drug, and, according to the dose to be given, one c. c. is added to sixty or eighty c. c. of tepid water to be given per rectum. I recall the rule of the old Berlin therapist, Müller, to begin with one sixtieth of a grain and increase to one fortieth

or one thirtieth of a grain until the commencement of narcotism is noted.

It is difficult to fix the size of the doses of morphine in children. The doses employed by Lesage and Cléret were extremely variable for children of the same age on account of the intensity of the symptoms that were to be controlled. The dose of one centigram above the age of three years is a strong dose applicable in violent paroxysms of laryngism. Lust's method seems to me more exact. He advises giving the morphine in relation to the body weight, and not to the age of the child. Begin with one half milligram for each kilogram, in twenty-four hours, by the mouth; or one quarter milligram in an enema of about thirty c. c. Hypodermically, begin with one tenth milligram per kilogram of body weight. After a few hours another dose can be given without danger if necessary. Lust says that children rapidly acquire immunity against the drug, and, if it is continued for some time, there is no danger of accumulation.

As to the maximum quantity of morphine that may be with safety employed in a series of injections, each one must be guided by his own judgment, but the child must be carefully watched for the early signs of intoxication. For this, the pupil is the surest guide, and if it contracts the administration of the drug must be stopped, and when the miosis has disappeared it can again be given.

## RECENT OBSERVATIONS IN DIGITALIS THERAPY.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 124.)

The influence of digitalis exerted clinically in the presence of a rapid heart rate or of one of the various forms of arrhythmia recently recognized has been discussed in the preceding instalments. Our inquiry showed the necessity of careful differentiation between individual cases in this connection, some instances, whether of increased rate or definite arrhythmia, responding appreciably or remarkably to the remedy, while in others digitalis fails or may be actually prejudicial. We are next concerned with the influence of digitalis in simple weakness of the heart muscle.

The view generally held on this subject is summarized in Sollmann's conception, 1917, of the service clinically rendered by the drug as "restoring the tone and contractions of an exhausted, fatigued, but otherwise normal heart muscle, to healthy efficiency." Where, as is sometimes the case, an excessively rapid rate of contraction or an irregularity creating mechanical conditions unfavorable to a sufficient cardiac output coexists, the drug may at times, in view of the effects it is capable of exerting on these latter types of disturbance, be of marked help indirectly by slowing and regularizing the heart and thus actually reducing the energy expenditure required of it. The importance of such indirect corrective actions in the clinical benefit yielded by the drug is being increasingly recognized. Indeed, the degree and manner of direct digitalis action on the heart muscle in various abnormal states is as

yet far from certain; strangely enough, there seems to be less unanimity of opinion on this long talked of subject than on the influence of digitalis in the recently discovered arrhythmias. While most observers continue to believe in an increase of tonicity or contractile power as accounting at least in part for the benefit from digitalis in cardiac insufficiency; Sutherland, 1917, has put forward the claim that digitalis "has no action whatever in medicinal doses on the cardiac tissues." As well known an observer as Vaquez, 1918, while recognizing a direct cardio-tonic influence on the part of the strophanthins—and in particular ouabain—asserts that digitalis clinically is powerless to improve the tone of the myocardium, and agrees with Potain and Merklen that in cases of marked cardiac dilatation this drug may not only fail to relieve the symptoms but do actual harm by slowing the rate, thereby forcing the heart to overflow in diastole and gradually yield owing to its deficient tonicity. Mackenzie considers the dilatation of the diseased heart to be due to failure of tonicity, but Henry and Smith, 1918, state, referring to cardiac dilatation, that "the function of tonicity remains quite as dark as the formerly accepted theory of muscle exhaustion." Cohn, 1915, has interpreted certain changes in the T wave in the electrocardiogram witnessed by him under the influence of digitalis as indicating a direct action of the drug on the heart muscle, and speaks of an "alteration of the contractile substance" in this connection. That digitalis may, even in small amounts, increase to some extent the excitability of the heart muscle seems possible in view of the evidences of markedly increased excitability—extrasystoles in particular—which frequently appear from large dosage.

On the whole, the subject may be said to be still in a somewhat confused state. Granting that in a certain proportion of heart cases digitalis has no opportunity to be of service by slowing an inordinately high rate or correcting arrhythmia, some other action must be exerted in such cases if any benefit accruing from the drug is to be accounted for. For the present it seems wisest to continue to recognize some sort of a direct strengthening action on the heart muscle, similar to but less pronounced than that already definitely shown to occur in experimental work with large doses. If variations in the extent of this strengthening appear to exist in different types of cases, we may, perhaps, explain them as arising through differences in the state of nutrition of the heart muscle in these various types, such differences possibly causing variations in the effect of digitalis on the muscle. According to Bernoulli, 1913, digitalis fails to alter the reaction of the normal—and, we may add, properly nourished—heart to heavy work; nor does it change the time required for complete return of the heart thus fatigued to normal. On the other hand, where the pathologically crippled heart becomes overburdened—and failure of compensation is generally ascribed to failure of cardiac nutrition—digitalis does seem to exert a direct beneficial influence. Miller, 1918, observed experimentally that digitalis enables the heart to tolerate a greater degree of coronary obstruction, *i. e.*, a greater reduction of nutrition from the blood than it could otherwise



withstand. Again, Cushny and his coworkers, as already mentioned, have recently presented evidence to the effect that whereas digitalis remedies the effects of auricular fibrillation in the well nourished heart by depressing conductivity through vagus stimulation, in the poorly nourished heart, including that of cardiac disease in man, it produces this result by direct action on the heart muscle. Thus, cardiac nutrition and the action of digitalis would seem to bear to each other some relationship, the precise nature of which, however, is not as yet clear.

Whatever uncertainty may still prevail regarding the mode of action of digitalis on the myocardium, the variations in benefit from the drug in different cases can at least partly be accounted for by variations in certain influences secondary to the direct myocardial effect. Assuming that some form of strengthening action on the heart muscle does occur under clinical therapeutic doses, such secondary influences as the increase in coronary circulation due to augmented cardiac output under digitalis and the removal of blood stasis and of the corresponding functional impairment in the lungs, digestive organs, and other viscera previously crippled through circulatory stagnation, are factors liable to marked variation in different cases and which help to explain differences in the amount of benefit yielded by the drug. Thus, in chronic myocarditis, the amount of functioning muscular tissue having become greatly reduced, these secondary benefits can hardly be as marked as, *e. g.*, in cases of valvular disease with thick cardiac parietes consisting of functionally efficient muscular tissue, well able to respond to whatever direct myotonic action digitalis may exert. On the other hand, recent experience has not sustained the view formerly held by some that digitalis is a dangerous drug in chronic myocarditis. According to Abrahams, "patients with myocarditis can stand fifteen drop doses of the tincture three times a day very nicely. It does them a great deal of good." The possibility that myocardial changes may predispose to heartblock should, however, be borne in mind in these cases.

(To be continued.)

**Glandular Laryngovestibulitis.**—A. Robin and J. Renaut (*Bulletin de l'Académie de médecine*, January 8, 1918) have observed that the loose cough of ordinary acute laryngotracheitis often passes into a much more annoying form of cough characterized by violent efforts to expel what appears to the patient as a foreign body tenaciously adherent to the laryngeal mucus membrane. At times, loosening of the foreign material, which is apt to produce a sensation as of a body that has "gone down the wrong way" in swallowing and become impacted, is finally accomplished only by sneezing. This material is actually an exaggerated secretion of the glands of the laryngeal vestibule, *i. e.*, that portion of the larynx situated below the inferior vocal cords. In mild cases, where acute or subacute, the phagocytic and air purifying functions of the secretion are unimpaired, but in intense forms phagocytosis becomes greatly reduced or even abolished and there is some risk of descending bronchitis or pulmonary congestion as a

complication, as well as of pain from overwork of the diaphragm in coughing and of myocardial weakening—the latter possibly of toxic origin. In the treatment, primary infection of the nasopharynx or mouth, or abuse of tobacco, must be eliminated. Where these measures fail to bring complete or even partial relief, the condition may be said to have become definitely established, and local treatment is required, *viz.*, inhalation four times daily of the following preparation, which the patient sprays into his mouth continuously for three successive periods of one minute at each sitting:

R Sodii salicylatis, .....25 grams;  
Antipyrina, .....5 grams;  
Glycerini, .....80 grams;  
Aque laurocerasi, ..... } .....15 grams;  
Aque aurantii florum, }  
Aque destillate, .....1 litre.

Fiat solutio.

This procedure generally overcomes the condition in three or four weeks. Recovery is accelerated by simultaneous internal use of a mixture of tincture of aconite, fifteen drops; tinctures of bryonia and belladonna, of each, eight drops, and distilled water, 150 grams; dose, one tablespoonful four times a day.

**Intravenous Injections of Arrhenal in Relapsing Fever.**—Dumitresco-Mante (*Presse médicale*, March 21, 1918) uses a solution of three grams of arrhenal in sterile distilled water, enough to make ten mls. Giving this large amount of the drug intravenously in a single dose was found entirely safe, no early or late ocular complication or other toxic effect save a slight, evanescent headache being noticed in any case. Among eight who were given this dose during the first paroxysm of fever, six were freed of the second paroxysm, the temperature soon descending permanently to normal. In the seventh case, the second paroxysm appeared nine days after the first, but was very mild, and no spirilla could be found in the blood at the time. In the ninth case the temperature rose to 40° C. nine days after the beginning of the first paroxysm, but descended to 36° on the next day. No spirilla could be detected. In this case the second rise is believed to have probably not been due to the infection itself. The average time between the injection and the return of temperature to normal in the eight cases was twenty-six hours. The sterilizing action is thus slower than with neosalvarsan, but seems none the less sure in most cases. Using neosalvarsan the author found that the second febrile paroxysm sometimes did appear after it, even where 0.45 or 0.5 gram had been given. In one case, moreover, only 0.15 gram of neosalvarsan proved sufficient to induce rather alarming cardiac disturbance. In no case receiving three grams of arrhenal had any cardiac difficulty resulted. Studies of the red blood cells, coagulability, and leucocytes, and of the renal, hepatic, and pulmonary functions revealed no deleterious effects of the drug. The known contraindications to arsenic, *viz.*, insufficiency of the liver, heart, or kidneys, as well as hemorrhage from the bowel or lungs, should doubtless apply in the use of arrhenal. Doses smaller than three grams proved therapeutically insufficient.



**Hepatitis: a Constant Accompaniment of Cholecystitis.**—Evarts A. Graham (*Surgery, Gynecology, and Obstetrics*, May, 1918) states that in thirty cases of biliary tract disease which have come to operation a distinct enlargement of the liver has been present in twenty-six or eighty-seven per cent. In the remaining four cases there has been definite gross evidence of previous or existing pathological change in the liver other than an enlargement. During the course of the operation small pieces of liver tissue have been removed for bacteriological and microscopical study. The result of these examinations may be epitomized as follows: In cases of acute or subacute cholecystitis there has been constantly found in the liver microscopical evidence of inflammation. The hepatic inflammation is characterized by leucocytic infiltration of the interlobular or periportal sheaths; in the more severe types of inflammation the infiltration may involve also the parenchyma at the peripheries of the lobules and be associated with more or less edema, slight necrosis, and moderate fat infiltration. Cultures from both the liver tissue and from the bile in the gall bladder have usually revealed the same organism from each of the two different sources. In chronic cholecystitis the liver microscopically often presents a similar condition to that of an early case of cirrhosis. The inflammatory reaction appears to be chiefly a pericholangitis. The gross enlargement of the liver is probably due chiefly to edema. The enlarged livers in this series have always diminished markedly or returned to normal size after appropriate surgical treatment. Marked cirrhotic changes have been shown to occur in the liver even when there has been a stasis of bile. The importance of these findings in relation to the pathogenesis of cirrhosis of the liver in general is discussed. From the standpoint of the diagnosis of obscure or doubtful cases of biliary tract disease the presence of an enlarged liver is of the greatest importance.

**Treatment of Puerperal Eclampsia.**—F. A. Dorman (*American Journal of Obstetrics*, April, 1918) says there is no type of sickness in which the indications for treatment are so clear cut as in eclampsia. First and most important is to get rid of the source of the poison by emptying the uterus with the minimum of shock. If there be a dilated or dilatable cervix one should proceed to deliver; if not, and the fetus is small, vaginal hysterectomy is a good method. In a case near term the condition may permit of temporizing by the introduction of a bag, to be followed by operative delivery after a few hours. In other cases the urgency of the symptoms may demand an abdominal Cesarean section. The second indication is to sustain the heart and respiration by diminishing the convulsions and relieving the blood pressure. Temporary control of the convulsions may be secured with a dose of morphine. If the pulse is rapid and strong, fluidextract of veratrum viride, four minims, may be given hypodermically and repeated in four hours, with careful watching in the meantime. Chloral hydrate, thirty grains by rectum, then ten grains every three hours, seems to have a quieting effect. Nitroglycerine, 1/100 grain hypodermically every hour, is also beneficial as regards the blood pressure. No anes-

thetic will stop the eclamptic seizure once it has begun. In this emergency, prevent injury to the tongue, keep the patient from falling off the bed or table, and see that respiration is resumed. Early administration of oxygen is of some assistance in overcoming the cyanosis. The third and last indication is to stimulate excretion. As soon as possible wash out the stomach and introduce by tube five grains of calomel with half an ounce of magnesium sulphate or one ounce of castor oil. This should be followed up by colon irrigation with saline or sodium bicarbonate solution, to be repeated as often as three times a day. Bleeding followed by intravenous saline injection may be practised in sthenic cases. The tendency to pulmonary edema should be remembered and the amount of solution introduced limited. A moderate degree of bleeding at the time of delivery usually serves the purpose of a blood letting. After twenty-four hours the hot pack or hot air bath is valuable; used earlier it seems to depress the heart. Giving oxygen at intervals is very beneficial. If coma persists, one must catheterize every six hours. The heart action should be watched and any necessary stimulation given. Beginning pulmonary edema demands active treatment, with dry cupping over the chest. As soon as the patient becomes partly rational she must be urged to drink water freely.

**Management of Breast Feeding.**—Howard Childs Carpenter (*Pennsylvania Medical Journal*, May, 1918) maintains that encouragement of the mother is of great importance. The anxious mother should be told that she has nothing to fear. If the child fails to gain in weight it should be examined carefully for any underlying condition present, such as syphilis, pyelitis, or adenoids. Little reliance should be placed on a chemical analysis of the milk, as many babies thrive on milk shown to be deficient. The breast fed baby should not suck the nipples alone but should be taught to grasp as much as possible of the areola. The intervals should be four hours and not two or three, and the best method is to feed the child five times daily—at 6 and 10 a. m. and at 2, 6, and 10 p. m. The diet of the nursing mother should remain about the same as before pregnancy. The food should be rich in calcium, cheese, milk, yolk of eggs, spinach, peas, and beans. A diet containing 2,500 to 3,000 calories per twenty-four hours is the best. If the baby has difficulty in nursing its throat should be examined, especially for adenoids. If artificial food is necessary, as determined by the weighing, it should be given immediately following the nursing and should vary with the age, size, and digestive ability of the infant. Vomiting is frequently due to handling the baby too much or having it assume faulty positions. Colic may be treated by turning the child on its abdomen or applying heat; if it persist the breast milk must be diluted, which is done by giving warm water or barley water in a nursing bottle before feeding, adding two to five grains of sodium bicarbonate to each bottle of diluent, or, if there is a tendency to constipation, five to ten drops of magnesium. When the baby is gaining in weight it should not be weaned. This is true, irrespective of vomiting, diarrhea or colic.

**Feeding in Hyperemesis Gravidarum.**—Charles S. Bacon (*Journal A. M. A.*, June 8, 1918) holds feeding to be one of the most important of all measures in the treatment of hyperemesis gravidarum. The condition usually passes off when the uterus rises out of the pelvis, and therefore every effort should be bent to nourishing the patient until that time arrives. Of the three non-oral modes of feeding, the rectal is the most commonly available, and is the easiest. By it all the essential factors of the diet can be supplied, carbohydrate, protein, salts, and vitamins. Since the rectum has not the power of digesting either protein or carbohydrate, the former should be supplied in the form of its constituent aminoacids and the latter in the form of glucose, which is absorbed as such. The protein is best provided by the dialysate of artificially digested meat or milk. The vitamins can be secured in an extract of the pancreas, and the salts can be added as desired. Sodium bromide can often be made to replace sodium chloride and provide the necessary sedative. Alcohol in dilute form, and in an amount not to exceed 100 grams daily, is an excellent food, and is well absorbed and completely utilized. From 300 to 500 mls of the following mixture should be given three times a day at the rate of one drop a second. It should be warmed by passing the tube between warm sandbags placed close to the buttocks. The solution consists of fifty grams of glucose, fifty grams of alcohol, three tenths gram of calcium chloride, three grams of sodium bicarbonate, four grams of sodium chloride or bromide, a sufficient quantity of pancreatic vitamin, and distilled water to make 1,000 mls. Fifteen hundred mls of this provide 825 calories. Under this treatment, carried out in hospital with the patient in bed, the vomiting stops in two or three days, thirst disappears, and the nitrogen loss is promptly checked. It is seldom necessary to interrupt pregnancy.

**Intravenous Injection of Chlorine Solutions in Typhus Fever.**—O. Danielopolu (*Bulletin et mémoires de la Société médicale des hôpitaux de Paris*, December 13, 1917) found that a solution containing 6.5 grams of sodium chloride and 0.4 gram of chlorine per litre merely agglutinates the red and white blood cells *in vitro*, without destroying them, and can thus be administered intravenously without the dangers that would attend a similar use of Dakin's solution, which is strongly hemolytic. Over 1,000 injections of the chlorine saline solution, never exceeding 500 mls at a dose, were administered without mishap, the only unfavorable effect being a chill, which occurred almost constantly in the subjects treated. The treatment was tried only in severe typhus cases, with intense delirium, prostration, great facial congestion, a pulse of 120, and a systolic pressure of eighty or ninety millimetres of mercury, with cyanosis and coldness of the extremities. Patients with such symptoms who did not receive the intravenous chlorine saline treatment showed a mortality of ninety-two per cent., while among sixty grave cases which did receive the treatment the mortality was only ten per cent. Injections were given daily. After one or more injections, normal

consciousness returned, cyanosis disappeared, and the excessive number of leucocytes was soon reduced to normal, rising again later, however, upon discontinuance of the injections. In exceptional cases in which the leucocytosis continued pronounced, increasing the number of injections to two a day generally brought about the desired result. On an average, two to eight daily injections proved sufficient. The measure probably acts indirectly as an antiseptic and antitoxic agent, as was indicated by the consequent rapid improvement in the general condition, disappearance of tachycardia, and subsequently, the restoration of normal arterial pressure. The typhus cases which succumbed in spite of the treatment were nearly all over forty years of age, and in four out of the six that died secondary streptococcic infection was the lethal factor.

**Selection of Abdominal Cases for Operation.**—Owen Richards (*British Medical Journal*, April 27, 1918) says that in military wounds of the abdomen the value of early operation and the best technic are fairly well agreed upon, and the mortality is fairly constant. There is, however, a material difference between successful cases and profitable cases. The only profitable cases are those in which an otherwise fatal injury is cured by operation, and it is upon the proper selection of cases for operation that the proportion of profitable cases depends. Even if the operation does no harm, it is a waste of valuable time to operate upon cases which would recover equally well without operation, and it is a similar waste of time to operate upon such as offer no hope of recovery even after operation. In both instances we are depriving other men of profitable operations. Patients with wounds limited to solid viscera, with no progressive hemorrhage and no large retained missile, seldom need operation, and those with other grave injuries of head, chest or extremities are usually not fit to withstand operation. In the others it can usually be determined that the abdomen has been penetrated, but the nature and extent of the abdominal injury remains unknown, hence the decision regarding operation must be based upon those facts which can be determined. While no rule can be laid down with certainty, the proportion of profitable operations is very high in those operated upon within the first twelve hours; the same is true to a less extent for those treated in the first twenty-four hours, but after this interval the proportion is very small, since most who then survive would have lived without operation. The pulse rate is the second guide of value, for those with a pulse of 120 or more have less than half the chance of survival of operation of those with a pulse below that rate. Those with rapid pulse should be operated upon, however, if their condition is as good as it is likely to be, if they have a chance of recovery, and if the time taken does not prevent the proper treatment of more hopeful cases. In times of great pressure the men should be selected and arranged in the order of the likelihood of the operation's being profitable, if the maximum surgical help is to be given to all. Finally no surgeon should be allowed to do this work who is not rapid and gentle in his technic.



**Simple Arthrotomy in Suppurative Arthritis.**

Willms (*Presse médicale*, March 28, 1918) reports five wound cases with diplococcic, staphylococcic, or streptococcic joint infections, some with and some without intraarticular fracture, in which simple opening of the joint and immediate active mobilization was followed by good results. In no case was any other means of drainage instituted or the joint irrigated. Drainage was perfect in every case. The temperature rose but little above normal and the general condition remained good. The infection seems to have continued limited to the synovial membrane, little or no atrophy could be detected, and joint mobility was completely preserved. These cases are held to prove that simple arthrotomy is far superior to either primary or secondary joint resection. The latter should now be abandoned in suppurative arthritis.

**Bactericidal Properties of Chlorine Yielding Solutions.**

Weissenbach and Mestrezat (*Presse médicale*, February 14, 1918) sought to ascertain the relative bactericidal power of various hypochlorite solutions, all containing equal amounts of chlorine but in different combinations. Solutions acid, neutral, and alkaline to phthalein were investigated, including the Dakin-Daufresne solution and solutions containing sodium bicarbonate and alum, respectively. Tests *in vitro* with the Staphylococcus aureus, Bacillus pyocyaneus, Bacillus paratyphosus, Bacillus perfringens, and the spores of Bacillus sporogensus showed that, weight for weight, the chlorine of hypochlorite solutions acid to phthalein acts twice as strongly as bactericide as the chlorine of alkaline solutions. This is apparently accounted for by the readiness with which hypochlorous acid decomposes in acid media, with liberation of four parts of oxygen to every two parts of chlorine. The action of nascent oxygen is thus added to, or perhaps may even completely replace, that of the chlorine.

**Method of Citrated Blood Transfusion.**

Oswald H. Robertson (*British Medical Journal*, April 27, 1918) points out the fact that transfusion of citrated blood requires a careful technic if reactions are to be avoided, and that if properly carried out it is a method of great value, especially since the whole process can be completed by one man. The apparatus that is used consists of a short, broad, open mouth glass bottle fitted with an inlet glass tube of six mm. internal diameter, to which a bleeding needle of large bore—1.5 to two mm.—is connected by rubber tubing eight cm. long. The outlet consists of a smaller glass tube, angulated so as to reach the lowest part of the bottle and connected to a smaller bore needle by a length of rubber tubing and a short connecting glass piece placed close to the needle. Pressure or suction within the bottle is provided by a reversible rubber syringe bulb. The bottle is marked at levels indicating 660, 760, and 860 mls, corresponding to 500, 600, and 700 mls of blood. For use the bottle is cleansed carefully and 160 mls of 3.8 per cent. solution of sodium citrate, made with freshly distilled water, are placed in it. It is then stoppered with cotton in gauze, and sterilized. To draw blood from the donor's vein the citrate solution is forced up into the in-

take tube to fill it and the needle without air. The needle is then inserted into the donor's vein through a small nick in the skin, and blood is drawn directly into the citrate, entering below its surface. Every few minutes the bottle is rotated to insure mixing. When the desired amount is drawn, the intake tube is clamped to leave it filled with blood and the needle withdrawn. For injection into the recipient the outlet system is filled with the citrated blood by air pressure, the detached needle and glass connection is inserted into the recipient's vein, and when it fills with blood the tube from the bottle is attached. The injection is made slowly by air pressure, and should take at least ten minutes. During the administration the bottle should be immersed in water at body temperature.

**Cultivation of the Meningococcus Under Partial Oxygen Tension.**

M. B. Cohen (*Journal A. M. A.*, June 29, 1918) cites the well known fact that it is often a difficult matter to obtain cultures of the meningococcus in sufficient quantity for rapid agglutination. The reason for this was found in the fact that this organism is microaerophil; that is, it does not grow well in the presence of full oxygen pressure. On this basis a simple, rapid, and satisfactory method for culture has been devised. It consists in sowing a tube slant of human serum glucose infusion agar with the culture, or suspected culture, and connecting this tube by a piece of rubber tubing with a second sown with *B. subtilis*. The *subtilis* grows rapidly and reduces the oxygen tension in both tubes. The same method can be applied to Petri dish cultures by inverting them and connecting the two by a short piece of tubing.

**Entameba Histolytica Carriers.**

S. Shephard and D. G. Lillie (*Lancet*, April 6, 1918) investigated the value of infusions of the several portions of the plant, "chaparro amargoso" in the treatment of persistent carriers of the *Entameba histolytica*, testing the drug on a series of patients who had proved resistant to at least two courses of emetine bismuth iodide. They used infusions of the root, of the root bark, and of the twigs and leaves, and corresponding amounts of the isolated, crystalline bitter principle. All infusions were made fresh and they were given orally and also by rectum. The latter method of administration was combined with the oral, but seemed of little or no value. The drug had some tendency to produce nausea, vomiting, abdominal pain, and diarrhea in some patients, the latter two symptoms appearing only in those who had free amebas in their stools. No case was cured by the use of the isolated bitter principle, but the infusion cured from thirty-six to fifty-seven per cent. of the cases in which they were used, there being but little difference in the efficiency of the different portions of the plant. The administration of a second course of treatment to patients who were not cured by the first course did not increase the proportion of cures. Simaruba bark was also tried in the form of fresh infusions, it yielding a similar bitter principle and being closely allied to chaparro. It gave about the same results. In no case having free *Entameba histolytica* in the stools was a cure effected.



# Miscellany from Home and Foreign Journals

**Diagnosis of Abdominal Aortitis.**—A. Mougeot (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 7, 1918) compares by the graphic method the time of the radial pulse with that of the femoral artery—the latter taken just below the crural arch. In all patients with aortic lesions not involving the abdominal portion of the vessel, and at any level of blood pressure, the normal synchronism of the pulse in these two situations was found preserved. In nearly all cases of abdominal aortitis without aneurysm, however, the femoral pulse was found to precede the radial by one fortieth to one twentieth of a second. In the presence of the interval last mentioned the discrepancy can be made out merely by careful palpation. To detect briefer intervals a recording apparatus is required. That an aortic aneurysm situated below the point of origin of the left subclavian artery or involving the abdominal aorta causes retardation of the femoral pulse as compared to the radial was already known. The author's recent observations in about fifty cases have shown that the opposite state of affairs, retardation of the radial as compared to the femoral, indicates sclerotic changes in the abdominal aorta.

**Diagnosis of Cholecystitis.**—W. H. Bodenstab (*Journal A. M. A.*, July 6, 1918) contends that the profession at large is not sufficiently strongly impressed with the importance of early operations for the relief of inflammations of the gallbladder and their results. Cholelithiasis and active cholecystitis deserve special attention on account of the suffering which they cause and because many of their serious consequences as cancer of the gallbladder or ducts, rupture of the bladder with septic peritonitis, empyema of the bladder, suppurative cholangitis, hepatitis, abscess of the liver, pancreatitis, etc., can all be prevented by early diagnosis and prompt operative treatment. With the aim of facilitating early diagnosis the author presents the results of an analysis of the clinical features of a series of 500 cases, 340 with stones and 160 with cholecystitis but without stones. The most constant symptom was tenderness in the gallbladder region, being present in eighty-six per cent. of cases with stones and ninety-four per cent. of those without. The sensations of bloating and upward pressure, relieved only by belching of gas were found in eighty per cent. of stone cases and in sixty-seven per cent. of those without stones. Vomiting, due mainly to the regurgitation of bile into the stomach, was found in eighty per cent. of the stone cases and forty-seven per cent. of those without stones; and it was found to be a good rule, when there was an upper abdominal lesion without pyloric obstruction to cause the vomiting, to look to the gallbladder. Radiating cramps in the form of sudden, severe epigastric pain shooting to either costal arch, through to the back, or to one or the other shoulder, and bearing no relation to food were typical of gallstones and were found in seventy-two per cent. of the cases with stones and only thirty-eight per cent. of those without. In

the absence of stones the attacks were less severe than in their presence. Marked shortness of breath was very common during the attacks of pain. Reflex symptoms suggesting digestive disturbances were very common and should always be investigated with reference to the state of the gall bladder. The presence of bile in the urine was also very common in the early hours after an attack. Jaundice mentioned in the patient's history as having followed an attack of radiating epigastric pains made the diagnosis practically certain. Finally the sex incidences of cholecystitis and stones were of importance; thus there were nine women to one man in the stone cases and three women to one man in the cholecystitis cases without stones. The cardinal symptoms of cholelithiasis could be stated as: 1, radiating pains; 2, vomiting; 3, belching; 4, dyspnea; and 5, prostration. The relative frequency of their occurrence in various combinations in both cholelithiasis and cholecystitis cases is shown in the subjoined abbreviated table.

Groups of symptoms.	Cholelithiasis Per cent.	Cholecystitis Per cent.
1 and 2	50.0	21.2
1, 2, and 3	55.6	18.1
1, 2, 3, and 4	50.9	13.8
1, 2, 3, 4, and 5	24.1	4.5
1, 2, and 4	50.6	16.2
1, 2, 4, and 5	24.1	5.6
1, 2, and 5	24.1	5.6

**The Relation of Cellular Changes of Age to Tumors.**—Ernest William Goodpasture (*The Journal of Medical Research*, May, 1918) bases his extensive report on the autopsy findings in fifty old dogs, each of which contained multiple tumors, either benign or benign and malignant, in more than one organ. The large number of sections studied showed that senescence is accompanied by multiple degenerative cellular changes in many organs and tissues, and apparently as a direct result of these changes, there occur the benign and malignant tumors, which in old dogs are usually multiple. He explains the changes which are observed in old age, together with the formation of tumors, in the following way: Progressive cellular differentiation eventually leads to senescence by the constant accumulation in the protoplasm of more or less stable structural substances. It may then be possible that a disturbance in assimilation or metabolism of cells may result in the accumulation of injurious metabolic substances within either the cytoplasm or the nucleus, so that many of the cells die, while others become dedifferentiated. The latter then possess potentialities for growth and differentiation in varying degrees. Some of these dedifferentiated cells may not attain their former degree of specialization, and so are not perfectly adapted to the needs of the organism. In the simplest form of dedifferentiation the cell is regenerated, and possesses the power of adapting itself to specialized function. In other cases the regenerated cells are only capable of a partial resumption of function, and finally, this capability may be destroyed altogether, although there is still formative power dominant in the life of the cell, whose continued growth may arise in tumors.

**Milk a Source of Watersoluble Vitamine.**—Thomas B. Osborne and Lafayette B. Mendel (*The Journal of Biological Chemistry*, June, 1918) found that in order to promote growth it was necessary to add a much larger proportion of milk to the diets fed rats than had been reported by Hopkins. The optimum amount seemed to be about twenty-eight per cent. of proteinfree milk. In trying to explain the discrepancy between their results and Hopkins', the authors thought that heating the dried proteinfree milk might have caused deterioration in the vitamine factor. Accordingly, fresh milk was used, which gave results similar to those obtained when an approximately equivalent amount of proteinfree milk was employed. At least sixteen c. c. of fresh milk must be supplied with the food mixture to produce a normal rate of growth in rats. In view of the fact that their rats needed much more milk than was reported by Hopkins, the authors advise for the present the use of liberal amounts of milk when this is depended on to supply an appreciable proportion of the watersoluble vitamine in the diet. A practical point in connection with this is the custom of reinforcing the supply of calories by diluting the top milk and adding milk sugar. Here the food contains a relatively smaller proportion of the watersoluble vitamine than was originally present in the cow's milk, so that while the child's appetite is normal, the supply of vitamine may be sufficient, but if the food intake is reduced, the vitamine supply is lowered, and endless dietary trouble may set in. The suggestion is offered that this is what happens in artificially fed children, and that it may be possible to obviate this by supplying this important factor of a proper diet, as has been done in feeding animals.

**Renal Elimination, Normal and Pathological.**—Ambard (*Presse médicale*, April 25, 1918) points out the futility of expecting that additional information as to renal function in the individual case can be obtained by using new compounds, without threshold of elimination, as test substances. The reason for this is that all substances without thresholds—substances apparently useless in cellular life, such as urea, ammonia, glycerin, iodine, methylene blue, and salicylic acid—have the same coefficients of secretion in a given case. Whichever of these substances, including also phenolphthalein, is employed, the result is the same, if it can be accurately read. Substances with thresholds, such as glucose and chlorine, have lately been shown to have the same coefficients as the substances without thresholds; but here a variable factor comes in in the changeability of the threshold at different times. A subject with satisfactory coefficients in general may be able to excrete iodine perfectly while showing retention of chlorine; in such a case the chlorine threshold is too high. Studies of the mobility of the threshold can be conducted with the aid of phloridzin, which lowers the glucose threshold, and of theobromine, which lowers the chloride threshold by increasing chloride elimination. As regards the technic of blood urea estimations Ambard lays stress on proper shaking of the contents of the ureometer—ten to twelve times in the course of fifteen minutes—in order to

obtain the best possible results with the hypobromite method. To obviate injury to the skin in closing the outlet while shaking the ureometer, a rubber cot should be used. Thirty mls of blood should, if possible, be collected for the estimation. Where smaller amounts are obtained, a greater yield for the test can be secured by rendering the blood incoagulable with 0.2 to 0.3 gram of sodium fluoride, centrifugating, and using the plasma thus obtained instead of serum. The time otherwise required—several hours—for the serum to separate is also saved by this method. The urine collected should be product of 1½ hours if the catheter is used and of 2½ hours if not, preferably obtained in the morning between nine and noon. Clinically the ureosecretory coefficient is especially important where the blood urea is below 0.5. Between 0.5 and one it is to some extent serviceable, but above one is superfluous.

**Distribution and Elimination of Zinc and Tin in the Body.**—William Salant, J. B. Rieger, and E. L. P. Treuthardt (*Journal of Biological Chemistry*, May, 1918), after administering zinc intravenously to rabbits, found that the gastrointestinal tract was the chief organ of elimination, as from one third to one half of the amount given was recovered from its contents and the feces in two to three days. Appreciable amounts of zinc were recovered from the liver, and the amounts demonstrated in the skin indicate that the metal may be either stored here or eliminated. Subcutaneous injection of zinc showed its elimination likewise mainly by the gastrointestinal canal. The kidney is not an important factor. The behavior of tin in the body is somewhat different, smaller amounts being found in the liver, and more eliminated by the kidneys, although its elimination also occurred chiefly through the gastrointestinal tract. Both metals were demonstrated in the skin and bones.

**Study of Four Hundred Post Mortem Wassermann Reactions.**—Stuart Graves (*Journal A. M. A.*, June 8, 1918) presents the results of this investigation as part of a series of over 6,000 Wassermann reactions performed during life or post mortem. He finds that in ninety-seven per cent. of a series of sixty-eight cases the post mortem reaction agreed with the antemortem test. A positive reaction agreed with the anatomical and clinical findings when done sixty hours post mortem, and a negative reaction twenty-two hours after death agreed with the reaction found during life. Only two and a half per cent. of the serums obtained post mortem were anticomplementary, or otherwise unsuitable for the test, which compares favorably with 1.14 per cent. found in antemortem specimens. The reaction was positive in the blood post mortem in over ninety-one per cent. of the cases in which there were anatomic lesions of syphilis and positive histories. Negative reactions were obtained in only 2.6 per cent. of cases showing anatomic lesions of syphilis. No evidence was obtained for the belief that acute infections or malignant growths caused positive reactions. The conclusion was reached that the Wassermann reaction performed on blood obtained post mortem was essentially as reliable as when done on blood from the living patient.



**Method for Determination of Sugar in Normal Urine.**—Stanley R. Benedict and Emil Osterberg (*Journal of Biological Chemistry*, April, 1918) found that the Myers adaptation of the Lewis-Benedict method gave results at least 100 per cent. too great in some cases, partly due to the imperfect removal of the creatinine. They have evolved a method by which the preliminary precipitation of interfering substances from the urine is accomplished before the final determination of sugar in the filtrate. The first step is calculated to remove the creatinine completely, the polyphenols almost so, and the total nitrogen and glycuronic acid as completely as possible. This is done by a single precipitation with excess of mercury nitrate in the presence of a slight excess of sodium carbonate. After removing the mercury with zinc dust the filtrates are waterclear. The sugar is then determined by the modified Lewis-Benedict method.

**Spirochetes in the Kidney.**—Yutaka Kon and Tomomitsu Watabiki (*Journal A. M. A.*, May 25, 1918) call attention to the fact that others have observed spirochetes in the urine and renal casts in cases of typhus fever and have regarded them as the causative organisms. Still others have found spirochetes in the urine in other conditions and have questioned the fact that they are characteristic of typhus fever. The authors examined the kidneys of fifty miscellaneous necropsy cases and those from twenty-six operative cases in which one kidney was removed. In the former group they found spirochetes in twenty-five, in the latter in fifteen kidneys. Three different types of spirochetes were found. The spirochetes were found in the hyaline casts and hyaline bodies in the renal tubules and occasionally in the so called cysts of retention in contracted kidneys. The occurrence of the spirochetes bore no relation to the disease from which the patient had suffered. The nature of the spirochetal bodies could not be determined and requires further investigation and the same can be said of their significance.

**Blood Dextrose as Affected by Morphine and Morphine with Ether Anesthesia.**—Ellison L. Ross (*Journal of Biological Chemistry*, May, 1918) using the variations in blood dextrose as an indicator, conducted experiments on dogs to determine whether morphine increases or decreases the unbalanced physiological condition produced by anesthesia. In the first series of experiments, eleven dogs were given ten milligrams of morphine per kilo of weight hypodermically. A calculation of the averages for blood sugar showed that half an hour after the administration of the morphine the dextrose content was increased fifty-nine per cent. of the original value; after forty-five minutes it was increased sixty-six per cent. over the original, and after ninety minutes there was an increase of seventy-seven per cent. of the blood dextrose before morphine. The second series of animals was given the same amount of morphine as the first. Half an hour later they were bled and immediately anesthetized. In the third series the dogs were anesthetized and, later, given the usual dose of morphine. After the animals had been under ether one hour and were still under the influence of morphine, the average dextrose content showed an increase of

twenty-one per cent. before ether. Ross finds that morphine does not produce as great an increase in the blood sugar when acting with ether as when acting alone. The increase of the blood sugar resulting from the action of ether anesthesia after the administration of morphine was much less than without morphine. The final degree of hyperglycemia is practically the same, with or without morphine.

**Agglutination of Human Red Cells by Horse Serum.**—Herbert U. Williams and Harold A. Patterson (*Journal A. M. A.*, June 8, 1918) tested the agglutinating power of nineteen samples of horse serum for various specimens of normal human red cells, and found that twelve of the serums agglutinated more than half of the samples of red cells. The serums used included normal serum with and without preservative, and such therapeutic serums as antipneumococcic, antistreptococcic and antidyenteric serums. The agglutination occurred at varying strengths of serum from 1:20 to 1:500, and varied with a given serum for different samples of red cells. The significance of the results were rendered somewhat problematical since various extraneous factors, such as temperature, etc., were found to influence the occurrence of agglutination to a marked extent. It seemed probable, however, that the results might throw some light on the occurrence of more or less marked symptoms following the use of such serums, especially when given intravenously. It was suggested that serums for therapeutic purposes should be derived from horses which had been previously tested and found not to agglutinate with human red cells.

**Bacteriological Studies in Bacillary Dysentery.**—Bezançon, Ranque, Senez, Coville, and Paraf (*Bulletin de l'Académie de médecine*, March 26, 1918), in studies of 300 stools during an epidemic which broke out simultaneously in several small foci in a certain military district in the late summer of 1917, were able to establish clearly the rôle of Shiga's bacillus in the more severe and clinically typical cases, while in the mild the Shiga organism was generally wanting and was replaced by aberrant bacilli of the dysentery group. The Shiga bacillus was isolated in large numbers from forty-three cases, and in dishes of lactose litmus agar at times almost completely replaced the normal intestinal flora, no colonies of colon bacillus being found. In twenty-six milder cases were found a number of different forms of organisms which did not correspond to any of the classical types of dysentery bacillus and never occurred in the severe or fatal cases. These atypical organisms are divided by the authors into five separate classes, according to their respective behaviors with indol and various sugars and their susceptibilities to agglutination by anti-Shiga and anti-Flexner serums. In each focus of dysentery the organisms responsible for the mild cases were of a single type. In one focus, however, the examinations revealed, in addition to the Shiga bacillus in five cases, the A paratyphoid organism alone in four cases and the typhoid organism alone in one case, in spite of the fact that the symptoms were those of dysentery. In no case in the series was the Flexner or the Hiss bacillus encountered.



# Proceedings of National and Local Societies

## NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, Held March 21, 1918.*

The Second Vice-President, DR. EDWIN B. CRAGIN, in the Chair.

**Physical Reconstruction.**—Major PAUL B. MAGNUSON, of the Surgeon General's Office, Washington, D. C., said there was no subject of greater interest today than the conservation and physical reconstruction of men. There was nothing particularly new about reconstruction; it was simply a co-ordination of many things that had been done individually over a considerable period of time. The reconstruction problem had been talked about as if it were a new thing, but many industries had been carrying on this work for the last ten or fifteen years.

Suppose a man in the trenches to have a joint injury. He was taken to the first dressing station just behind the lines; the wound was dressed and he went thence to the evacuation hospital some distance behind. In the first station were men trained in schools for special work; there were four or five schools in this country training men to take special care of special conditions. So in this first station expert attention was given to the injured joint which was placed in fixed position to prevent suffering and shock from the jolting over the roads to the evacuation hospital. That was the first step in reconstruction and began immediately, as soon as the patient was picked up in the field. The evacuation hospital was equipped to do surgery; there the wound was cleansed, fragments of bone put in apposition, a more permanent form of dressing put on, and, after twenty-four hours, the patient was taken back to the base hospital.

The Surgeon General's Office was divided up into different specialties, eye, ear, head, orthopedic surgery, medical service, genitourinary surgery, tuberculosis section, and so on, not forgetting the general surgeon. The general surgeon, apparently, would not seem to have much left to him, but in reality he had plenty to do. The man skilled in general surgery easily became the skilled specialist, so he was trained in one line, preferably that which appealed to him. In the evacuation hospital the cases went through regular channels. A record was kept of all patients and of those who treated them, and when a man failed with many cases his head came off because the ultimate good of the soldier was the only goal.

The soldier at the base hospital, if judged to be totally disabled, came back to the United States at once. The term, unfit for military service, meant unfit for front line duty. There were many duties a man partially disabled could perform; orderly duty or clerical work. Such men would be kept in the service and assigned to duty within their ability to carry out. The aviation service had use for a great many men in stretching goods on aeroplane wings alone. They planned to establish schools in connection with supply stations where these men were concentrated and supply themselves with men disabled for front line duty, which would release a great

many able-bodied men for front line work. Some of them could be drillmasters and some teachers of bomb throwing. So because a man was wounded was often no reason for discharge from the army.

The plan of distribution of the arriving wounded to this country was to send them as near their homes as possible, first taking into consideration the number of men at the various reconstruction hospitals. Reconstruction did not mean only bone and joint work; it meant making over every class of cripple, whether from a medical or surgical cause. Tuberculous cases could be trained as well as those having amputations, in the hospital to which they were finally sent.

At the head of the hospital would be the best men that could be secured for medical and surgical work. Here would begin the repairs on the man which were all that was formerly known of reconstruction. If the man had had an amputation at the front he might need a secondary amputation here, and an end bearing stump was tried for, there being many advantages in it, so it was being advocated at this time. Within three or four weeks of the time of the secondary amputation the man would be fitted with a jointed pegleg and then would be taught to walk. While he was learning, his permanent leg would be made. A wonderful artificial leg had recently been devised by an army medical officer which was far ahead of anything so far in use, and cost only one fourth the price of the best previously sold. This leg would be fitted as soon as the man learned to balance himself on the pegleg and he would thus be started on the road to his education.

As soon as the surgical disability was corrected sufficiently for the patients to move around they could be given work to do because they were perfectly healthy except for their disability. It was the plan of the Surgeon General to start their education the minute they were able to do anything, and, to that end, bedside occupations had been instituted. A consultation was held with the patient himself, the doctor, and the vocational officer as soon as the patient was able to be up. In these schools there would be vocational teachers of all kinds, bookkeeping, stenography, the trades, farming, etc. At the consultation many factors would be employed, many things considered; it might be necessary to persuade the man to take up a certain line of work; he might prefer work which he was not able to do. He must be started on something in which he would have an interest and in which he could make a living, a field in which there would be a market for his labor. The fact that he could sell his labor for a price would also stimulate his interest. The consultation ended, the man would enter the vocational school or the shop or wherever it had been decided he should go. From there a one hundred per cent. man would eventually emerge. This was a statement to be emphasized to industries; these men when they were sent back to industry would be one hundred per cent. men in that industry; they would not be incapacitated; they would do good work and compete equally with men who had not their disability. A campaign should be started to teach this fact among

manufacturers. Another telling point lay in the fact that a man trained to do certain work to which he was compelled to stick was the better workman and more valuable to his employer than the man who could go out and get half a dozen jobs any time he wanted to.

In the base hospitals moving pictures would be shown these men, just newly crippled, of men injured as they had been and performing all sorts of work and daily services for themselves. This would have a potent psychic effect. A book was being written for cripples teaching them how to care for the stump, how to use artificial limbs, how to repair them, etc., which would be of inestimable value.

The reconstruction hospitals would have every facility for doing high class work, including hydrotherapy, electrotherapy, massage, and a little gymnastic apparatus, though not much made for the curative workshops would be used for exercises. A lathe worker with his foot operating a jigsaw would have his attention focused and at the same time exercise his stiff ankle as well as if with a piece of gymnasium apparatus. A massage treatment lasted for one half hour; a patient's interest could be bent on some form of work with machinery so arranged with some device as to administer massage for long periods of time; the patient became so absorbed in his work that the pain was forgotten.

It was planned to have these hospitals form large institutions, for they would need many of the most skillful physicians, and many small units scattered all over the country would take away too many surgeons and medical men from the civil population.

There was a lesson for industry in these plans for the rehabilitation of cripples. Industry had paid too little heed, as a rule, to the value of proper medical service and supervision of its workmen and scarcely any at all to the possibility of getting valuable service from the work of men who had been crippled in their employ, if properly trained. If the medical profession made good in this vast work it was doing for the Government, industry would be forced to a realization of it, for there would be a labor shortage after the war and it would be necessary to save every man available.

**The Technical or Educational Side of Curative Work in Military Hospitals.**—Major MICHAEL W. MURRAY, Sanitary Corps, National Army, classified the cases for curative reeducational work and grouped with them the types of work for which they would best be fitted. The problem could be broadly stated as one of reestablishing the soldier's citizen morale and of returning him to civil life with such powers that he might again take his place as an independent wage earner. It was impossible to make a sharp distinction between the medical and the educational phases of the problem. At the very beginning it was wholly medical and surgical; at the end it had become in most cases entirely educational. The educator could perform a double service in the work of reconstruction: First, assist the medical officers in providing means of occupational therapy; second, readjust the soldier or sailor to the requirements of civil life so that he might return to independent wage earning with the brightest possible future. Generally speaking, the best therapeutic work would be that which aimed most directly and

most visibly at increasing the man's wage earning capacity and at giving him a sense of increased power in his social and occupational relationships.

The nature of the problem could best be illustrated by describing a few concrete cases of men who had already returned from the front, and suggesting a few of the things which could be done for men while they were under medical and surgical care. While the men were lying in bed thinking about their future was the best possible time to arouse their ambition, make them realize that more would be accomplished by persistent effort than by talent, and that there were different lines of endeavor in one of which each could accomplish all he would. The following class of cases had been discovered. Case I. Illiterate, native-born American, laborer, with latent talent to learn, who would not in the future be able to accomplish any heavy work. It was essential that this man should learn the fundamentals of the three R's and this could be started while he was still in bed. Case II. Illiterate foreigner or native-born of foreign parents, laborer, low grade, apparently no desire to learn. It should be determined if he is subnormal and, if not, every effort should be made to get him started on the right road. Case III. Man with less than common school education, formerly employed in unskilled or slightly skilled trades. Fair native talent, realizing the need of more training, desiring to learn and able to profit by opportunity. Case IV. Man with common school education, before enlistment having begun in trade promising advancement; intelligent, willing to learn and physically able to progress in his old occupation. These men could either be improved technically for their own line of work, if physically capable of following it, or they could be prepared for some other occupation related to it. If the cases so far surveyed were any indication there would be no serious problem of labor adjustment. Men unable to follow a trade or technical occupation could most profitably be trained for some clerical, commercial, or technical occupation connected with it, thus not interfering at all with labor conditions in those occupations. Case V. The highly trained electrician, electrical engineer, mechanical engineer, men who had held positions of large responsibility. Some of the best therapeutic work would be to allow such men to teach and help their fellows in Class IV. With the development of vocational, technical and trade schools in the country, men doing such work would have gotten their first taste of teaching and many teachers for these schools could be recruited from this class. Case VI. The boy who left school at fourteen and engaged in odd jobs as elevator runner, messenger, etc. He needed to realize that he must have more education to fit himself for a man's job. This was a case for practical vocational guidance. Case VII. The farmer or farm hand with a common school education caring for no other occupation, but unable to do much of any farm work. They could make a good living on their own farms or as superintendents for others when trained to use their heads instead of their hands and backs, through study of the scientific side of agriculture, simple practical farm accounts and business management.



These were fair examples of the principles which would have to be followed in these classes of men. The educated man provided no such problem; he naturally worked more with his head than with his hands and followed some line of commercial work, accounting, salesmanship, teaching, and the other professions. It would be seen from these cases that the work presented a great human problem which neither the medical man nor the educator could solve alone. It was a continuation from the point at which the public school work had left off. It was not, however, a simple matter of continuing public school education, as it was ordinarily understood. There would be needed for such work occupational therapists who had a wide knowledge of all phases of education, acquaintance with industrial demands and opportunities, familiarity with labor conditions, knowledge of educational means and possibilities, wide experience in educational administration, especially with the newer phases of education, as commercial, agricultural, vocational and technical, knowledge of psychology, pedagogy, and the realization that in a broader sense the work was all part of the medical problem and that the soldier was not truly cured until he was back at work.

Dr. W. GILL WYLIE expressed his particular interest in the work outlined this evening because of his recollections of the effect of the Civil War. It had been stated that the needs of this war being met by the work and resourcefulness of the medical profession would redound to the benefit of the civil population after the war. After the year 1865 there was certainly an improvement in the condition of the sick and poor through the sanitary laws which grew out of that conflict. A little later came an end of the habitual bad work done in the hospitals. Antiseptics were just beginning to be known and, up to that time, there had never been an ambulance to bring the sick to the hospitals. While the speaker was still an intern in Bellevue the State Charities Aid Association was formed, and that was the beginning of a training school for nurses in this country; not only did it enhance the value of the hospitals in caring for the sick, but the presence of highly trained, efficient, and refined women vastly improved the morale of the entire atmosphere. From that time their beneficent influence had been at work.

Dr. REGINALD H. SAYRE alluded to the fact that a certain number of corporations, particularly a large railroad with a terminus in this city, had made a practice of caring for those workmen crippled in their employ, by giving them work well within their ability to perform and paying them the same wages as men not so disqualified received for the same duties. They earn their living and did their work in as satisfactory manner as any one else. There would have to be a change in the workmen's compensation laws, and this was of vital importance because, at the present time, many corporations were doubtful about giving positions to any one with any disability or illness because they felt if he got sick or injured in their employ the disability he had to start with would add to the employer's financial responsibility. The subject of changing these laws would doubtless have to be considered very soon.

That which Doctor Wylie had said about conditions after the Civil War was true. The speaker

remembered as a boy that it seemed to him every street corner had an armless or legless man grinding an organ, the pennies he collected forming his living. The work that was referred to by the speakers of the evening would prevent that. The idea was an excellent one of giving these cripples work to do that at the same time acted in lieu of curative gymnastics. It was in line with that plan so frequently resorted to of giving children with spastic paraplegia jackstones to play with; with mind absorbed and occupied with accomplishing something, there was no drudgery attached to the exercise.

Captain S. A. KNOFF expressed his particular interest in the very difficult problem of finding suitable work for the tuberculosis patients to do.

Lieutenant RUSSELL, of Port Jefferson, said that most of the young men joining the army had been haunted by what they had heard of crippled soldiers and sailors after the Civil War and were consequently discouraged. It would seem a very desirable idea to publish this plan widely so that those young men thinking of enlisting would have opportunity to know what the Government intended to do for them in case they were disabled. It was an excellent development and it encouraged a recruit to know that if he lost his life, his people would be provided for; if he did not lose his life, but became disabled, the Government would aid him in every way to return to civil life a self respecting, self supporting, efficient, and valuable member of the community.

Major P. B. MAGNUSON replied to Captain Knoff that the reconstruction of a tuberculous man was considered just as important by the Government as of one who had lost his arm or leg. The tuberculous would not be given anything to do that was not conducive to cure; but would be sent to a special hospital in a suitable climate; there to work under the supervision and guidance of a man familiar with his needs, preferably out of doors. There was at present some idea of keeping these patients quietly resting out of doors all the time for a while, using no energy whatever and not until the case could be considered to be arrested would the patient be given work and then he would be tried out very slowly.

There would be two outcomes of this Governmental plan; there would be no cripples from the ranks playing hand organs on the corners and it was to be hoped no more turning out of industrial plant cripples with a few thousand dollars which would be taken away from them in a year or two leaving them a burden on the State or begging their daily bread. The war would come to a close, but industry would go on. There was no reason why industrial cripples should not be cared for. They were in the service of the Government as well as the soldier and sailor, they produced the things they ate, the things they wore and used every day, and the slight cost of reeducating them was their due.

Major M. W. MURRAY in closing wished to emphasize that this reeducational work should be begun very early, as soon as the doctors pronounced the man able to do something sitting up in bed. A great deal could be done at that time with proper hospital apparatus. Starting with that thin edge of the wedge the education could be increased under medical supervision.



PHILADELPHIA COUNTY MEDICAL  
SOCIETY.*Regular Meeting Held April 24, 1918.*

The President, Dr. FRANK C. HAMMOND, in the Chair.

## SYMPOSIUM ON THE ANEMIAS.

**The Recognition and Treatment of the Anemias.**

—Dr. ALFRED STENGEL said that when we summed up all cases of anemia there would be relatively few of the so-called primary anemias and a great many of the form termed secondary anemia. The secondary anemias or the simple anemias, analyzed from the standpoint of cause, might be grouped under: 1, infections; 2, those following hemorrhage, manifest or concealed; 3, those due to some form of intoxication. While lead was the recognized form of poisoning, in these days new poisons were being encountered, and cases, such as had been termed pernicious anemia, might be due to TNT poisoning; 4, parasitic anemia; 5, anemias that were expressive of some deep seated, perhaps, overlooked neoplasm.

Infection was probably the cause of the great majority of anemias that we saw in ordinary practice and those cases were mainly important where the infection was not manifest. Young boys and girls who were anemic were treated with iron and arsenic; they improved, only to relapse. Was there here a constitutional tendency to anemia? We had failed to recognize the cause of the anemia in these cases. We could recall cases of anemia in young women and boys with valvular lesions of the heart. They had a chronic infection and they literally ate iron and were thus kept in a reasonably good condition of health. Young persons with large cystic infected tonsils were constantly relapsing to an anemic condition because the infection was allowed to remain. The attitude of practitioners had been all wrong in this connection.

In the posthemorrhagic anemias there were the open and the concealed hemorrhages, and in the latter instance a mistake in diagnosis was not unlikely to be made. The longer an anemia lasted the more it approached in its clinical appearance a pernicious and aplastic anemia. The bone marrow became exhausted and the patient's appearance was that of pernicious anemia. In such a case, although the cause of the anemia might be removed, the patient did not get well; the anemia habit was established; the blood regenerating function was absent, and while the blood did not show the characteristics of pernicious anemia the patient was anemic until he died. The question of treatment was not so much concerned with the form of iron and arsenic that was used as in finding and removing the cause; surgically, if focal. Transfusion was indicated in acute anemia due to loss of blood. Splenectomy was one of the most valuable adjuncts that had been discovered in the treatment of certain types of anemia. It was, however, a very serious procedure.

**The Value of Splenectomy in the Treatment of Some of the Anemias.**—Dr. JOHN B. DEEVER said that the leading indication for splenectomy was probably traumatic injury. Inspection would soon indicate whether or not the organ should be removed. Injury to the hilus without doubt demanded removal.

A slight wound of the cortex might be treated conservatively by some surgeons, but if there was any doubt, removal was the safer course. Neoplasms of the spleen were rare, but they demanded splenectomy, unless there was evidence of metastasis. Wandering spleen was often associated with splenic enlargement. It might be treated by splenopexy or splenectomy, according to the case.

A more common condition of enlargement was that due to Banti's disease. While we did not definitely know its etiology, we did know that removing the spleen had obtained a cure in a great many instances. Some recoveries had been reported by operation in the later stages of the disease, but the operation was attended with great risk; early operation had been attended with such good results that it should be resorted to without hesitancy.

The mortality appeared to be about eleven per cent. We were told that the best results of splenectomy were obtained in the treatment of hemolytic jaundice. Eliot and Kavelin in forty-eight cases collected in 1915 reported only two deaths, a mortality of 4.2 per cent. Krumbhaar in 1916 had collected 156 cases of pernicious anemia treated by splenectomy with thirty deaths. The Mayo Clinic reported thirty-one splenectomies for pernicious anemia up to April 1, 1916, with three deaths, or 9.7 per cent. mortality. Of the survivors, twenty-two, or seventy-eight per cent., showed continued improvement; of sixteen followed up for six months, eleven continued to improve and three had relapses. From the experience of the Mayo Clinic it appeared that splenectomy for the relief of pernicious anemia should be considered in youthful and middle aged subjects showing good general resistance and where splenic enlargement was moderate and there was evidence of hemolytic action. The degree of hemolytic activity was estimated by the blood pigments, urobilin and urobilinogen in the duodenal contents. A comparison of the degree of hemolysis with the severity of the anemia seemed to indicate the degree of productive power of the bone marrow. Hemoglobin below thirty-five per cent., with erythrocytes less than 1,500,000, increased the operative risk. An improvement in the blood picture and in the general condition might be obtained by preoperative blood transfusion. In a few instances blood transfusion for postoperative relapse had been successfully employed in the Mayo Clinic, but it had not been adopted as a routine procedure.

The treatment of pernicious anemia by splenectomy was still on trial and was apparently merely palliative. There was, however, reasonable hope for improved results. In the aplastic type of the disease splenectomy was contraindicated. Splenectomy was also contraindicated in leucemia. In at least one operated case of Banti's disease the patient had lived comfortably for several years, dying later of hematemesis. Operations in late Banti's cases in the presence of ascites had been attended with good results. The few cases of pernicious anemia which had been operated, had shown the same fluctuations of improvement and relapse which seemed to characterize the condition.

**Blood Transfusion in Infants.**—Dr. HARRY LOWENBURG called attention to a method of blood

transfusion in infants. Within the last month he had on three occasions effectually done a transfusion in the longitudinal sinus through the inferior fontanelle. In one referred case the child was sixteen months of age with a hemoglobin of thirty per cent. and 1,560,000 red cells. The case was studied along the lines suggested by Dr. Stengel. The baby had had bloody stools for about a year. It was not determined whether this condition was responsible for the anemia or was caused by it. As a last resort transfusion was tried. The hemoglobin had been raised to sixty-five per cent. and the erythrocyte count to 4,800,000. The child had had no bloody stools since the first transfusion. Attention was directed to the procedure as a valuable but much neglected means of intravenous medication.

## Letters to the Editors.

### EIGHT HOUR DAY FOR PHYSICIANS.

BAR HARBOR, MAINE, July 17, 1918.

To the Editors:

The Labor Board deserves credit for establishing as law, a great democratic principle: the right of the lowest grades of self supporting men to fix minimum hours for a day's work. Doubtless this board will further distinguish itself by fixing the maximum wage for the smallest output.

By such acts is progress encouraged? Especially for preparedness for war? The dominant political group has always made that their chief objective. To be sure the nation might well expect some such action since rumors are rife of strikes, for no valid reason, to prepare the public mind.

Why should not the profession of medicine collectively take steps to limit their hours of work? They would be amply justified since the young and robust physicians are volunteering rapidly and the older men must kill themselves in behalf of ailing humanity. This obligation, however, they cheerfully accept. Why is patriotism confined to professional groups and (practically) repudiated by laborers—except they be able "to get away with it" by reason of overwhelming power of voting? Who encourages them in this?

J. MADISON TAYLOR; M. D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

### *Interpretation of Dental and Maxillary Röntgenograms.*

By ROBERT H. IVY, M.D., D.D.S., Major, Medical Reserve Corps, United States Army; Associate Surgeon, Columbia Hospital, Milwaukee; Formerly Instructor in Oral Surgery, University of Pennsylvania. With 259 illustrations. St. Louis: C. V. Mosby Company, 1918. Pp. 114.

Following an illustrated section on the anatomy of the jaws and the accessory pneumatic sinuses and their normal x ray appearances, there is a most valuable section descriptive of oral diseases and injuries. Stereoscopic dental radiography is very well explained and also a convenient device for viewing the two films in a stereoscope. Localization by means of a comparison of two radiographs made from different directions is explained. This method is often useful in determining the position of an unerupted upper canine. A single radiogram does not always enable one to say whether the canine lies at the palatal or the labial aspect.

A special feature of the book is seventy-three pages of radiographs illustrating normal and pathological conditions and classified regionally. Each radiogram is accompanied by a description of the diagnosis and in practically all cases the author had an opportunity to confirm the diagnosis operatively. This section includes several radiograms made with the plate at the side of the face and showing especially unerupted or horizontally impacted wisdom teeth and fractures of the jaw. All of the text is valuable and well expressed. Many of the illustrations are excellent and even in those not quite so clear, the reader is able to verify the accompanying diagnostic notes.

The book forms a handsome volume, and while it does not enter into x ray technic except as noted above, it does afford an admirable guide to diagnosis based upon dental radiography.

*An X Ray Atlas of the Skull.* By A. A. RUSSELL GREEN, M. B., B. S. (Lond.), M. R. C. S. (Eng.), Captain, R. A. M. C. (T.); Radiographer to Birmingham Skin Hospital and Birmingham Board of Guardians, etc. With Five Colored Plates and a Table Showing Relations Between Displacement of Shadows and Distance of Bodies Throwing Those Shadows. New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1918. Pp. x-27. (Price, \$3.50.)

A slender but most attractive book and especially useful as a guide to the x ray localization of diseases or injuries of the skull, pneumatic sinuses, or brain, and the localization of bullets or other foreign bodies. A valuable table is given showing the distance of the foreign body from the surface as indicated by the displacement of the image when two radiographs are made from a tube distance of fifty centimetres and a tube displacement of ten centimetres. Radiographs of the living head from a number of standard directions are given, and then follows the distinctive feature of the book. This is a set of radiographs of the dried skull in which one side is empty and the other has been so treated as to demonstrate the anatomy with extraordinary clearness. Sutures are outlined with wire, some structures are covered with tinfoil, the sinuses are injected with a mixture of paraffin wax and bismuth, and in the fresh specimen the blood vessels have been injected with mercury. The resulting radiographs are printed in about eight colors and form charts which combine beauty with utility.

## Births, Marriages, and Deaths.

### Died.

DAY.—In Port Norris. N. J., on Friday, July 12th, Dr. F. Thomas Day, aged fifty-eight years.

DOYLE.—In Philadelphia, on Saturday, July 6th, Dr. John J. A. Doyle.

HOLT.—In Webster, N. Y., on Monday, July 8th, Dr. N. Curtice Holt, aged sixty-five years.

KARNIOL.—In New York, on Monday, July 15th, Dr. William Karniol, aged forty years.

KARPAS.—In France, on Monday, June 24th, Major Morris Jacob Karpas, Medical Reserve Corps, U. S. Army, of New York, aged thirty-eight years.

MENDEL.—In New York, on Saturday, July 13th, Dr. A. A. Mendel, aged fifty years.

MERCKEL.—In New York, on Tuesday, July 16th, Dr. Gottfried Merckel, aged fifty-one years.

MEREDITH.—In Philadelphia, on Friday, July 12th, Dr. Samuel C. Meredith, aged sixty-three years.

MORASSE.—In Norwich, Conn., on Sunday, June 30th, Dr. Louis Ovid Morasse, aged fifty-nine years.

MURRAY.—In Bellows Falls, Vt., on Thursday, July 4th, Dr. George G. Murray, aged forty-two years.

MYERS.—In Milwaukee, Wisconsin, on Tuesday, July 2d, Dr. Albert William Myers, aged forty-six years.

RATHBUN.—In Washington, D. C., on Tuesday, July 16th, Dr. Richard Rathbun, aged sixty-six years.



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## Original Communications

### OPHTHALMIC CHANGES IN TABES AND PARESIS.

*Recent Pathology and Diagnosis, With Reference to Cerebrospinal Syphilis; 122 Cases.*

THE LUCIEN HOWE PRIZE PAPER.\*

By I. S. WECHSLER, M. D.,

New York,

Instructor in Neurology, Columbia University; Chief of Clinic, Second Neurological Division, Vanderbilt Clinic, New York City.

(From the Department of Neurology, Columbia University.)

#### INTRODUCTION.

The great amount of study which has been devoted to the ophthalmic disturbances in tabes, general paresis and meningovascular neurosyphilis and the voluminously compiled facts observed as to symptoms, incidence, etc., seemed to make the subject a closed chapter. So well, in fact, have statements come to be accepted that it would have seemed naive heresy, for instance, to question the primary, purely degenerative nature of the optic atrophy in tabes.

But, as far back as 1902, Kéraval and Raviart pointed out that optic atrophy in tabes and general paresis was not a simple, primarily degenerative process, while Marie and Léry, 1904, sought to bring this conception a step further. The work of both fell on unresponsive soil. Stargardt, in 1913, exhaustively studied the subject and not only confirmed the work of Marie and Léry but altogether denied the existence of purely degenerative processes in tabes and paresis. Schoenberg in this country in 1916 called attention to the above investigations and added his own study, pointing to a newer conception. I shall refer to their work in greater detail later.

Other events served to alter in part our conception of syphilis of the nervous system and the neurology of the eye. The discovery of the spirochete and the synthesis of arsenobenzol revolutionized etiology and therapy, while to the work of Schaudinn and Ehrlich was added the intraspinal treatment initiated by Swift and Ellis. The routine examination of the spinal fluid made possible by the work of Quincke, and, later, the epoch making researches of Wassermann, followed by the investigations of Ravaut and finally Lange-Szigmondi, added to the refinement of diagnosis. The investigations of Moore, Noguchi and Levaditi fixed the

guilt upon the heads of the spirochetes as the direct etiological culprits in tabes and paresis. The lucid distinction of Head, in 1914, on embryological grounds, that is, parenchymatous and interstitial or vascular involvement, or ectodermal and mesodermal lesions, also served to clarify the subject.

#### THE PROBLEM.

In view of recent investigations it is evident that the pathology of optic changes in tabes and paresis does not present the finality which, for instance, Uhthoff and Wilbrand and Saenger give to it. There are three questions to be considered: 1. Are the pathological changes in tabes and paresis giving rise to ocular manifestations fundamentally different from those occurring in interstitial meningovascular syphilis? and 2, are the lymphocytosis, plasmocytosis, and other inflammatory changes absent in tabetic and parietic eye palsies and optic atrophy and present only in so called cerebrospinal syphilis? 3. Is the process on the one hand primarily degenerative and on the other consequent upon inflammation? To all these questions a negative answer must be given. There is an etiological identity and pathological similarity in all syphilitic processes, be they parietic, tabetic or so called cerebrospinal syphilitic, and an attempt will be made to prove this in the discussion of the pathology.

In the opinion of the writer, syphilis is one continuous disease, and while for convenience of classification one may speak of a primary, secondary, tertiary, or even quaternary, or the old meta and parasymphilitic stages, from the standpoint of pathology there is no fundamental difference between them. The difference, if any, lies in the reaction of the structures of the body at various periods after infection or in the varied action of the spirochete after numerous vicissitudes in the body. It may safely be argued that the underlying pathological process of any syphilitic lesion, whatever its chronological manifestation, is essentially of one character, differing only in degree at various times and under various conditions, and depending upon the structures involved. Thus, while in so called cerebrospinal syphilis the vascular, inflammatory, exudative process overbalances the degenerative changes, in tabes and paresis the latter is more marked and often completely overshadows the former.

As the term cerebrospinal syphilis is often meaningless and frequently confusing, I shall employ the term interstitial or meningovascular neurosyphilis.

\*Awarded the Lucien Howe Prize by the Medical Society of the State of New York, at Albany, May 20, 1918.



The terms paretic, tabetic, meningovascular or diffuse, etc., neurosyphilis, as classified by Southard and Solomon are much better. To avoid confusion, however, it will be necessary occasionally to employ the common designation, cerebrospinal syphilis.

The object of this paper, of course, is not to discuss the whole subject of the pathology of syphilis but only that part which bears on the neurology of the eye. While, unfortunately, I have no original pathological sections, I have brought together facts recently gathered and shall discuss the ophthalmic changes in tabes and paresis from the point of view of more modern pathology. I have collected 122 clinical cases and, in reviewing their various ocular symptoms, will compare them with previously gathered data, at the same time laying stress on the diagnostic differentiation from eye changes occurring in cerebrospinal syphilis.

Enough has been said to outline the aim of this essay, but it may be well to point out that the influence on therapy will be far reaching if the opinion is confirmed that the optic changes in tabes and paresis are primarily inflammatory and degenerative only secondarily.

#### OPHTHALMIC CHANGES IN TABES AND PARESIS.

With few notable differences, the eye symptoms in paresis are practically similar to those occurring

Robertson pupil, while the average in cases culled from literature is given as sixty-seven per cent. Naturally, the per cent. incidence rises and falls with the stage of tabes under observation, and a rigid pupil as the only symptom may precede the onset of tabes by years. How early pupillary changes are seen in tabes is difficult to decide, some authors claiming to have observed them even in the first year of the infection. Mott gives 73.5 per cent. Argyll Robertson out of a series of 150 cases; three per cent. of his cases gave unilateral Argyll Robertson, 3.7 per cent. were sluggish to light and fifteen per cent were inactive to light and accommodation. In my series, 3.2 per cent. showed internal ophthalmoplegia and 4.3 per cent. of cases had normal reaction while 8.7 per cent. gave sluggish reaction to light. In twenty per cent. there is said to be a want of parallelism in the intensity of rigidity in both pupils. The Argyll Robertson pupil is said to be found in ten per cent. of cases of interstitial neurosyphilis. Many authors (Erb, Dejerine, Uthoff, Oppenheim, Spiller, and Camp) deem this in cerebrospinal syphilis really due to a coexisting tabes. Loss of consensual reaction runs parallel with rigidity to light, and sometimes, loss of convergence accompanies rigidity to light (in about twenty-five per cent.). Intermittent pupillary rigidity has been claimed to exist in tabes; more likely it is due to interstitial syphilis

TABLE I (NINETY-TWO CASES OF TABES).  
SHOWING PER CENT. INCIDENCE OF EYE SYMPTOMS.

<i>Pupillary reaction</i>	<i>Size of pupil</i>	<i>Shape of pupil</i>	<i>Muscle palsies</i>	<i>Optic atrophy</i>	<i>Nystagmus</i>
Argyll Robertson Seventy cases=76%	Miosis Thirty cases=32.6%	Irregular Thirty-six cases=39.1%	Unilateral oculomotor Four cases=4.3%	Complete bilateral Twelve cases=13%	True nystagmus One case=1%
Sluggish reaction Eight cases=8.7%	Anisocoria Twenty-eight cases=30.4%	Only one pupil irregular Three cases=3.3%	Unilateral abducens Two cases=2.2%	Partial bilateral Three cases=3.3%	Nystagmoid Two cases=2.2%
Double internal ophthalmoplegia Five cases=5.4%	Mydriasis Four cases=4.3%	Normal shape Fifty cases=54.3%	Unilateral ptosis One case=1%		
Unilateral internal and external ophthalmoplegia One case=1%	Normal size Thirty-three cases=36%				
One pupil A R and the other normal Two cases=2.2%					
One pupil A R and the other internal ophthalmoplegia Two cases=2.2%					
Normal reaction Four cases=4.3%					

in tabes. Thus, while one may get visual disturbances in paresis due to involvement of the cortical centres, a picture never seen in tabes, the main character of the symptoms, their underlying pathological condition, and their manifestation, are the same in both diseases. Taboparesis, juvenile tabes and juvenile paresis also show almost identical clinical pictures and only minor characteristics will have to be alluded to show wherein they differ.

#### THE PUPIL.

*Reaction.*—While the Argyll Robertson pupillary phenomenon very rarely occurs in other conditions, it is practically pathognomonic of tabes; its absence however does not altogether militate against the diagnosis. Seventy-six per cent. of my cases showed the phenomenon bilaterally and four per cent. unilaterally (Table I). Of 300 cases quoted by Uthoff seventy-one per cent. showed the Argyll

or intoxications. Absence of accommodation and the presence of light reaction has been observed in tabes (Dejerine) but this is seen more often in general paresis, meningovascular syphilis of the nervous system and tumors of the colliculi.

"Springing mydriasis," that is alternating miosis and mydriasis occurs rarely in tabes and is seen more often in paresis. The so-called paradoxical pupillary reaction has been observed in tabes and paresis (Mott), although its existence is doubted by some (Uthoff). Piltz found contraction of the pupil on forcible contraction of orbicularis in forty-one to forty-three per cent. of cases of tabes. Hippus is said to occur in tabes, but is neither common nor diagnostic, and has significance only in a rigid pupil. Its pathology is given as either cortical or quadrigeminal irritation (G. Ludwig). Loss of reflex sensory dilatation is common and early in tabes.

All the foregoing pupillary signs are much less

common in paresis. In my cases of paresis only 36.7 per cent. showed an Argyll Robertson pupil, thirty per cent. gave a sluggish reaction and twenty per cent. were normal in both eyes. One case 3.3 per cent. showed bilateral and one, 3.3 per cent., unilateral internal ophthalmoplegia, while 6.7 per cent. showed one pupil sluggish and the other normal (Table II.).

TABLE II (THIRTY CASES OF GENERAL PARALYSIS).  
SHOWING PER CENT. INCIDENCE OF EYE SYMPTOMS.

<i>Pupillary reaction</i>	<i>Size of pupil</i>	<i>Shape of pupil</i>	<i>Muscle palsies</i>	<i>Optic atrophy</i>	<i>Nystagmus</i>
Argyll Robertson Eleven cases=36.7%	Miosis Four cases=13%	Irregular Fourteen cases=47%	Partial oculomotor One case=3.3%	Total bilateral One case=3.3%	Nystagmoid One case=3.3%
Sluggish reaction Nine cases=30%	Anisocoria Nine cases=30%	One irregular and one normal Four cases=13%		Partial bilateral (temporal) One case=3.3%	
Bilateral internal oph- thalmoplegia One case=3.3%	Normal size Eighteen cases=60%	Normal shape Twelve cases=40%			
Unilateral internal oph- thalmoplegia One case=3.3%					
One pupil sluggish and other normal One case=3.3%					
Normal reaction Six cases=20%					

*Size.*—The miotic pupil is very common in tabes but is only significant in connection with rigidity. I need only mention the arteriosclerotic pupil to show how common it is in other conditions. Miosis occurs in from twenty-four per cent. (Uhtoff) to fifty-two per cent. (Erb) of cases. In my series it was found in 32.6 per cent. There need be no parallelism between miosis and rigidity. The pathology is not quite clear. Some think it is due to a disturbance in the paths from the spinal centre; others to an irritating process in the fibres to the sphincter pupillæ. (One can, of course, only suggest that it is a vagotonic reaction of an irritative character, as there is very good ground to believe so from the general vagotonic reactions so commonly observed in tabes.) Anisocoria is equally common and significant with miosis: it occurred in 30.4 per cent. of my cases of tabes. While in my cases of paresis, miosis occurred in only thirteen per cent., anisocoria occurred in thirty per cent. Mydriasis occurred in 4.3 per cent. of the tabes cases. I found normal size pupils in thirty-six per cent. of tabetics and sixty per cent. of paretics. In so called cerebrospinal lues the miotic pupil does not especially belong to the clinical picture. Inequality is probably more common in paresis but altogether is not of very great value: it is seen in neurotics and in diseases of the lungs, heart, and chest. Obviously, unilateral involvement of the sympathetic, from whatever cause, will give inequality of the pupil.

*Shape.*—An irregular pupil is probably as frequent in tabes as in paresis or general syphilitic involvement of the nervous system. In fact, it is said to be common in the very early stages of diffuse neurosyphilis. One must make sure, however, that an iritis or an old synechia is not behind the phenomenon. I observed irregular pupils in 39.1 per cent. of cases of tabes and forty-seven per cent. of paresis. In 3.3 per cent. of tabes and thirteen per cent. of paresis one pupil only was irregular, the other normal; 54.3

per cent. of tabes and forty per cent. of paresis showed normally shaped pupils. Besides irregularity in shape, the pupil may be oval or eccentrically situated. The explanation of the underlying pathology of pupillary irregularity is neither sufficient nor clear, though it is known that irritation of the long and short ciliary nerve fibres (Piltz) gives irregularity of outline.

*Pathology of pupillary reactions.*—Some believe that the pathological process causing light rigidity lies in the gray substance of the third ventricle (Pineles, Siemerling and Boedeker, von Monakow). Marina found degeneration in the ciliary ganglion and secondary degeneration of the short ciliary nerve in all cases of pupillary rigidity. Uhtoff says that, although nothing is certain, the probability is that there occurs some break in the centripetal paths to the oculomotor and accommodation nuclei. Ferrier in his "Lumleian Lectures: Tabes," as quoted by Mott, says, "The probability is that the condition which blocks the path of reflex pupillary contraction blocks also that of psychoreflex dilatation." The conscious voluntary accommodation occurs by virtue of the central association with the muscles of convergence through the impulse from the cortex to the motoroculi. The Edinger-Westphal nucleus supplies the sphincter and the ciliospinal supplies the dilator pupillæ. The seat of the pathological process may be in the synapses in the ciliary ganglion or there may be an interruption in the reflex path to the Edinger-Westphal nucleus. The degeneration may be in the optic fibres (it is known that there are separate fibres for light reaction, some of which cross in the chiasm), or in their terminal arborization in the superior colliculi, or in the associating neurones from them to the Edinger-Westphal nucleus (Mott). The anatomicopathological background of the pupillary phenomena is still ill understood, as the existence of an accommodation centre is only guessed at, not known.

A discussion of the histopathology will be deferred for later consideration in the general treatment of the pathology.

#### THE OPTIC NERVE.

Perhaps not so important from the standpoint of diagnosis but surely more so from that of pathology are the optic nerve changes in tabes and paresis. So called pure, white, simple optic atrophy is said

to be the badge of parenchymatous syphilis, and every case of optic atrophy is the forerunner of tabes, even if it takes twenty years (Charcot) to develop.

*Optic atrophy.*—Tabetic optic atrophy is more common in men. It is said to occur in ten to fifteen per cent. of all cases of tabes. In my series of cases I found 13.3 per cent. complete bilateral and 3.3 per cent. partial bilateral atrophy, that is, 16.6 per cent. in all. It is more common in juvenile tabes. Wilbrand and Saenger collected thirty-nine cases from the literature, of which nineteen had optic atrophy. Gowers mentions twenty-six cases of optic atrophy out of 400 cases of syphilis, *i. e.*, 6.5 per cent. Mott states that paresis shows four per cent. of optic atrophy. Some claim that one never finds this in pure cases of paresis, only in such as are complicated by tabes, *i. e.*, taboparalytically. I found 3.3 per cent. complete and 3.3 per cent. partial bilateral optic atrophy in paresis, or a total of 6.6 per cent.

Optic atrophy sets in most commonly in the pre-ataxic stage (fifty per cent.—Wilbrand and Saenger), and, when it does occur, usually is the first symptom. In fact such cases of tabes usually run a milder course. The so called *formes frustes* (Charcot) or *formes bénignes* (Babinski) belong to this class. Some think that the advent of optic atrophy and blindness stops the progress of tabes (Benedict, Charcot, Gowers, Dejerine, Spiller, Mott). Other authors disagree with this view (Marie), but careful serological examination ought to throw light on this point. Mott believes that tabetics who develop optic atrophy are apt to develop paresis, but Oppenheim and Wilbrand and Saenger controvert this.

*Fields.*—One eye usually precedes the other in loss of vision, though the fact is often not discovered until the second is involved. Most authors assert that pure hemianopsia is never seen in tabes, though symmetrical degeneration may simulate the picture; the periphery of the other half is usually also involved, though Stargardt denies this dogmatic statement (*v. i.*). It is claimed that whenever a hemianopsia is found in tabes an interstitial lues involving the chiasm or tract complicates the picture. Central scotoma are rare in tabes, and, when found, are the result of complications, such as interstitial syphilis, toxic amblyopia, etc. (Uthoff). Stargardt quotes fourteen cases from the Breslau Clinic, showing the presence of scotoma in tabes. Fuchs reported thirty cases of scotoma (quoted by Stargardt). There is generally found first, peripheral contraction of fields for colors, first for red, then green, blue, and yellow and finally for white, and secondly, cases which show partial defects of the field with other parts perfectly normal.

*Course.*—The progress of the optic atrophy is usually slow and gradual. The visual disturbances usually begin with defects in color perception, defects in fields of vision, and diminished central vision. At first there is blurring, cloudiness, flashes of light, seeing red and green. The patient may be unaware for a long time of his condition. One eye may precede by months the blindness in the other, and, in many cases, vision is much better after the eye has been completely rested for hours in the

dark; possibly because the few healthy retinal ganglion cells have a chance to renovate the visual purple. Sudden blindness in tabes is probably due to destruction of the maculopapillary bundle (Mott). It usually takes two or three years for complete blindness to set in: the minimum is said to be two to three months; the maximum twelve years (Uthoff). Dejerine gives the time as six to eighteen months for completion of the optic atrophy. Tabetic optic atrophy "always ends in blindness" (Uthoff). While this may have been true in the past there is reason to believe that it will not be so in the future.

*Ophthalmoscopic findings.*—The disk is grayish or whitish, the vessels are usually normal, the margins sharply outlined. There may be atrophy of the disk and no visual or field disturbances for some time, but less often disturbances without ophthalmoscopic changes. Neuritic changes are not found in tabetic atrophy, though they have been reported (Wilbrand, Oppenheim). The cupping of the disk is not a significant sign (Uthoff). Nevertheless, there may be no disc changes, despite positive disturbances of vision and irregularities in fields. Wilbrand and Saenger quote ten cases (with autopsy) which showed no objective findings during life and yet revealed degeneration on microscopic study.

#### EYE MUSCLES.

It is difficult to determine the incidence of muscle palsies in tabes and paresis. Most tabetic eye muscle palsies are fleeting, their existence often brought out only through a history of double vision. Uthoff speaks of twenty to twenty-two per cent. of tabetics having disturbances of eye muscles, Erb gives thirty-eight per cent., v. Leyden and Goldscheider forty to fifty per cent., and Mott about fifteen per cent. In my series of cases I found only 7.5 per cent., and if to this is added 7.6 per cent. of complete internal ophthalmoplegia then the series shows 15.1 per cent. The oculomotor is most commonly involved (Erb, Fournier, Charcot, Gowers, Wilbrand and Saenger, Mott, Nonne), either partially or completely, thus earning for itself in tabes also the deserved appellation, *la signature de la verole*, given to it by Fournier and Ricord. The abductors are next most common and trochlearis last. As for the fourth nerve, it may be remarked that detection of its involvement is particularly difficult and often escapes detection by the neurologist, if not the ophthalmologist. Palsies are by far less common in paresis; in my series only 3.3 per cent. Kraepelin speaks of eighteen per cent. of transitory palsies.

*Clinically,* the palsies are partial, incomplete, fleeting, and changing, while total third nerve paralysis is uncommon. Usually it is unilateral; if bilateral, one thinks rather of a basal meningitic involvement. The levator palpebrae is the most common single muscle affected. Ptosis is more common in the early stages. In paresis, ptosis is relatively uncommon compared to internal ophthalmoplegia (Wilbrand and Saenger), which is equally true of other eye muscle palsies in paresis. Incidentally, atrophy of the optic nerve with psychic symptoms, in tabes, is more common in connection with eye muscle palsies than without them. Isolated ptosis and abductors paralysis are said to be common. Complete external ophthalmoplegia alone is not common. Ab-



ducens paralysis is usually transient, rarely bilateral, always nuclear. Transient ptosis is not rare in early tabes, while palsies of associated movements are rarely, and according to Oppenheim never, seen in tabes. Diplopia, of course, is a common symptom. Most muscular palsies occur early in tabes (Charcot, Gowers, Westphal, Wilbrand and Saenger, Uhtoff, Mott, Nonne) and are fleeting; those that remain stationary come later (Oppenheim). Recurring paralyses are not uncommon. The duration of the palsy may be from hours to days, months, or even years.

*Pathology.*—All authors agree, and stained sections show, that we deal with a nuclear degeneration. The roots are said to be secondarily degenerated, although they and the nerve may be primarily degenerated (Dejerine). Spiller demonstrated the presence of inflammation in the nerves in tabetic eye palsies, and found lymphocytic infiltration in the pia of the nerves. Thickening of the ependyma over the aqueduct and fourth ventricle without nuclear degenerations has been observed in tabetic muscular palsies. Microscopically, the ganglion cells are broken down in varying degrees, some cell bodies disappear, others are small and shrunken and with broken endings. Some cells show vacuolization. The fibres gradually disappear. There is an increase in neuroglia. Vascular changes are rare (*v. i.*). In the nerve the myelin sheath is found broken down and axis cylinder very thin, and both may be completely atrophied. The connective tissue is increased, the nuclei proliferated. (Despite which, Uhtoff says there is no proof of an actual neuritic process.) The transitoriness of the paralyses is explained by some on circulatory grounds, while Wilbrand and Saenger are of the opinion that there is actual restitution of destroyed substance.

*Nystagmus.*—Actual nystagmus is very rare in tabes, and, when found, should always suggest complication. Nystagmoid movements are more common and supposedly are due to weakness of the eye muscles. I found 1+ per cent. nystagmus and 2.2 per cent. nystagmoid movements in tabes, and 3.3 per cent. in paresis. Mott gives four per cent. in tabes. Charcot spoke of an ataxia of the eye muscles, but Uhtoff denies this. The anatomical seat of the lesion, if there be any, is not known.

*Keratitis and ophthalmia neuroparalytica* are very rare in tabes, and, according to Uhtoff and Wilbrand and Saenger, hardly ever found. The same is true of herpes zoster ophthalmicus. Sensory changes in the region of the trigeminus are not common, nor are neuralgias. The pathology of keratitis neuroparalytica is a degeneration of the descending sensory root in the bulb, or the sensory nucleus and the nerve roots. Epiphora occurs, but is rare in tabes, though it may come on in crises, this probably due to irritation of the fifth and, possibly, the seventh. Paralysis of the branches of the sympathetic have been observed. All of the above symptoms are, of course, to be found more commonly in interstitial neurosyphilis.

#### OPHTHALMOPLEGIA.

Isolated chronic progressive ophthalmoplegia is most commonly found in tabes and next often in paresis. Unlike muscular paralyses it is usually not recessive. Total ophthalmoplegia—that is, internal

and external—according to Uhtoff, occurs in two per cent. of cases, according to Wilbrand and Saenger in seven per cent. I found unilateral internal ophthalmoplegia in 3.2 per cent. of cases, bilateral internal ophthalmoplegia in 5.4 per cent., and complete internal and external in 1+ per cent. in tabes, while in paresis I found 3.3 per cent. unilateral and 3.3 per cent. bilateral internal ophthalmoplegia. Optic atrophy accompanies the ophthalmoplegias in thirty per cent. The very presence of primary optic atrophy occurring in ophthalmoplegia speaks for tabes or paresis. Pupillary changes in shape, size, and form frequently accompany ophthalmoplegias, also occasional facial and trigeminal paralyses. Very naturally, accompanying bulbar symptoms speak rather against tabes and paresis and for diffuse neurosyphilis.

*Pathology.*—Degenerative changes have been found in the nuclei and nerve roots supplying the eye muscles as well as the peripheral nerve branches. It is said that degeneration begins in the nuclear regions, or, at least, is more intense there than in the roots and nerves. Sometimes, however, the peripheral nerves alone are degenerated and not the nuclei (Oppenheim, Dejerine, Spiller). The cells in the nuclei are shrunken, granular, degenerated, or vacuolated. The fibres are rarefied and the glia is increased. Small hemorrhages and diseases of bloodvessels have been found to account for the degenerations. Ependymal changes in the aqueduct and the floor of the fourth ventricle are rarely encountered. Peripherally the nerve fibres are found atrophied, the sheath and axis broken down. Lymphocytosis has been found in the nerves. The connective tissue may be increased. The muscles themselves show atrophy of fibres, degeneration, increase of nuclei, and at times even hypertrophy of some fibres (Oppenheim).

A few eye symptoms are found in paresis which are never seen in tabes. In epileptiform seizures, so common in paresis, one occasionally sees conjugate deviation of the eyes. So, too, parietic migraine may be accompanied by transitory hemianopsia, transitory strabismus, ptosis, and diplopia, and while it may be difficult to demonstrate, a parietic lesion of the calcarine fissure, occipital lobe, or optic radiation may give homonymous hemianopsia. Alexia may result from a lesion in the angular gyrus. These symptoms may occur in gumma of those regions and indeed the difficulty of diagnosis may be very great. The symptoms accompanying parenchymatous neurosyphilis as contrasted with those occurring in interstitial neurosyphilis will, however, serve to help in the differentiation. Visual hallucinations may be mentioned as occurring in paresis and, though rarely, even in tabes and taboparesis.

#### DIAGNOSIS.

In attempting to differentiate tabetic eye symptoms from other conditions one usually considers meningovascular neurosyphilis (cerebrospinal lues), pseudotabes, alcoholic amblyopia and pseudotabes alcoholica, combined sclerosis of the posterior and lateral columns, hereditary ataxia and syringomyelia. Leaving out those of lesser importance, I shall limit the differential diagnosis to tabes and so called cerebrospinal syphilis.

Although rare, tabes may supervene on an interstitial, vascular neurosyphilis, making a mixed clinical picture so far as the eye symptoms are concerned, which renders the diagnosis somewhat more difficult. In such cases the general neurological signs, particularly those referable to the cord, will have to be taken into consideration. Generally speaking, the clinical picture of tabes comes on late in the infection—eight to fifteen years; interstitial lues more commonly early in the disease—one to three years. In tabes, optic atrophy is more common, and the condition usually progresses to complete blindness. Total bilateral optic atrophy hardly ever appears in interstitial vascular neurosyphilis (Uhtoff, Mott, Wilbrand, and Saenger). In the latter we always deal with an active retrobulbar, inflammatory, neuritic process causing so called descending optic atrophy.

The visual fields in tabes differ from those found in optic neuritis. Central scotoma due to direct involvement of the maculopapillary bundle are very common in neuritis, and so is hemianopsia; while irregular or concentrically contracted fields are the rule in tabes. Bitemporal hemianopsia does not at all belong to the picture of tabes. Optic neuritis is not infrequently unilateral throughout the course of interstitial neurosyphilis. Ophthalmoscopically, vascular changes and an inflammatory condition of the disc in neuritis, and a sharply defined margin and normal vessels in tabes, are often found. Of course, a syphilitic meningitis behind the chiasm (optic tracts, etc.) will not give any inflammatory disc changes even in neuritis. Visual disturbances without ophthalmoscopic findings are not uncommon in cerebrospinal lues, and are exceptional in tabes. Isolated optic neuritis without complications is rare in interstitial syphilis, while optic atrophy alone, even for years, is not uncommon in tabes. Complications of the basal cranial nerves and other localized affections point away from tabes. Choking of the disc caused by a gumma, obviously, is never encountered in the latter.

Paralysis of the eye muscles are said to be far less common in tabes, and involvement of the other cranials is practically unknown. It is difficult to determine the exact incidence, as patients often give a history of diplopia and show no palsies. Not only are disturbances of eye movements less common, but they are not so complete, being transient and fleeting; they show nuclear paralyses, isolated palsies. As we deal with a basilar vascular meningitis in interstitial neurosyphilis we often have double paralyses of the third nerve, involvement of all the branches, greater degree of paralysis, and combination with visual disturbances not peculiar to tabes. A superior crossed hemiplegia (Weber's syndrome), symptoms referable to gummatous or other involvement of the brain, of course, do not belong to tabes.

Miosis is rare in cerebrospinal syphilis and pupillary rigidity, that is, a true Argyll Robertson phenomenon is said not to occur except in tabes and paresis. Where the Argyll Robertson is found it is justifiable to suspect a superadded tabes. Accommodation is usually affected together with light rigidity in interstitial lues, while the internal oph-

thalmoplegia not infrequently is accompanied by involvement of other cranials. Involvement of the trigeminal is very rare in tabes, and keratitis neuro-paralytica is altogether wanting, and Horner's pupillary sign is never seen. Wernicke's sign is also unknown, as are symptoms referable to involvement of the colliculi or geniculate bodies.

Practically, the same conditions hold true in paresis as in tabes. The cerebral conditions caused by gumma giving psychic symptoms, which may remind one of paresis, will be diagnostically differentiated by signs and symptoms peculiar to each condition. Ataxia, of course, is not seen in interstitial neurosyphilis and spastic paralysis is not observed in tabes, while loss of memory, gutting of the personality, and euphoria are not seen in either. Finally, serology offers an aid to diagnosis which is always available. The blood is more often positive and the cerebrospinal fluid more often negative in interstitial syphilis than in tabes, while in paresis the fluid is nearly 100 per cent. positive. A colloidal gold reaction, of course, goes with paresis and speaks against interstitial neurosyphilis. All in all, while cases occasionally do come up which offer diagnostic problems, in the vast majority careful analysis will make differentiation fairly simple.

#### PATHOLOGY.

Before discussing the more recent conceptions of the syphilitic changes in tabetic and parietic optic atrophy it may be well to review briefly the orthodox pathology: Macroscopically, the nerve appears gray, thin and slack; on cross section the periphery may be gray and the centre of the nerve white. Microscopically, there is fatty degeneration and absorption of the myelin sheath, breaking down, varicosity, and disappearance of the axis cylinder. The atrophic process begins primarily in the retinal ganglion cells and in the retinal fibres, and progresses secondarily, but little, to the optic, chiasm, tract, thalamus, superior quadrigeminal, and external geniculate body. It never begins in the basal ganglia to descend to tract, chiasm, optic, etc., although Uhtoff thinks it may begin in the optic fibres. The changes are similar to those found in the posterior columns of the cord. The connective tissue and neuroglia tissue changes are secondary to the fibre changes, and not due to sympathetic or vascular changes. The interstitial connective tissue and neuroglia undergo secondary changes, but there is no scar formation and proliferation or infiltration of cells as in neuritis. There is atrophic sclerosis of glial and interstitial tissue and sclerosis of the small vessels. Later, there is an increase of glial cells. In old cases there is atrophic sclerosis of the retinal vessels. The neuroglial increase is secondary to the atrophy of the nerve fibres (Weigert). The theory has been put forward (Wharton Jones) that the tabetic optic atrophy is due to the influence of the sympathetic which is affected in the spinal cord, but it has been denied on the ground of the absence of vascular changes. In paresis the central neurones are degenerated, and in tabes the peripheral one.

From the abbreviated description just given we gather that in tabes and paresis, more particularly



in optic atrophy, the process is a purely degenerative one, the existence of which is postulated on the theory of toxins. The presence of an inflammatory process is not considered, and is even denied. As far as the toxic theory is concerned, it seems to have been fairly well disposed of by the discovery of spirochetes in tabetic and paretic lesions, and, while they have not yet been demonstrated, it is not too speculative to assume their existence in the optic paths as well. Further, as has been fairly well established, exudative foci are found in tabes and paresis, and the pathological process is not at all like that found in toxins such as tobacco, methyl alcohol, filix mas, etc.

In 1902 Kéraval and Raviart microscopically examined a number of atrophied nerves taken from tabetics and paretics and found neuritic processes. They found an endo and perivasculitis as the cause of the atrophy; likewise a thickening of the pia-arachnoid around the optic paths. In 1905 Marie and Léri also found signs of inflammation and thickening of the pia and arachnoid covering the optics and chiasm. They described signs of obliterated vessels in the septa of the nerves, and stated that there are two phases in optic atrophy: First, the inflammatory, *phase d'irritation*, and second, *phase d'obliteration*. It is in the second stage that the fibres disappear. Marie and Léri also found a disproportion between the atrophy of the retinal ganglion cells and the optic fibres, a condition which ought never to exist if it be true that the degenerative process in the latter always follows a disappearance of the former. They concluded, therefore, that destruction of the optic fibres may go on independently of the destruction of the retinal ganglion cells.

Stargardt, however, seems to have demonstrated conclusively the exudative, inflammatory process in tabetic and paretic optic atrophy. He examined twenty-four specimens taken from tabetics and paretics, and investigated separately the retina, optic nerves, chiasm and tract, external geniculate body, and parts of the gray matter adjacent to those structures. To make sure that no cadaveric changes interfered with his investigations, he obtained some of his specimens within a few minutes after death.

*The Retina.*—His investigations showed chromatolysis and degeneration of the ganglion cells which could only have been secondary to degeneration in the optic paths. In many cases of paresis where the optic fibres were found normal the retinal ganglion cells, too, were found intact. On the other hand, he found normal retinæ in cases where the brain suffered intensely, and he asks the question: "If the degeneration of the ganglion cells is due to a toxin, how is it that they altogether escaped destruction when the brain suffered so extensively?" In four cases where the ganglion cells were degenerated in part it corresponded to degeneration of the optic fibres. He also found quadrant degeneration in the retinal cells, and asks, "How can this be explained on the assumption that the process begins in the retina?"

*Changes in the optic nerves.*—Stargardt found two pathological processes in tabes and paresis: exudative and degenerative. Characteristic of the first

was the presence of lymphocytes and plasma cells, but no round cell infiltration. Characteristic of the second was the breaking down of the axis cylinder and myelin sheath, and replacement by glial tissue. The exudative and degenerative processes were found side by side. The plasma cells were found mainly in the pia and septa along the perivascular lymph spaces in the optic nerve. There was also inflammation of the endothelium and proliferation of vessels. In some cases mast cells were to be seen.

*Changes in the chiasm and tract.*—In the chiasm primary degeneration was most commonly seen. By primary degeneration is meant the presence side by side of both exudative and degenerative processes; by secondary is meant the absence of an exudative process. In the optic tract the changes were usually secondary, and only rarely were exudative ones seen.

*Changes in external geniculate body.*—In some were found exudative processes in the pia, with deposit of plasma cells and secondary degeneration in the ganglion cells, while similar pathological changes were found in the tuber cinereum and the gray matter of the anterior perforated space, third ventricle, basal part of the cortex, the olfactory and oculomotor nerves, and the hypophysis—all structures adjacent to the intracranial visual paths. As to the oculomotor, both exudative and degenerative changes were found, and in several cases of ptosis none were found in the third nerve nuclei. In all cases the plasma cell infiltration was in the vessels of the nerve and in the mesodermal tissue, always having stopped short of the ectodermal structures (*i. e.*, the nerve fibres).

His conclusions were as follows: "There is no fibre degeneration if there is not an exudative process somewhere in the course of the nerve. The exudative process, according to this, belongs to the picture of optic nerve atrophy just as it does to that of tabes and paresis. The main seat of the exudative process is in the intracranial portion of the optic nerve, in that lying in the bony canal, and in the optic chiasm. The orbital optics, the tract, and external geniculate body are only rarely involved. There is no regularity in the localization or extent of the exudative process. In paresis the exudative process extends from the brain structures to the visual paths; in tabes the exudative process begins in the visual paths, apart from those in the spinal cord, and may extend to the brain. Here, too, there may be all possible variations. In all cases the exudative process precedes the degenerative changes."

Stargardt also believes that there is a nongummatous syphilitic process in cases of tabes and paresis comparable to gummatous changes seen in interstitial syphilis, and that the histopathological changes in the former take place by preference in the optic nerve and chiasm, and more rarely in the tract, etc., just as they do in the latter. He denies that no scotoma are found in tabes, quoting Fuchs (*v. s.*), and that no hemianopsia is seen, quoting Gowers. Both of these pictures may follow, though rarely, the primary exudative-degenerative process in the retrobulbar optic paths.



Schoenberg, who has done some interesting work on intravital staining of the optic nerve, also holds the opinion "that this type of optic atrophies is due to the presence of spirochetes in the sheaths and in the interior of the optic nerves, that in the beginning these microorganisms are localized at the periphery of the nerves, mostly in its sheaths, and that only in a later stage (do) they migrate into the nerve bundles and between the fibres. . . ." In a later essay on the intracranial treatment of optic atrophy the same author confirmed his previous view that the tabetic optic atrophy is the result of an active inflammatory process, and he has even succeeded in arresting, if not improving, the condition in advanced cases.

Spiller has made microscopic studies in tabetic eye palsies, and has demonstrated the presence of inflammatory changes. In one case showing bilateral internal and external ophthalmoplegia he found lymphocytic infiltration of the oculomotor nerve and nuclei, as well as of the trochlearis and abducens. The nerves were atrophied and the fibres degenerated. The degeneration in the left abducens was greater than in the right, and the lymphocytic infiltration was also more extensive in the left than in the right. Although the case was clinically one of tabes, pathologically it could not be differentiated from cerebrospinal syphilis. He also found lymphocytic infiltration in the pia and the pial vessels in eleven cases of tabes. Dejerine has described actual meningitis in tabes, while others have observed inflammatory changes in the septa and the interstitial supporting tissues. Still others have shown the presence of lymphocytes and plasma cells in the lymph sheaths in cases of tabes and paresis. Bresowsky (as quoted by Spiller) found meningitis in forty cases of tabes. In half those cases the meningitic process was of a severe form.

Warthin, as the result of intensive study of 300 cases of syphilis by means of microscopic sections, definitely states that it is the gummatous process that exists in places where there were no inflammatory lesions. Doing post mortems with the microscope instead of the scalpel, he demonstrated the presence of spirochetes in places where there were no inflammatory lesions, but simple degeneration or necrosis—a condition analogous to so called primary degeneration of the optic paths. It is his opinion that all nerve syphilis (and optic atrophy is nerve syphilis) begins in the secondary stage, and that "every syphilitic is a little tabetic and paretic."

Fordyce, in speaking of optic atrophy, says that "in syphilis the optic nerve may be primarily or secondarily involved, more often the latter," that is, there may be direct involvement of the nerve or extension to it from the meninges. Further, he believes that optic atrophy in tabes which gives a positive fluid reaction, bespeaks an inflammatory process and therefore makes the case amenable to treatment.

#### CONCLUSION.

After study of the more recent investigations concerning the pathology of neurosyphilis, particularly with reference to optic changes, I have gained the impression that there is no fundamental difference between tabetic neurosyphilis and so called cerebro-

spinal or, better, diffuse neurosyphilis. It seems evident that an inflammatory process is behind every form of syphilitic involvement, and that the spirochete is at the bottom of the reaction. Obviously the inflammatory reaction is in direct proportion to the kind of tissue involved. There is every reason why the meninges should respond more violently than the parenchyma of the brain. The reaction, too, of vascular, interstitial structures will be of a different nature than that of parenchymatous tissue. But lymph and plasma cell infiltration and mast cells are the fundamental characteristics of syphilis. This picture occurs in tabes, paresis, and optic atrophy just as it does in interstitial neurosyphilis or, say, aortitis. There is therefore no valid reason for calling a protean clinical picture cerebrospinal syphilis. In the first place, tabes and paresis are anatomically just as cerebrospinal, and secondly, the pathology is based in all cases on a similar reaction to the same agent. I have, therefore, without being too consistent, used the term interstitial or diffuse neurosyphilis instead of cerebrospinal lues.

The same argument seems to hold true when we come to the pathology of special structures, such as the optic nerve. Evidently very careful examination has revealed inflammatory reactions even in very old cases of optic atrophy. It would seem advisable, therefore, to drop the term primary optic atrophy, or, rather, employ it in the sense that the atrophy takes place *pari passu* with the inflammatory, exudative process. It is equally descending with an inflammatory neuritis, though the vascular changes are not nearly so violent. The deductions to be drawn are quite obvious. Without attempting to deal with the subject of therapy, it may be well to point out that if the inflammatory character of optic atrophy will come to be recognized, we may be able to attempt rational and possibly hopeful treatment in cases hitherto the despair of therapeutists.

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## THE SUCCESSFUL TREATMENT OF CHRONIC PATHOGENIC INFECTIONS OF THE LOWER RESPIRATORY TRACT.

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I wish to point out some salient facts in the diagnosis and treatment of certain infections of the lower respiratory tract, the larynx, trachea, and bronchi, as distinguished from the upper tract about which so much has been written during the past few years.

Any person who has more than a passing interest in respiratory diseases must have been impressed in an increasing degree by the large number of so called chronic conditions of the larynx, trachea, and lungs which are met with not only in daily clinical experience, but outside of the consultation room and hospital ward. It is fairly impossible to become one of a public assemblage, such as the theatre or opera, and not be more or less annoyed by volleys of coughing, scraping the throat, or other noises peculiar to respiratory disturbances. In fact this becomes so common that it often passes unnoticed unless it is near to us and of a particularly aggravating character. Doubtless many of these cases are acute and are destined to recover spontaneously, but a very large number, at one time acute, are now chronic, and because of neglect or improper or unskillful treatment have gone on to such marked pathological change that they go about seeking relief where none is found and become the bane of many a practitioner.

It should be understood that I am speaking here of infectious processes only and not of conditions the result of tumor, such as aneurysm, or the chronic passive congestion of valvular heart disease, or structural changes found in such incurable entities as emphysema and advanced tuberculosis.

There is undoubtedly a rather large group of respiratory patients who are suffering from an unrecognized infection of the mucous membrane, not merely a surface infection, but an infection where the bacteria live, thrive, and grow deep down in the submucosa, causing there, in time, abundant connective tissue proliferation and complete functional change. Such patients are in the light of present day knowledge carriers of certain types of microorganism attenuated in virulence, to be sure, but culturable on satisfactory media, again becoming lethal when used experimentally. It is remarkable how resistant the body becomes to the ulterior effects of such a chronic infective process, and even a superadded acute infection such as that caused by the pneumococcus does not always destroy the life of the host, contrary to what might be expected. Many such cases recover from the acute process only to have for the remainder of their lives the annoying symptoms of the old chronic condition.

The profession at large has been slow to learn the nature of infection of the respiratory mucous membrane save in pneumonia and tuberculosis which have been studied assiduously. For example, a

sputum is sent to a health laboratory for examination, the specimen is reported as containing or not containing the tubercle bacillus although it may have swarmed with myriads of other organisms which are regarded as simply incidental—a mixed infection, if anything is said about it at all. The pneumococcus is recognized as a potent enemy, but it is only within a very short time and as a result of academic rather than actual clinical interest at the Rockefeller Institute that the pneumococci have been classified into four distinct groups according to their virulence and prognostic importance. It is now known that every case of pneumonia falls under one of the four headings according to what the laboratory specialist has to say about the sputum; and, consequently, we have had placed in our hands a specific serum for each type according to the identity of the enemy we are fighting. Work of this kind is not only far-reaching but epoch making in that it gives us a wider acquaintance with our bacterial enemies, and affords a constructive plan of battle out of which we have greater reason to expect victory than ever before.

Without meaning to offer any drastic criticism it is only fair to say that no class of disease is more unskillfully treated by the average medical man than infections of the lower respiratory tract, and especially so if they be chronic. Fortunately the acute cases have a remarkable tendency to recover whether they be accorded all, any, or no treatment whatever, and it is undoubtedly due to this fact that the family practitioner makes light of a simple cold and considers his duty well performed if he prescribes just to make the patient feel that something is being done. This is, in the last analysis, the fault not of the doctor but of medical teaching. In all of these diseases indirect treatment has ever been the rule. Too much attention has been paid to the bowels; the liver and the kidneys; to the temperature, pulse and respiration; to calomel, squills, ammonium chloride, ipecac, rhinitis tablets and the compound tincture of benzoin; and not enough attention, may one say, no attention at all, to the microorganism causing the difficulty and how it may be combated.

It has not been emphasized that cough medicines do not cure but only increase or diminish the secretions and stop the tickling through the beneficial action of some paralyzant such as heroin, which constipates and may set the stage for the entrance of that arch villain, opium, who has probably destroyed more lives than he has ever saved.

A few simple rules stand one in good stead in working with these respiratory infections. One should have at his right hand the skilled services of a trained bacteriologist who must be cooperative and interested in the clinical side of his work as well as in the test tube and microscope. In every case the sputum should be obtained, and cultures taken from the nose and throat whenever symptoms are referable to these organs. It should be a standing order that the culture is to be saved with the purpose of making a vaccine if this be deemed necessary.

The organisms most commonly found are some member of the streptococcus or staphylococcus



family and the micrococcus catarrhalis. Some attempt should be made to determine the site of bacterial growth. Not infrequently the voice is normal and the larynx looks healthy, but just below the vocal cords the mucous membrane looks swollen and red and the tracheal rings cannot be counted. If a tracheitis is present, the patient when asked where he feels the tickling will point to the episternal notch, to the area directly behind the collar button. Plaques of mucus, mucus, and blood streaks are often seen, especially when the streptococcus mucosus is present. A continuous desire to scrape the throat indicates the presence of mucus on the vocal cords, and not infrequently the patient cannot speak distinctly until this mucus is shaken off by the scraping or "hemming" process.

In chronic tracheitis one often finds the mucous membrane over both true and false cords covered with crusts. There is a dry, hard cough which becomes easier when the crusts soften and can be coughed out. The secretion in all of these cases is very viscid in character owing to an excess of mucin, consequently when dried it becomes very firmly attached to the epithelium and on coming away leaves a raw, bleeding, eroded surface. The voice is very husky, and at times there is aphonia. Such a condition may be limited to the trachea or may extend downward into the larger bronchi. In one case, upon examination of the right superior bronchus with the bronchoscope we entered a small abscess cavity which had apparently been encapsulated. Culture showed a staphylococcus organism.

In those cases of so-called chronic bronchitis with copious, fetid discharge, one must always keep in mind the possibility of a foreign body in a bronchus. One such patient, the son of the president of a great mercantile company, had been the rounds in Europe before the great war, and a diagnosis of pulmonary tuberculosis had been made by several eminent physicians. An x ray plate showed an encysted collar button far down in the right bronchus which had been there for about eleven years. This was successfully removed by Dr. Chevalier Jackson, then of Pittsburgh, and the patient recovered, although it required several months for all of the active symptoms to subside. This is by no means unique, as several bronchoscopists have reported similar experiences.

The method of procedure in all cases is as follows: A careful history, especially as to how the condition began; its probable origin; whether following pneumonia, grippe, etc.; question of associated disease, heart, kidneys; duration; local symptoms; character of cough, worse at night or when lying down; what periods of ease if any; effect of climatic or barometric factors; amount, character, odor, color, and consistency of sputum; and the kinds of treatment that have been already employed.

In the local examination the nose and nasopharynx must be studied for obstruction and the presence of pus. Occasionally the patient complains of coughing and gagging, which we find to be the result of a chronic nasal sinus disease with postnasal discharge and dried secretion which gets down into the hypopharynx, drags on the epiglottis and rima glottidis, and sets up severe spasms of

choking until the offending discharge is loosened and spit out. The larynx and trachea must be studied with the laryngeal mirror, and it is often necessary to cocaineize quite thoroughly with twenty per cent. cocaine before we can get a view of the region below the cords. In case this indirect method fails, we can proceed with the direct speculum and inspect the trachea and bronchi by bronchoscopic methods. In every case a specimen of secretion must be secured, either during the examination or when the patient coughs it out. This is cultured and carefully gone over by the laboratory man who furnishes a full report of the bacterial flora.

X ray examination of the nasal sinuses, and of the chest may be essential in a given case, and a Wassermann may throw surprising light on a baffling problem.

Physical signs do not afford any great help except as to the location of the lesion—that is, which lung and what part of the lung is affected. In our experience, physical signs even when determined and recorded by an expert examiner are not of nearly so much value as the x ray, although this latter is also capable of being misread.

Naturally the entire question of treatment resolves itself into two factors: the improvement of the patient's general resistance, and the destruction of the bacterial parasite. The former has been the chief weapon of the lung specialist these many years, and is too well known to need mention here. A newer phase of treatment which does require special mention is the use of vaccines. These have proved so successful in my hands in increasing the general bodily resistance that it is surprising how many men seem opposed to their use. There must be something in the way the vaccines are made which affects their efficiency. Personally, I do not favor the stock variety for several reasons, and always use the autogenous kind whenever possible. Dr. T. S. Schlauch, of this city, has made these for me for some years and I cannot testify too strongly to their value. This excellence probably lies in the fact that he does not destroy the bacteria by heat in making the vaccine, but uses cresol or a very mild carbolic solution. Heating is capable of exerting some lipid change which renders the vaccine inert or at least ineffectual, and it is entirely unnecessary. The vaccine is counted as 500 million in one cubic centimetre. We begin with fifty million in most cases and wait for the reaction, both local and general, to subside before giving another dose. Quite often one can increase a half c. c. at each dose. Whenever a too marked or a violent reaction is obtained we usually discontinue vaccine treatment temporarily and watch for recurrence of old symptoms or absence of them as the case may be. A vaccine does two very helpful things, it increases the appetite and makes the patient sleepy, and is therefore a better tonic than most of the commonly used drug combinations.

If a drug combination seems desirable, the French ampoules of Clin & Cie. (No. 627) are excellent. These contain glycerophosphates of iron and soda, arsenate of soda, and sulphate of strychnine. One of these sterile ampoules is used hypodermatically twice a week, rarely three times. After the third



dose the patient will often say that he feels much improved.

As for the destruction of the microorganisms by direct treatment, this is a matter which has been sadly neglected. Even the nose and throat specialist has not always made the most of his opportunities in applying bactericidal medication, chiefly because most agents have acted severely on the normal body cells as well as on the bacteria, and thus the patient has been made worse instead of better. Silver nitrate has been the old standby, and when judiciously used it is very helpful. It should not be swabbed on with an applicator as that method is very disagreeable, and by bruising the soft tissues may engender a reaction which does more harm than good. With a De Vilbiss atomizer (No. 52) it can be sprayed directly into the trachea, or if it is desirable to reach the bronchi it can be dropped in with a laryngeal syringe. A two per cent. solution is sufficiently strong, about five minims at each instillation. Recently a preparation known as silvol, an analogue of silver nitrate, has given good service in the hands of several men at the Manhattan Eye, Ear, and Throat Hospital. Occasionally where direct medication of a given bronchus has been desirable, we have passed the bronchoscope under local anesthesia and have instilled our antiseptic through a soft rubber catheter passed through the lumen of the bronchoscopic tube.

The silver preparations are especially helpful where one has to do with crusting, for they increase all secretions to a marked degree, render them less viscid, and by stimulating the mucous glands help to remove from the submucosa great masses of bacteria which have been entrenched there.

Much is to be looked for from the new dichloramine-T of Carrel-Dakin. This is now made up with an oily base known as chlorocane and is fairly stable as compared with the earlier solutions which were readily spoiled by contamination and decomposed by light and had to be made up fresh every day. Either a one per cent. or a two per cent. solution may be used in the trachea and bronchi by instillation or spraying. In beginning treatment of those cases where there is much discharge or crusting it is better to use a silver preparation for a few days, and then change to dichloramine-T when one can be sure that this agent will come directly into contact with the infected surface.

One reason why treatment of this class of patients has failed in the past is because neither patient nor doctor has realized the importance of persistent and repeated applications of bactericidal agents. Inhalations such as the compound tincture of benzoin, while of value in certain acute cases, are not usually concentrated enough in action and not frequently enough applied. Bacteria grow at an enormous rate on the respiratory mucous membrane where heat, moisture, and absence of direct sunlight make cultural conditions ideal; therefore, ammunition must not be frugally used, but a nearly continuous barrage fire must be maintained to win the battle against such overwhelming propagation. It is useless to administer a treatment by direct instillation and tell the patient to come back the day after tomorrow, for by that time the effect of the bactericide

has long since been lost. These patients must be treated at least once every day. In private practice the effect is so marked that they do not at all object to coming in morning and evening and thus shorten the time of convalescence very markedly. Twice a day is the rule in all severe, chronic cases and in all of the acute ones with active symptoms or tendency to complications in the ears and sinuses. The gratitude of these sufferers more than repays the physician for the time and patience he is obliged to give to them.

*Conclusions.*—From an intimate and intensive study of a large number of cases of chronic, chiefly pyogenic, infections of the larynx, trachea, and bronchi, both in hospital and private practice, it would seem that such infections are seldom diagnosed in the acute stage. Questioned as to previous treatment, nearly all of these patients said that they had taken much medicine by mouth without seeing any permanent benefit, and that the activities of the physicians whom they had consulted were limited to chest examination, sputum tests, and a negative report as to the presence of pulmonary tuberculosis. In many cases the patients had been carefully advised as to diet, fresh air, exercise, etc., but almost none had received any kind of local treatment other than inhalations to be carried out at home, and an occasional swabbing of the pharynx and larynx with a silver or iodine preparation.

In the light of such evidence it would seem wise for those who make a specialty of throat and lung disease to enlighten the profession as to the method of procedure in the diagnosis and treatment of cases manifesting chronic hoarseness and disturbing cough. Especial emphasis should be placed upon the importance of systematic and thorough treatment in all acute respiratory infections with a view to decreasing the number of chronic cases now so frequently seen in all branches of medical practice.

14 CENTRAL PARK WEST.

## WHY IS ASPARAGUS FORBIDDEN DURING GONORRHEA?

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The idea that the ingestion of asparagus is to be avoided, at least during the acute and subacute stages of gonorrhea, seems to be widespread not only among the members of the medical profession, but also among that portion of the laity which furnishes the greatest contingent of the patients affected with the disease. In quite a number of older and newer books on the subject in which the dietetic management of gonorrhea has been more or less fully considered, and also in the periodical literature, asparagus appears most frequently among the forbidden articles of food, and sometimes conspicuously as the arch offender. During an extended practice in the treatment of gonorrhea I had frequently the opportunity for the examination of urine voided within a short time after the ingestion of asparagus and the experience gained thereby soon made me look somewhat skeptically upon the correctness of the interdiction of asparagus, the

more so as I was not able to detect in the literature any definite statement of the reasons for the elimination from the diet of an article of food, which from its character is not only considered a wholesome one in general (1), but rather seems to promise a favorable effect upon the congested state of the mucous membrane of the urethra during this period. So I have become somewhat suspicious that, like not a few other doctrines, the ban on asparagus, of obscure origin, passed without any close investigation through conventional tradition into the medical literature and into the mind of the profession. Therefore in practice I usually have not prohibited the eating of asparagus and the result has not changed my opinion, and, while probably it is not a matter of much importance, I have felt justified in bringing it before the profession in order to have the truth established.

Having gone over a large part of the literature in search of definite statements of convincing reasons for or actual proofs of the injurious effect of asparagus I shall refer to a few authors. One of the most outspoken adversaries, the younger Zeissl in his numerous publications on the subject (2), usually applying exactly the same phrases and words, says that the patient should be allowed a moderately nourishing diet, if possible entirely vegetable, particularly milk, vegetables, fruit. Celery, asparagus, caviar, black coffee should be avoided, or briefly all articles of food or stimulants which increase the secretion of the kidneys and cause erections. Contrary to the opinion of most other authors Zeissl insists that frequent evacuating of the urine irritates the inflamed mucous membrane of the urethra. Lydston (3), considers a restricted regimen necessary, not only because of its beneficial effects from an antiphlogistic standpoint, but for the purpose of diminishing the waste products excreted by the urine. It is on the amount and character of these waste products that the irritating properties of the urine depend and there is nothing so efficacious in diminishing its acidity as attention to diet, the ideal regimen being bread and milk. Stimulants of all kinds, such as alcoholics, tea, and coffee should be interdicted. The more closely a vegetable diet is adhered to, the better, providing a bread and milk regimen be not acceptable. Asparagus and tomatoes, however, are to be avoided. R. W. Taylor (4) says that careful attention to diet is an important consideration. It should be light and plain, and in moderate quantity. All highly seasoned foods, salads, gravies, soups, and condiments should be absolutely interdicted. Coffee, cocoa, beer, alcoholic liquors, ginger ale, and asparagus should be avoided. In a more recent publication R. Guiteras (5) advises avoidance of all foods which give rise to irritating compounds in the urine, such as asparagus, tomatoes, rhubarb, and all sour, pickled and spiced dishes, especially the condiments, pepper, pepper sauce, catsup, chile sauce, etc. In an article entitled, Scientific Knowledge Logically Applied to Acute Gonorrhea of the Male Urethra (6) G. S. Peterkin among other things forbidden specially mentions bananas, rhubarb, tomatoes, and asparagus.

From these citations, which easily could be

multiplied, it appears that the reason for the restrictions of the diet is the increase of the volume of the urine secreted. This theory of Zeissl is strongly opposed by Guiteras and Peterkin who insist on the ingestion of large quantities of water, or in case of considerable acidity of the urine, of alkaline mineral waters or solutions or salts of potassium. Other factors are the causation of erections and the furnishing of irritating waste products excreted in the urine. The latter are to be referred to the crystals of oxalate of lime in the case of tomatoes, rhubarb, celery, and possibly coffee, tea, and cocoa, but not asparagus. I have not been able to find any evidence that asparagus increases the tendency to erections, which is generally acknowledged to exist in a more or less pronounced degree in the majority of cases owing to the congested condition of the urethra and surrounding tissues. Under these circumstances it would be very difficult to decide in a single instance upon the participation of asparagus in the sexual irritation. However, to answer the principal charge, the production of chemically injurious substances in the urine, it will be necessary to carefully scrutinize the chemical constituents of the plant asparagus.

Although in France the shoots are used for the preparation of a syrup, the root is really alone official in the shape of a tisane which is prescribed as a diuretic in cases of dropsy associated with diseases of the heart, but its medical value is considered problematical. In this discussion we have to do only with the shoots as the real article of food. Like the root they contain, besides sugar, albumin, mucus and the alkaline mineral salts which are found in varying quantities in all vegetables articles of food, principally asparagin or aminosuccinamic acid ( $C_4H_8N_2O_3 + H_2O$ ), an amido derivate of succinic acid, containing 21.2 per cent. of nitrogen. It forms transparent lustrous, rhombic prisms, of 1.519 specific gravity, soluble in forty-seven parts of water at 68° Fahr., and in acids and alkalies; it is physiologically inactive and its medical properties are doubtful. Discovered first in 1805 in the shoots of *Asparagus officinalis* and named after this plant it has gradually been traced in the widest distribution over the vegetable kingdom. Though the amounts are smaller than in asparagus it is found in considerable quantities in the leguminous vegetables, peas, lentils, beans; among the cereals in oats; and in much larger quantities in potatoes and sugar beets. It is always found in the greatest quantities in sprouting plants; in the potato it may furnish as much as forty per cent. of all nitrogen. That asparagin owes its origin to the disintegration in the sprouting plants of albuminous bodies becomes evident from the fact that the albumin in the sprouting plants becomes diminished in proportion to the increase of asparagin; it remains in the sprouting plant for a short time if exposed to light, being regenerated into albumin.

Asparagin, when young and tender, is very easily digested, even by invalids. Though not of high nutritive value, there is very little doubt that its use leads to a true economy of food during digestion, in other words to a healthy assimilation of food principles, and more particularly of proteins. Experi-



ments on herbivorous animals place asparagin, as a nourishing substance, in line with the gelatines, having the effect of saving albumin and thereby allowing of the formation of albumin during a deficiency. In carnivorous and omnivorous animals, however, addition of asparagus to the food did not result in a reduction of albumin metabolism, but rather in an increase of the disintegration of albumin. This stimulus to the disintegration of protein in the intestines during digestion leads to the production of an organic sulphur body known as methylmercaptan, which is absorbed and becomes responsible for the well known peculiar disagreeable odor of the urine. There is no evidence that the presence of this substance in the urine is in any way irritating.

Substances producing purin bodies and excess of uric acid are present in asparagus to an extent which perhaps cannot be entirely neglected, although in smaller quantity than in oatmeal, peameals, beans, and particularly in all kinds of fish and meat. It is probable, however, that the alkaline salts present in asparagus as in all vegetable foods, would compensate any uric acid forming tendency and keep the blood sufficiently alkaline to prevent the formation of insoluble urates.

There remains to be considered the condition of the urine itself after the ingestion of asparagus. It is usually of normal specific gravity and of light color. The chemical reaction may be slightly acid, amphoteric, neutral, or more frequently alkaline. The urine may be clear immediately after being voided, but commonly it is at once more or less deeply clouded. This cloudiness, at first uniform through the entire quantity, cannot at once be distinguished from that caused by the presence of pus or of mucus, but gradually it begins to thin, showing many minute clear areas and small whitish flakes which soon begin to sink and to settle at the bottom of the vessel as a white, gray, or even yellowish sediment. The settling proceeds much more rapidly than that of mucus or pus. On heating or boiling the cloudiness increases, but immediately and entirely disappears when some acid, preferably acetic acid, is added, sometimes with the development of small gas bubbles. The sediment principally consists of the neutral and basic phosphates of the alkaline earths, calcium and magnesium, which normally are kept in solution as acid salts if the urine contains a sufficient quantity of phosphoric acid and soluble combinations of phosphoric acid with the alkalies sodium and potassium, but are precipitated as neutral or basic salts whenever the acidity of the urine is diminished. Therefore the cloudiness is not at all restricted to asparagus, but also appears after rhubarb, horseradish, beans, various kinds of cabbage and copious drinking of milk, and alkaline mineral waters, with great individual variations. In fact the condition of such urine is almost identical, except for the peculiar odor, with one purposely produced by the administration of solutions of some potassium salts, as particularly recommended by Guiteras. Under the heading of Alkaline Diluents, he says that the alkaline salts of potassium and sodium are administered for the purpose of reducing the acidity of the urine, thus making it less

irritating to the urethra. The potash salts, while not so well borne by the stomach, are more effective as diuretics and for rendering the urine alkaline; they are the acetate, the bicarbonate and citrate of potassium in doses of fifteen to thirty grains. The action of all these salts of sodium and potassium is to reduce the acidity of the urine. They escape by the kidneys as carbonates. The acetate is the most efficient, but is not as well borne by the stomach as the citrate.

The sediment generally is of a grayish white color, sometimes it feels soft, like dust, sometimes slightly gritty or sandy; under the microscope one meets mostly the amorphous, dustlike elements of the basic salts of the alkaline earths which resemble the salts of uric acid, but occasionally the spear or wedge shaped crystals of the neutral phosphate of lime are found, or the coffin shaped crystals of the ammoniated phosphate of magnesia, when the alkaline reaction of the urine is due to the decomposition of urea. Altogether the asparagus urine practically represents a physiological phosphaturia without any increase of the phosphates themselves, which, outside of ingestion of certain substances into the digestive organs, occurs under various conditions, particularly under some nerve influences. Ordinarily it does not cause any subjective symptoms and probably for that reason escapes observation, but in the case of asparagus the peculiar, often strong odor is more likely to attract attention and lead to examination.

While at the present time one must not insinuate that a physician would be satisfied with a mere inspection of a patient's urine, I know that not so very many years ago patients with phosphaturia were treated for weeks and longer for catarrh of the bladder; also that the cloudiness on heating and the sediment have been mistaken for albumin; in fact I have seen patients of mine refused life insurance until the attention of the examining physicians had been directly called to the presence of phosphaturia. With such an experience one may well feel justified in assuming that in years back similar mistakes originally led to the condemnation of asparagus as injurious in gonorrhea, and that this erroneous impression has gradually been accepted without much further investigation. Exacerbations of gonorrhea certainly are likely to occur subsequently to an ingestion of asparagus, but that is no proof that it is really caused by it, and before judging one ought to carefully investigate what else had been eaten or drunk with the asparagus. It seems improbable that of the many substances of similar composition asparagus alone should have an injurious influence.

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43 ROCKLEDGE AVENUE.

A new treatment for chronic cases of malaria with enlarged liver and spleen consists in the intravenous injection of basic colloidal quinine.



## SOME INTERESTING RECTAL CASES.

*With Comments on the Lessons They Teach.*

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The immediate objective of the physician in his treatment of the sick, is obviously, the cure of the patient, and his restoration to his accustomed place in the social scheme. But this is by no means his sole duty, for he must so utilize the knowledge, experience, and skill thus gained, as to enable him to prevent disease in others, when possible, modify its course, shorten its duration, and ward off its complications. Unless this has been attempted, consistently, earnestly, and diligently, the doctor has fallen short of what is expected of him, for he owes a duty to the community no less than to the individual. To the credit of the medical profession be it said, that it has always upheld this enlightened view of its responsibilities, indeed has at all times been found in the forefront of every educational effort to urge a higher standard of the obligations of the physician to society as a whole. Its best ideals, noblest impulses, and loftiest aspirations have been at all times centred on efforts to diminish the sum total of human suffering, by stamping out preventable illness. It is in furtherance of this thought that clinical observations are made, and interesting or unusual cases recorded, for as the lessons they reveal today become crystallized into the solid scientific achievement of tomorrow, they furnish weapons with which medicine is enabled to forge ahead in its campaign against ignorance and disease.

It falls to the lot of the proctologist to be consulted by patients whose cases present features which must possess a special interest to the physician. This arises from the fact that disease of the lower rectum and anal canal may bring about such varied changes in the neighboring organs, and such profound alterations in their functions because of reflex and other disturbances, as to make it necessary for the physician to be thoroughly familiar with their manifestations, in order to understand their causes, combat their symptoms, and overcome their ill effects.

The proctologist is frequently consulted in cases in which local symptoms dominate the picture, notwithstanding that the disease is in other parts of the body, conversely, with manifestations which point to foci in adjacent organs, the sole cause of the disease may be found in the anorectal tissues. Indeed, rectal, or perirectal disease has been known to simulate constitutional conditions so closely, as to be mistakenly treated for it, at least for a time. Prolonged suffering, and even serious disability may result from comparatively slight local trouble, often controllable by minor surgical procedures; on the other hand, conditions which are a grave menace to the life of the individual may, at the outset, cause no alarming changes, and the unsuspecting medical attendant may be lulled into a fancied security, though the patient is already the victim of a formidable malady. It is because of these premises that these cases have been singled out from daily prac-

tice, and concrete examples presented of features which may be helpful in avoiding errors.

CASE I.—E. E., twenty-five, unmarried, suddenly became ill after her day's work, with excruciating pains in the rectum and anal canal, radiating into the lumbosacral region and thighs, and with cramplike sensations over the lower abdomen. The patient had no history of previous illness or attacks, no constipation, vomiting, menstrual or urinary disturbances. The temperature was ninety-eight, the pulse ninety-four. The muscles of the pelvic outlet were in a state of marked spasm, the sphincters and levator ani tightly contracted; those of the abdomen were rigid, with no localized tender points that could be ascertained. No satisfactory rectal examination was possible at this time, but digital examination was negative, beyond the findings noted above. Two general possibilities were considered: local trouble in anal canal and rectum, such as a foreign body, fissure, acute invagination with strangulation of a portion of the rectum or pelvic colon; or some abdominal disease. After four or five hours the pain and rigidity diminished, permitting a rectoscopic examination, which was negative; on digital exploration of the rectum, however, marked tenderness was elicited on the right side of the pelvis, in the region of the pararectal fossa, over what seemed a boggy mass. The abdominal muscles being less tense, a decidedly tender point could be made out in the right iliac fossa, but there were no other signs of appendicitis. The patient was removed to the hospital the next day, with a diagnosis of a possible appendicular abscess, which was confirmed by the attending staff. Temperature one hundred, pulse eighty-four, total white blood cells 15,000, polynuclears sixty-nine per cent. At operation the peritoneal cavity was found to contain a quantity of bloody fluid, coming from a ruptured cyst of the corpus luteum of the right ovary, which was still bleeding. Appendix normal.

It must seem clear from the above, that the disease need not necessarily be in the rectum even if the most prominent subjective symptoms point toward it; the pain in the rectum, and the rigidity of the muscles in this case, were reflex phenomena, excited by the irritation of the lesion communicated to adjacent parts of the cord, and deflected to the anorectal tissues. A proctoscopic examination brought out at once negative findings in the rectum, and a clue to the location of the disease, though not its nature. We know of a case of appendicitis with rectal symptoms, in which the patient barely escaped operation of the rectum, because the condition was mistakenly attributed to rectal trouble; on the other hand we recently operated on a physician in like circumstances, but with symptoms less intense, in whom a sliver of wood,  $1\frac{1}{4}$  inches long and one quarter inch wide, was lodged transversely in the anal canal.

CASE II.—D. P., a married woman under forty, was referred to the Rectal Clinic of the New York Hospital, following an operation for the correction of flat foot four weeks before, made necessary to relieve the patient of lumbosacral pains radiating to the thighs, heavy, dull feeling in the lower back, weakness of the feet, and inability to attend to her usual duties. She had been troubled with increasing constipation, straining at stool, and occasional bleeding from the rectum; all of which continued unchanged after her operation. Proctoscopic examination revealed a mass, the size of a small apple, pressing upon the anterior rectal wall, reducing its lumen considerably. With the patient in the squatting position, the mass could be readily outlined about four inches from the anal margin, conveying to the examining finger the impression of an irregularly round, somewhat nodular body, apparently connected with the fundus uteri. A diagnosis of a probably malignant neoplasm was made, and an operation was advised, but was declined by the patient. Here we have disease of the genitorectal apparatus, which in its subjective symptoms resembles flat foot closely enough to have been mistaken for it, even to the extent of surgical remedies

being carried out to cure it. We must bear in mind, too, that the presence of one disease does not necessarily exclude another. A patient with flat foot (for indeed she had it) may become the victim of carcinoma just as readily as one without it. Further than that, only a thorough local examination of the parts could reveal the seat of the real trouble, for most of the subjective symptoms might easily have been caused by the flat foot; that is, all except the bleeding, which did not fit into the picture at all, and for which a satisfactory explanation should have been sought. If that had been done, the patient's condition might have been diagnosed at least four weeks earlier, an interval, it must be assumed, which would have made an appreciable difference in the management, if not in the treatment, of the case; for a diagnosis of malignant tumor is of but little value, if the disease is already inoperable.

CASE III.—This case has been reported in detail elsewhere (*New York Medical Record*, November 18, 1916), and will only be briefly featured. A married woman of twenty years of age had been complaining of obstinate constipation, which had grown progressively worse, until there was only one bowel movement in nine days, invariably accompanied by much distress. She was subject to attacks of vertigo, headaches, cramplike abdominal pain, tenderness in the right iliac fossa, and tympanites. Menstruation and urination were normal; there was no fever, vomiting, or loss of weight. Her condition was attributed by her doctor to a chronic appendix, and an abdominal section was advised. When she came under observation by the writer, he was struck with the thickened, hypertrophied sphincters, which surrounded the anal canal very tightly, interfered with a proper digital examination, and seemed to act as a decided cause of obstruction to a normally formed fecal movement. She was therefore advised to permit a division of the muscles, before consenting to the more serious abdominal operation; to this she agreed, and it was performed under local anesthesia, followed by gradual dilatation with Wales bougies. The result proved striking; the subjective sensations were relieved promptly, completely, and permanently, with the return of a daily normal movement, and she was able to return in a few days to her regular duties. Case III illustrates the obverse of Cases I and II: inasmuch as symptoms which pointed to a serious abdominal condition were found to be due to disease of the anal canal; furthermore, but for the local examination, and its correct interpretation, the patient might have felt necessary to submit to an abdominal operation, involving invasion of the peritoneal cavity, which would in all probability have afforded no relief.

CASE IV.—N. K., male, twenty-five, previous history negative, with no history of venereal disease, was taken ill one week before he came under our observation with fever, severe headache and backache, constipation, dysuria, and pain in the rectum. All other examinations, including the genitourinary tract, being negative, his trouble was diagnosed provisionally by his family physician as grip, and treated expectantly. His rectal and urinary symptoms, however, became worse, and he was removed to the writer's service at the Philanthropin Hospital, where under general anesthesia a fluctuating, sausage-shaped mass was made out on the under surface of the pelvic diaphragm, pressing forward toward the membranous urethra and in the general direction of the urogenital triangle. This was found to be due to an abscess. The abscess was incised, its contents evacuated, and the cavity drained, resulting in the recovery of the patient.

We know that deep abscess of the pelvirectal tissues is a grave infection, liable to result in rupture into the peritoneal cavity, or when localized anteriorly, into the bladder or urethra; hence its treatment must be prompt and radical. Infections of this character may give rise to constitutional symptoms for a longer or shorter time without any focal signs; hence in every obscure fever the pelvirectal tissues should be carefully explored, especially in the presence of urinary symptoms for which no satisfactory explanation can be found.

CASE V.—The patient was a married woman of twenty-six, referred to the Rectal Clinic at the New York Hospital by Doctor G., with a complaint of obstinate constipation, and straining at stool, as far back as she could remember. She had a feeling as though the bowel did not completely empty itself, and an annoying sensation as of a foreign body in the anal canal, which made her return

to the toilet necessary again and again after defecation. In addition to this, she had developed in the past three years protrusion and bleeding from the bowel, which were attributed to piles; as a matter of fact, she was sent to the hospital for operation to remove them. Inspection showed that she had indeed some small piles, but when the buttocks were well separated, and an attempt was made to introduce the finger into the rectum, the true cause of her trouble quickly became apparent; it was due to the presence of an obstructive band, one fourth of an inch wide, extending from one side of the anus to the other, bisecting it into two unequal halves, and preventing the expulsion of a normal sized fecal mass. In the absence of any history pointing to an inflammatory condition of the parts, or any operation upon the anal canal, it may be safely assumed that the trouble was of a congenital origin. The lower portion of the rectum is formed by the union of the caudal end of the enteron with the proctodeum, an invagination of the ectoderm at the anal site; these grow toward each other, and when they finally meet, the membrane between the two becomes absorbed, and a continuous tube is formed. At times, owing to some unknown fault in development, the membrane between the two persists, either in whole or in part, causing a varying degree of obstruction to the fecal current. The remedy in this case was simplicity itself, and its application resulted in a prompt cessation of the troublesome symptoms.

The lesson to be derived from this case appears to be clear enough, but it might not be amiss to repeat, at this point, that a careful examination of the anal canal of the newborn child should be made by the obstetrical attendant as soon after birth as possible. The anus should not be merely inspected, but a well oiled finger ought to be passed into the canal, one inch or more upward. A deep anal dimple may be the only evidence of an anal canal, as in one of our cases; at any rate, the discovery of a malformation of the parts at this time may be the means of saving years of suffering, if not life itself.

CASE VI.—An unmarried woman, under thirty, had been suffering from loose stools, containing mucus and pus, and protrusions from the bowel, a number of years. Her appetite and general condition were good, she had not lost any weight, and was able to attend to the demands of a rather strenuous occupation. However, she decided to consult her doctor, and was under treatment for four months with bismuth internally, starch enemata, and regulation of the diet, which gave her only temporary relief. She was referred to the writer, and on proctoscopic examination an ulcerated bleeding mass three inches from the anal margin was found, which partially surrounded the circumference of the bowel. The pathologist's report showed it to be an adenocarcinoma, and an amputation of the rectum was done by the vaginal route; the treatment, however, failed to save her life. There is one symptom in this case which should have put the doctor on his guard at once: the presence of bloody stools containing mucus and pus, which are never a part of the picture in bleeding from hemorrhoids. The age of the patient, and absence of loss of weight, are merely negative symptoms, which do not count in the presence of positive signs. Four months were spent in temporizing with a condition which should have received medical treatment immediately, and which a careful local examination would have disclosed at once.

The material presented furnishes food for thought and contains facts which cannot be disregarded. It could serve no useful purpose to cite any more cases; enough have been recorded to convey an adequate idea of the subject to the general practitioner, and even the specialist; enough to demonstrate how much depends upon a careful, systematic, and thorough examination of the parts. Mistakes will continue to be made, because the human mind with all its wonderful attributes is an imperfect instrument; but it is one thing to arrive at an erroneous conclusion after a full consideration of all the facts, and quite another to fall into error because we have failed to gather the best evidence obtainable to make out our case.



## HOW CAN WE GET ENOUGH SLEEP?

BY EDWIN F. BOWERS, M. D.,  
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On an average most healthy persons require about nine hours' sleep in order to be thoroughly recuperated. Women need and should have a half an hour to an hour more than men of the same age.

But this is entirely a matter of the individual's power to recuperate—to restore his oxygen balance, eliminate or burn up his fatigue poisons, and to replace his worn-out cells with fresh tissue pabulum. All of which depends largely upon the depth of sleep. If the sleeping chamber is stuffy and poorly ventilated no amount of sleep is going to produce the rested feeling that should come from sound sleep taken under hygienic conditions.

Of course, these hours of sleep do not apply to children. The rules governing their sleeping must be much more flexible than those applied to adults. Children growing rapidly need more sleep than those of slow growth. Children require and should get more sleep in winter than in summer. And vigorous children need less sleep than delicate children. At a rough estimate it might be said that babies can use fifteen to eighteen hours out of every twenty-four very profitably in sleeping. This period gradually declines, until at the third year the child requires about twelve hours. By the sixth year, if left to his own instincts, he takes about ten hours. Up to the eighteenth or nineteenth year this ten hour necessity persists. Growth being by this time attained, the sleep requirements drop an hour or more, and remain there until the advent of that second childhood, age—which reduces the period of reconstruction because the reconstructive faculty has been reduced.

To make children get up before they have had enough restful sleep to thoroughly refresh them is a foolish, health destroying crime against the child, and an insult to Nature. There's nothing we could possibly do—unless it would be to frighten them with bedtime tales of ghosts or hobgoblins—that reacts more disastrously on the nervous systems of children or youths of either sex than to deprive them of needed sleep. And nothing that will sow the seeds of future nervous instability more surely.

The best time for sleeping is that time that will favor the greatest degree of relaxation. With most people this is some time during the hours of darkness, when there isn't so much going on to distract the senses of sight and hearing. Just what hours should be devoted to sleeping is not as important as that there should be enough of them. The so-called beauty sleep, achieved during the hours preceding midnight, is a fact only because it adds to the number of hours which, under ordinary conditions, we might be supposed to spend in bed. Most of us get up at about the same time every morning—no matter how early or how late we've gone to bed the night before. So there isn't a word of truth in the old fable that one hour of sleep before midnight is worth

any two hours after. Sleep is sleep, provided only that it is sound, restful sleep—whether we get it at eight o'clock in the evening, two o'clock in the morning, or one o'clock the next afternoon. If we can get our sleep undiluted by disturbance so much the better.

In this connection it may be of interest to observe that we physicians are at last awakening to the fact that it is a job similar to the one made famous by the industrious Sisyphus to attempt to cure a neurasthenic who isn't permitted to sleep. We are beginning to realize that sound sleep isn't obtainable in a bed that rattles or squeaks or that shocks the nerves into semi-wakefulness by unusual slippings of the springs or unexpected creakings. The advent of the separate bed and the banishing of the double bed into the limbo of warming pans and night caps is a distinct advance from the standpoint of hygiene, sanitation, and more rational sleeping habits. When separate beds, or, better still, separate sleeping chambers, are in universal use, men and women, especially nervous men and women—and delicate children, will get a good deal more sleep than they do at present; they'll derive more benefit from the sleep they do get. All this will make it easier for them to do with considerably less sleep than they now require.

225 WEST END AVENUE.

# HIRSCHSPRUNG'S DISEASE WITH EVENTRATION OF THE RIGHT HALF OF THE DIAPHRAGM.

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Hirschsprung's disease is synonymous with megacolon congenitum, idiopathic dilatation of the colon. By it is meant a marked dilatation of the whole sigmoid colon with hypertrophy of all the coats of the colon, particularly the muscular. The case I wish to report is unique, because of the coincident occurrence of such a dilated colon with a marked eventration or elevation of the diaphragm.

CASE.—B. G., age twenty; saleswoman, Russian; was admitted to the first medical service of Dr. N. E. Brill, August 22, 1917, and discharged September 21, 1917. The chief complaint was pain in the right hypochondrium for the past two years. Family history was negative. Past history was negative, except that just prior to the beginning of her complaint she fell from a car, striking her right side.

*Present history:* For two years she has complained of pain in the right hypochondrium and chest, cramplike in character, increased by taking food, usually one hour after meals; nausea after meals; and frequently vomits, inducing some for the relief of epigastric distress and distention. She has frequent eructations of no particular taste nor odor; no jaundice nor hematemesis; is constipated; has frequent attacks of pain at night, but no cardiac or respiratory disturbance, and no genitourinary symptoms. She has frequent headaches, some loss of weight, and has had several fainting spells.

*Summary:* Cramplike pain in the right hypochondrium and right chest, nausea, vomiting, eructations, constipation, headaches for two years.



**Physical examination:** Her general condition was fair, she was anemic, and had spots of pigmentation on the abdomen. Respiration was increased and, at times, there was slight dyspnea; the nodes small, cervical, axillary and epitrochlears palpable. Head, ears and mastoids were negative. Eyes were normal. Mouth, teeth and gums were in fair condition; mucosa was negative; tongue moist and coated; throat negative. Neck showed no rigidity. Thyroid was normal. Heart apex was in the sixth space in the anterior axillary line. Right border was at the left parasternal line; action was slow and regular; no murmurs; pulse of a normal tension.

**Lungs:** There was dullness above the right clavicle, below it became tympanic and continued so to the costal margin. On the left side there was normal pulmonary resonance. On the right side in the supraclavicular region the breathing was rough and loud. Below the breathing became diminished and finally absent. At the end of inspiration there was occasionally heard a metallic tinkle. Posteriorly there was dullness over the right suprascapular region, below the shoulders, tympanic. Over the upper portion the breathing was rough and loud, below it was gradually diminished. On pressure in the epigastrium, or over the right hypochondrium, musical gurgling sounds were heard. On the left side, posteriorly, there was relative dullness and the breathing was somewhat rough.

**Abdomen:** The abdomen was perfectly flat. There was resistance in the right hypochondrium; the liver was not palpable, nor could its position be elicited by percussion. The spleen edge was fully two fingers below the costal margin. Kidneys were not palpable; no masses were felt anywhere. Extremities were negative. Summary: Loss of weight, palpable lymph nodes, cardiac displacement, pulmonary signs, palpable spleen.

**Blood examination:** Hemoglobin, 85 per cent.; red blood corpuscles, 4,000,000; white blood corpuscles, 10,000; polynuclears, 60; small lymphocytes, 26; large lymphocytes, 10; transitional 1; eosinophiles, 2; basophiles, 1.

**Stomach contents:** Fasting, 15 c.c.; gray-yellow; no food residue; small amount of mucus; congo positive; total acidity, 23; free hydrochloric acid, 8; test meal, 150 c.c.; of a brownish color; total acidity, 46; free hydrochloric acid, 20. Blood pressure—systolic, 90; diastolic, 70. Urine negative, stools negative.

**Report from the Röntgenological Laboratory:** The Röntgen examination of the chest showed almost complete absence of the lung markings on the right side. At the level of the second rib anteriorly there was seen traversing the chest a linear shadow, the convexity of which was upward. Above this shadow there apparently was normal lung. Below this shadow the lung structure was absent and was replaced apparently by air. The linear shadow described was the diaphragm, which was displaced upward by the intestinal viscera. The heart and the mediastinum were displaced toward the left. Fluoroscopic examination showed the diaphragm on the right side to be motionless in respiration. The Röntgen appearance indicates probably a diaphragmatic hernia or eventration. The differentiation between these two conditions is almost impossible.

The Röntgen examination of the gastrointestinal tract showed the following: No abnormality was seen in the esophagus. The stomach was situated vertically, displaced to the left and moderately posited, its lower pole in the erect position reaching about two inches below the crest of the ilium. Gastric tone was good and peristalsis was normal. The duodenal bulb was small, but regular in contour and not tender. The food started to pass at once through the pylorus, and the stomach seemed to be emptying rapidly. An examination made three hours post cibum showed almost the entire food in the jejunum and ileum; there was a moderate quantity still in the stomach. At the six hour observation there was a very tiny residue still in the stomach and the rest of the food was in the jejunum and the ileum. The entire colon was distorted and displaced to the right. It was difficult to determine exactly its different portions. An observation made forty-eight hours post cibum showed most of the colon outlined. The examination of the colon by means of a barium enema showed a markedly distended colon, not all of it outlined, and it was difficult to distinguish its different portions.

The patient was discharged from the hospital and, in a short time, began to have several attacks characterized by pain referred to the right chest and right hypochondrium, accompanied by vomiting, loss of appetite, marked constipation and weakness. On account of the frequent recurrence of these attacks, each of which would last for about three days—the intervals between such attacks being extremely short—the patient demanded some relief, even though surgical interference were required. Acting upon this demand the patient was readmitted to the gastroenterological service (Dr. A. A. Berg, Chief) of the hospital, and further study was then made of the abdominal condition. Particular attention was paid to the röntgenological examinations of the colon. In view of the rare findings during the preceding stay in the hospital, in which evidence was noted of the eventration of the right half of the diaphragm with marked displacement of the colon high up on the right side, it was decided to further this study by means of barium enemata. Five and a half quarts of the barium enema were found necessary to distend her colon—one and a half quarts being the usual amount required. X ray findings showed a huge distention and dilatation of the complete descending and transverse colons with a protrusion upwards to the chest, beneath the marked elevation of the right half of the diaphragm.

On November 17, the patient was operated upon by Dr. A. A. Berg. Laparotomy was performed and, immediately, the distended gut presented itself through the abdominal incision—the gut having a circumference about as large as a stout person's thigh. With the extrusion of the gut the patient temporarily ceased breathing, in all probability, due to a partial return of the heart to a more normal position, and to a descent of the diaphragm, with a sudden expansion of the right lung. About three feet of this distended colon was resected, and a side to side anastomosis was performed. Doctor Berg, after resection, on inserting his hand into the right upper quadrant, found that the diaphragm had descended, possessed respiratory motility, and that a hand's breath space existed between the diaphragm and liver. The patient made an uneventful recovery; the respiratory signs in the right lung approached much nearer the normal; subjectively, the symptoms improved considerably; the gastric symptoms disappeared; and constipation gave way to a normal bowel movement.

The patient was discharged from the hospital. Prior to discharge, however, a röntgenological examination of the thorax showed that the right half of the diaphragm had descended to the fourth rib. The shadow caused by the liver was very distinct, and a space of about three fingers' breadth persisted between the diaphragm and the liver. The left half of the diaphragm was somewhat higher than in the preceding examination, and the heart had assumed a position considerably more to the right. Fluoroscopic examination showed that there was respiratory motility on the right side, but the respiratory excursions there were much more limited than on the left side. There was no paradoxical respiration to be noted.

An analysis of the case made us appreciate that we had to deal with a marked dilatation of the colon, coincident with eventration of the right half of the diaphragm—a truly unique condition. There was no evidence to prove that the colonic condition was other than a congenital one. In reviewing the history we note that, while the constipation was somewhat of an obstinate one, it was never so marked as one expects to find in Hirschsprung's disease, where one of the cardinal symptoms is a most obstinate constipation. The curious feature was that the dilatation was coincident with eventration of the diaphragm on the right side rather than on the left. There must have been some pathological lesion of the right half of the diaphragm to permit of its marked displacement upward by the dilated colon. The puzzling factor was to account for the right sided eventration. The only etiological factor which

might have some influence on the right sided lesion was that the symptoms persisted for only two years, and were felt directly subsequent to the injury received by the falling from the car and striking the right side. This injury caused her, at the time, to remain in bed for two weeks, and, according to her story, she was considerably shaken.

Eventration of the diaphragm has been regarded as synonymous with several other conditions, and has been known ever since F. L. Petit reported a case in 1790. In 1849, Cruveilhier gave his conception of this condition under the same term. Some have used the terms dilatation, relaxation, muscular insufficiency, high position, elevation. Others have used the same terms to describe a pathological condition of the diaphragm, permitting the abdominal viscera to be displaced upward. The diaphragm, as a result, is greatly thinned as well as distended, but its three layers remain intact. In this respect, the condition is different from hernia of the diaphragm, which, whether true or false, is dependent on the presence or absence of a hernial sac, consisting of an opening in the sheet of the diaphragm through which the abdominal viscera pass into the thoracic cavity. All the terms mentioned are partially descriptive, though none are satisfactory. As its multiplicity of names suggests, eventration is one of the rarer lesions of the diaphragm. As to its frequency, Eppinger, in 1911, published the following comparison:

Type	Right side	Left side
True hernia	21	53
False hernia	34	527
Eventration	2	15

This gives a total of 635 cases, in which there were seventeen eventrations; the ratio of eventration to hernia being one to thirty-seven. Bayne-Jones collected a larger number, and the number of eventration cases has now risen to forty-six. Bayne-Jones added a third case of right sided eventration, occurring in a man of fifty-two who began to complain of gastric symptoms five years before admission to the hospital. The above described case makes the fourth of right sided eventration in the literature. Diaphragmatic hernia with protrusion of the stomach or other abdominal viscera into the thoracic cavity and a relative condition—elevation of the diaphragm—though not common, are of practical importance. Both may give rise to marked gastric symptoms. The former is an actual rupture of the diaphragm, the latter is not; although the term eventration, which is frequently used as a synonym, implies a rupture. While the right half of the diaphragm may be affected, nearly all the cases reported have been left sided. Elevation is usually, if not always, congenital. Hernia may be either congenital or acquired. The clinical symptoms and the physical signs of the two conditions are not essentially different, and the röntgen examination affords the most effective means of exact diagnosis and of differentiating the one from the other.

The diaphragm depends for its nerve supply upon the phrenics which arise from the fourth cervical and connect with fibres from the third, and even from the fifth. Along their course to the diaphragm they connect with fibres from the brachial

plexus. In the etiology of the condition, apart from being congenital, it may occur in diseases of the motor columns of the cervical cord, *e. g.*, anterior poliomyelitis, tumors—such as tubercle, gummata, lepra tubercles—in diseases of the cervical vertebra, fracture and dislocation of the midcervical vertebra, involvement of the anterior horns (hematomyelia) or into the meninges surrounding the same, mostly traumatic. We see it, also, in Duchenne-Erb paralysis; in tumor compression of the phrenics; in tuberculosis caused by a compression of the thoracic glands; as a neuritis; in infectious diseases, such as diphtheria; in alcoholic, lead, chronic arsenical, carbon dioxide, and opium poisoning; in acute and chronic inflammation in the vicinity of the phrenic or diaphragm—for example, pleuritis; in tabes; in progressive muscular atrophy; and both hysterical and rheumatoid forms have been described.

120 WEST SEVENTIETH STREET.

### Treatment of Sprained Foot in Military Prac-

tice.—Audion (*Paris médical*, April 20, 1918) comments on the large number of cases of pes equinus or equinovarus which have followed mere sprains among soldiers. Surgeons have been allowing men with such sprains to walk as soon as they feel able to, just as has been the custom in civil practice. The soldier, however, instead of resting as soon as the muscle concerned begins to be fatigued, finds so much pleasure in walking about and is so hardened to fatigue that he does not rest the parts sufficiently. The muscles fail to recover their mobility completely during rest, and the faulty attitude of the limb assumed in locomotion to minimize pain becomes fixed by contracture and retraction of the over-fatigued muscles. All these sprain cases should be put to bed when admitted and the condition of the foot examined carefully the next day. Where the patient is able voluntarily to flex the foot so that the sole forms an angle of 75° to 80° with the axis of the leg, he can be allowed to walk two hours every day provided he avoids external rotation of the foot and keeps the heel down normally at each step. If he cannot walk thus, he should remain in bed longer, or better, a plaster boot should be applied with the foot flexed—a procedure facilitated by the sitting position, the knee being flexed and the chair moved forward slightly in relation to the affected foot resting on the ground. Where voluntary flexion of the foot proves impossible at the first examination, passive flexion should be attempted. If it can be accomplished, the patient may walk, but not as long as the preceding group of cases; preferably he should be allowed to walk only to the table and the latrine, remaining in bed the rest of the time. If even passive flexion is impracticable, a plaster boot should be applied with the foot in the best position in which the patient can walk without distress. The boot should be used for ten days to two weeks. The patient must allow the boot to harden for twenty-four or thirty-six hours before he begins walking. To prevent any tendency to external rotation by pivoting on the heel in walking, the patient should be told to bend the knee as soon as the heel meets the ground.



# Medicine and Surgery in the Army and Navy

## EXAMINATION OF RECRUITS FOR TUBERCULOSIS.\*

*A Plan for the Special Examinations of Conscripts at the Place of Mobilization with Particular Reference to Tuberculosis.*

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Conscripts upon arrival at this camp are registered in the receiving camp and are assigned to the depot brigade, where they enter quarantine for three weeks, during which time they are clothed, vaccinated, and drawn for special physical examination. This examination is carried out under orders issued by the mustering officer to the commanding officer of the organization or organizations to which the conscripts belong, directing them to report to the supervisor of the special physical examining boards.

The special physical examining boards act in an advisory capacity to the mustering officer. They are under the direction of the division surgeon and supervised by the president of the tuberculosis examining board. These boards comprise the tuberculosis examining board, cardiovascular board, orthopedic board, and the neuropsychiatric board. They occupy a regulation barrack (plans A and B). The lower floor houses the orthopedic and cardiovascular boards, the x ray rooms, the reexamination rooms, supervisor's office, and laboratory. The upper floor houses the tuberculosis and neuropsychiatric boards, stenographers, and clerks. These boards are organized to handle 1,500 men daily, but with an additional force they can be expanded to take care of 2,000 men daily.

The conscripts report for examination in charge of a noncommissioned officer as follows: approximately 250 at 7.30 in the morning; 200 at 8.30 a. m.; 150 at 9.30 a. m.; 150 at 10.30 a. m.; 250 at 12.30 p. m.; 250 at 2 p. m., and 200 at 3 p. m. In this way large numbers of men are not kept waiting. On the day preceding the examination the mustering officer sends a duplicate of each man's form 1010, issued by the local board to the supervisor of the special physical examining board, together with a copy of the order to report for examination and the roster. The 1010 forms are arranged in the same order as the names on the roster, and the men are lined up single file outside the barrack building in the same order. The receiving is in charge of three clerks (enlisted men). All enlisted personnel of all the boards is in charge of one noncommissioned officer. The clerk at the entrance calls out the names, and each man enters the building as his name is called. He is handed his form 1010 and told to look at the name. As he enters, he states his age, which is written behind his name upon the roster, serving as a check indicating that the man has appeared for examination and has been given his form 1010. The

man passes into room 1-A (see plan), and hands his form 1010 to a second clerk, who asks the man his name and compares it with the 1010. He then copies the man's name on form 88, and passes 88 and 1010 across the table to the third clerk, who copies the name upon a blank reference card. These are returned to the conscript, who passes on and is instructed by an orderly to completely undress and place his clothes upon the mess table (1), which runs down the middle of the room, dividing the orthopedic space into two parts in such a manner that after the examination the men secure their clothes from the opposite side of the table, thus obviating the necessity of going back after them and interfering with traffic.

After completely undressing, the men take their place in line, single file, and pass to the orthopedic board, which consists of three medical officers and two clerks. Each man mounts on one end of the table (see plan 2) and approaches the orthopedic examiner (Plan A.—Fig. 3), who is stationed at the other end and conducts the foot examination. Note is made of their foot posture, the amount of disability, and the presence of congenital or acquired deformities. A statistical record of the finding is made on orthopedic form 1. The man passes on for the general examination. For this general examination two examiners are utilized (4). The recruits are lined up on the floor three feet apart in rows of six, each man standing on a mark painted on the floor (X). He places his papers in front of him on the floor; the various joints of the body are then examined for deformities and tested for limitation of motion, special attention being given to the spine and to general body posture. Upon completion of the examination the recommendation of the board is stamped on form 88 and the blank card, and a record is made of those accepted for full military duties, those accepted for special and limited service, or domestic service only, and those rejected. (No writing is placed upon form 1010; it is only to determine what action was taken by the local or medical advisory board.) In case of rejection or acceptance for special or limited military service, orthopedic board form 2 is filled in and kept by the board as the board's record, and a note is made upon form 88 of the cause of the rejection, or the reason for special or limited military service; or, if accepted, with abnormalities, a record of the abnormality is made and recorded on form 88, after the word "accept." The orthopedic board stamps its recommendation on the second line from the bottom on form 88. In case of rejection or domestic service only (special or limited military service), the board's clerk records the reason for such action on form 88, but if accepted with abnormalities for full military duty, the clerk places the number of the abnormality as it appears on the Surgeon General's office list. The exit clerk refers to the list and writes in the abnormality after the conscript has given up his paper; thus the conscript has no knowledge of the existence of an abnormality. The three papers (form 1010, form 88, and blank card) are returned to the man, who

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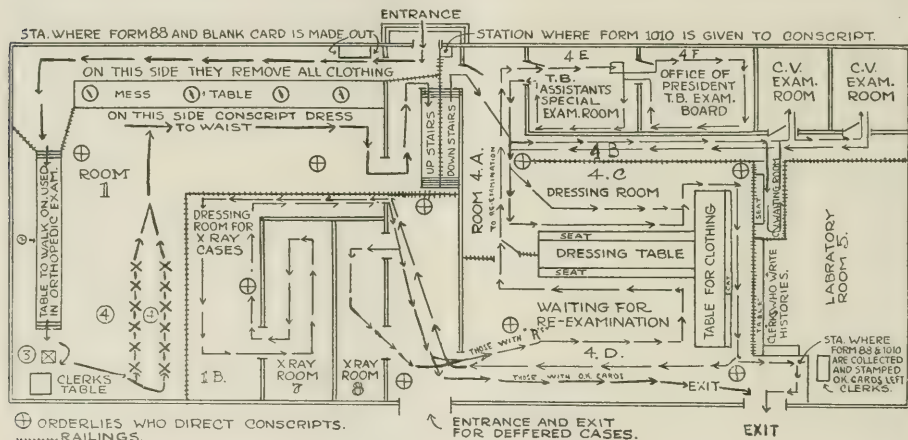


passes on down the side of the mess table opposite to his entrance; he removes his clothes therefrom and dresses to the waist, except shoes. An orderly stationed in this dressing space calls out constantly, "Dress to the waist quickly, except shoes; carry your shoes and remaining clothes on your left arm. Be sure you pick up your right papers and all your belongings. You cannot return." The man passes upstairs to be examined by a member of the cardiovascular board (room 2-A) for enlarged thyroid, which, if found enlarged, is indicated by placing a T upon the conscript's chest with a skin pencil. An orderly stationed at the head of the stairs first requires each man to examine his papers again and make certain that they belong to him, lest in dressing he may have picked up another man's papers. The man then passes on to the tuberculosis examiners, consisting of twelve examiners, each given a number which is written in lieu of signature on form 88 and on the blank card. The examiners are distributed at convenient places around the room; they are selected for the most part from infirmiry sur-

once; after the man leaves the base hospital, a second examination is made one month later, and a third one made three months after the first.

The tuberculosis examiners verbally interrogate each man regarding his family, past and present history along the lines indicated in circular B, this board, and according to the special blank form 1, this board. The physical examination is then made along the lines described in circular A,<sup>1</sup> this board, circular 20 S. G. O., and Colonel Bushnell's "Manifest Tuberculosis."

The principles contained in these circulars have been thoroughly mastered by the tuberculosis examiners. If the examiner has reason to suspect tuberculosis, either from the patient's family history, past history, present history, or the results of the physical examination, he is required to write a history of the case on blank form 1. In any event, a history is required, and the conscript must be referred to the x ray department under the following circumstances: 1. History of prolonged contact with, or death of a single member of the family from tuber-



geons in the camp, few of whom have had any recent training, and none of whom have had any special training in physical diagnosis. An effort is made to get officers from every organization who are especially interested in the work, so that there will be at least one officer in every organization who will have some special knowledge of the diagnosis of tuberculosis. This plan has proved advantageous, in that these officers are constantly on the alert for suspicious cases in their organizations. Approximately one third of these officers are detached from the organizations that are not full; they are assigned to the depot brigade for duty on the tuberculosis examining board. The other medical officers go back to their organizations during the quiet period. When insufficient infirmiry surgeons are available, the deficiency is made up by the addition of contract surgeons. During the quiet period the board conducts reexaminations of men who have had measles, influenza, pneumonia, and bronchopneumonia. These examinations are carried out at

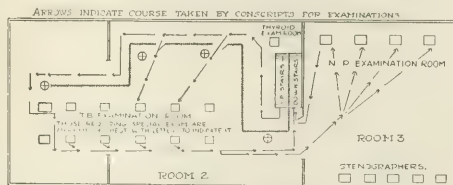
culosis. 2. Inability to work because of ill health. 3. Every case of well defined history of previous pleurisy, pneumonia, frequent or protracted colds, typhoid fever, or any other past illness of a prolonged character, which could have been tuberculous, such as prolonged cough and expectoration, hemorrhage from lungs, or expectoration of bloody sputum, loss of weight or strength, night sweats, fatigue, etc. A sputum examination will be requested in every case wherein cough or expectoration is claimed, or rales of any description are heard on auscultation. 4. Existing cervical adenitis, tuberculosis of the bones and joints, or rectal fistula. 5. Every asthenic and all cases wherein a man's physical condition is manifestly below par or lacking in stamina or resistance to disease. 6. All cases of chest deformity, scoliosis, kyphosis, funnel chest, pigeon breast, flat chest, and barrel chest. 7. All cases wherein physical examination reveals (a) im-

<sup>1</sup>The text of circulars, A, B, and C will be given in the second instalment of this article.

paired resonance on percussion. (b) Increased transmission of voice sounds over areas where it is normally not increased. (c) Abnormal breathing, such as sharpened vesicular or rough inspiration, with prolonged expiration, over areas where it is not physiologically normal, even though no râles are found. (d) All cases presenting râles. (e) Fixation of lung borders or Turban shading.

A copy of the above is given each examiner and he is required to follow it carefully. When the examinations noted above are distinctly negative, and the examiner is of the opinion that there is no evidence of disease of the lungs, pleura, or mediastinum, he accepts and indicates the acceptance by placing his number with a lead pencil at the beginning of the fifth line from the bottom on form 88. He also places his number on the blank reference card in the space assigned to the tuberculosis board. The tuberculosis examining board not only examines for lung abnormalities, but notes cardiovascular and neuropsychiatric defects. If a neuropsychiatric or cardiovascular defect has been observed or suspected, an N or C or both are placed upon the man's chest with a grease pencil, the man then passes on. If he bears an N, the orderly directs him to the neuropsychiatric board (room 3), otherwise he goes downstairs. In case positive evidence of tuberculosis is obtained as a result of the investigation under 1, 2, 3, 4, 5, 6, or 7, the examiner is obliged to fill in the important data on form 1, with remarks pertaining thereto. He also fills in the result of the physical examination. In case of abnormal physical findings, the examiner is obliged to record the results of inspection, percussion, and auscultation, as outlined in circular C, this board. This nomenclature was adopted to prevent the use of careless and meaningless phrases. While it does not cover all physical phenomena noted in physical examinations, it is sufficiently broad to cover all important findings, and at the same time to standardize our methods. A diagnosis is also required if a lung abnormality is noted. If tuberculosis is diagnosed, the character, location, extent and activity of the lesion must be indicated. In other lung diseases sufficient evidence must be given to justify the diagnosis. For instance, if uncomplicated chronic bronchitis is diagnosed, we expect the examiner to give the evidence on which the diagnosis has been made. We would expect a history of cough and expectoration for more than three months' standing; no alteration in percussion resonance; certainly a prolonged expiration over the lower lobes with non-resonating mucous râles. If emphysema is diagnosed, we would expect him to demonstrate a prolonged expiration with the lung border standing below the twelfth dorsal spine behind and below the seventh rib in the midmamillary line in front, with mucous nonresonant râles, etc. The examiner then checks for sputum examination, providing the conscript claims cough and expectoration, or if any kind of a râle is heard on auscultation. He then writes his recommendation to the president of the board and the reason the case is referred to the x ray department, such as "family history, past history, present history, physical findings, chest deformity, asthenia, etc." The examiner finally signs the blank

and in addition places his number on form 88 and the blank card. In the latter instance, he places an H after his name, indicating that a history has been written. The papers are then returned to the conscript, who passes downstairs, providing, of course, that he does not bear an N. Silence is maintained in the tuberculosis examining room by four orderlies, who see to it that the examiners are constantly supplied with men to examine. Inasmuch as the men are in their stocking feet, there is no noise due to movement about the room. Upon arriving down-



PLAN B.—Upper floor, physical examination unit; tuberculosis and neuropsychiatric boards.

stairs in room 4 A, the man confronts an orderly (four orderlies are used to direct traffic in this room), who observes whether the man has a history blank, a C or a T upon his chest. If none is present, the man is instructed to dress completely, 4 C., and pass on to the exit, where he gives up all papers to the exit clerks (three in number), who now stamp form 88 and the blank reference card "T. B. Exam. Bd. ACCEPT," behind the examiner's number. On the line below this (fourth from the bottom) he stamps "No N. P. defects noted by the T. B. Exam. Bd." In case an N. P. defect has been noted, this space will have been stamped by that board. On the third line from the bottom on form 88 and the blank reference, the exit clerk stamps "No C. V. defects noted by the T. B. Board," which, if noted, is stamped by the cardiovascular board. The orthopedic board has already stamped their action. If a history has been written, the man is instructed to put on his shoes and pass on without further dressing to the history clerk (four in number), who complete the history and direct the man to the x ray waiting room (Room 1 B).

The x ray equipment consists of two fluoroscopic outfits, equipped with Coolidge tubes, three medical officers, two stenographers and one clerk, and three orderlies to direct traffic and maintain order. Each röntgenologist fluoroscopes 200 to 250 men daily. The fluoroscopic work begins in the morning as soon as a sufficient number of men accumulate, and continues until the last man has passed through. Each day's work is thus finished the same day. The men are brought into the x ray room in groups of ten, lined up single file, and as each man steps in front of the screen he gives his name. The findings are dictated as the examinations proceed, the stenographer recording them in the dark. In case of negative findings, the röntgenologist dictates simply "negative," whereupon the stenographer turns on the ruby light, gives the man an O. K. card; the next man steps in promptly and the light is turned out again. In case of abnormal findings, the dictation is made as brief as possible, and the röntgenologist

places an R upon the man's chest with a grease pencil. After all have passed under the screen, the light is turned on and the men pass out, those having O. K. cards complete their dressing and pass on to the exit clerk, where the card is given up and the man joins his company waiting outside. The men with R's upon their chest and without O. K. cards are directed back to the waiting space for reexaminations (4D).

#### TUBERCULOSIS EXAMINING BOARD, CAMP LEWIS, WASH.

##### FORM I.

Name ..... Rank ..... Org. .... Bat. .... Co. ....  
Date ..... Drafted from ..... Inducted in service .....  
Occupation ..... Working steadily? ..... Why not? .....  
Age ..... Single ..... Married ..... Nativity mother ..... Father .....

##### FAMILY HISTORY.

Father. Alive ..... health ..... dead ..... Cause .....  
Mother. Alive ..... health ..... dead ..... Cause .....  
Brothers. Alive ..... health ..... dead ..... Cause .....  
Sisters. Alive ..... health ..... dead ..... Cause .....  
Remarks .....

##### PAST HISTORY.

Severe or prolonged illness (Nature—Date—Duration) .....  
Pneumonia ..... Pleurisy ..... Typhoid .....  
Take cold easily ..... last long ..... weeks ..... cough or spit blood .....  
Remarks .....

##### PRESENT HISTORY.

Cough ..... how long ..... Raise from lungs ..... how long .....  
Height ..... Highest Wt. .... when ..... Present Wt. .... L. due to .....  
Tire easily ..... Time of day ..... how long ..... sweat at night .....  
Remarks .....

##### EXAMINATION.

General condition ..... Habitus ..... Attitude .....

##### PHYSICAL FINDINGS:

##### X RAY FINDINGS:

DIAGNOSIS: .....  
Sputum ..... Recommendation .....  
Referred to ..... because of .....  
Their diagnosis ..... Final disposition .....  
T. B. Examiner's name .....

##### FORM II.

Camp Lewis, American Lake, Wash.  
Date ..... 1918.

From: The President of the Tuberculosis Examining Board, Camp  
Lewis, American Lake, Wash.  
To: The Commanding Officer:  
Organization ..... Co. ....  
Subject: Tuberculosis Examinations:  
You are requested to require the following named persons to  
report to .....  
Date ..... at ..... for the purpose of a  
Re-examination

##### FORM III.

Camp Lewis, American Lake, Wash.  
Date ..... 1918.

From: The President of the Tuberculosis Examining Board, Camp  
Lewis, American Lake, Wash.  
To: The Commanding Officer:  
Organization ..... Co. ....  
Subject: Tuberculosis Examinations:  
You are requested to require the following named persons to  
report to (The orderly room, for example) .....  
Date, June 24, 5 a. m., for the purpose of coughing and expecto-  
rating from lungs, into sputum cup in the presence of an ATTENDANT.

It is requested that the sputum cups so obtained shall be labeled, showing Name, Organization, Rank, Company, Age, and same should be sent to Laboratory Building No. 33, H. A. Section.  
Each sputum cup so obtained should be wrapped separately in order to avoid contamination of one specimen by another.

##### FORM IV.

Camp Lewis, American Lake, Wash.  
Date ..... 1918.

From: The President of the Tuberculosis Examining Board, Camp  
Lewis, American Lake, Wash.  
To: The Commanding Officer:  
Organization ..... Co. ....  
Subject: Tuberculosis Examinations:  
You are requested to require the following named persons to  
report to the x ray laboratory, .....  
Date ..... at ..... for the purpose of an x ray examination.

After approximately fifty men have passed through, for about one hour, the röntgenologist and stenographer alternate with another röntgenologist and stenographer. The stenographer secures from the exit clerks the papers of the men upon whom he has taken dictation, and records the x ray findings at once upon the history blanks, which are then handed to the clerk of the assistant of the president of the board. The assistant reviews the evidence recorded, namely, the complete history, physical examination, diagnosis made by the examiner, the x ray evidence dictated by the röntgenologist. He then sends for the man, reexamines him (4 E), and decides the case, if possible. If in doubt, he sends the man into the room of the president of the board (4 F) with the accumulated evidence. The president then decides the case. The president of the board sees, in addition to such doubtful cases, every reject and every case given limited service. The men's cards are then stamped and turned over to the exit clerks.

The fluoroscopic O. K. records are gone over by the assistant. If he cannot accept from the evidence recorded or is in doubt, he sends out form 2 by orderly and has the man brought back for re-examination at once. He will, in any event, send for the man, irrespective of x ray findings, if the examiner has diagnosed a tuberculosis, or if there is anything suggestive of tuberculosis, either from the history or the results of the physical examination, in spite of the negative fluoroscopic findings. If it is evident that the man is an accept, his form 88 and blank card are stamped and returned to the exit clerk. If the sputum examination is checked on the history, form 3 is made out, and together with a sputum cup sent to the man's company commander, the latter has the specimen returned to the laboratory, where a microscopic examination is made at once. The laboratory is in charge of one medical officer and two technicians. However, the man's disposition does not await the results of the sputum examination. In case it is desired to repeat the x ray examination, form 4 is sent to the man's company commander. These four forms are also used in cases of all reexaminations. Those cases sent into the assistant or president's room for re-examination are given O. K. cards after the examination has been completed. These cards indicate that the man may leave the building, and that he has given up his papers.

In case a man is referred to the cardiovascular board (4 B) in addition to the x ray, he is sent to the cardiovascular board with a copy of the x ray findings after the tuberculosis board has acted upon the case. The röntgenologist fluoroscopes every heart case, and notes any heart abnormality that is present in cases referred by the tuberculosis board. Thus, if the tuberculosis examiners follow instructions regarding cases, they are obliged to refer to the x ray; approximately one man out of every four will fall into one of the groups, 1, 2, 3, 4, 5, 6, or 7, and thus not only will almost every case of tuberculosis be weeded out, but it serves as a check on missed heart cases. To check the tuberculosis examiner, the exit clerk is instructed to send every man without history that passes through between



certain hours to the x ray room. In other instances, every case passed by a certain examiner without a history is sent to the x ray room, a different examiner being checked each day, and while it is known to them that the check is being run, they do not know upon whom, or in what manner it is being carried out. This control fluoroscopic work, as well as part of the other fluoroscopic work, is carried out by the president of the tuberculosis examining board, who not only must be a clinician but a röntgenologist, and thus in a position to interpret properly the findings of both the tuberculosis examiners and the röntgenologists, serving as an arbitrator and preventing undue enthusiasm on the part of either.

In order that the control cases may be kept separate from the other x ray cases, the exit clerk gives the man a slip of paper upon which has been stamped an X and the examiner's number, as the man gives up his papers. The man gives his papers to the clerk (the stenographer of the president of the board) in the x ray room as he steps under the screen. If O. K., the clerk marks O. K. upon the slip and returns it to the man, who gives it up at the exit. If an abnormality is noted, an R is placed upon the man's chest with grease pencil, and he is directed to the waiting place for reexamination and thence to the reexamination room, where he is historied and examined by the president of the board. If a tuberculosis has been overlooked, the man is sent back to the original examiner for review. As an additional check on the alertness of the examiner, cases of manifest tuberculosis detected are sent through several examiners without their knowledge. In case of disagreement, the examiners are assembled after the day's work is finished, and the case reviewed by the president of the board. If a case of tuberculosis is missed by the examiner, but sent to the x ray room because of any of the conditions under 1, 2, 3, 4, 5, 6, or 7, with an incorrect diagnosis and found under the screen to present an abnormality which reexamination determines to be tuberculosis, the case is sent back to the examiner with the results of the reexamination for review.

Every conscript rejected on account of tuberculosis is given a short talk by the president of the board, who explains to the conscript the reason for rejection, and advises him to get in touch with the antituberculosis association of the state in which he resides. He is also given a booklet issued by the National Association for the Study and Prevention of Tuberculosis, entitled "What You Should Know About Tuberculosis."

The board keeps a record of the local and medical advisory board examiner who passed the case. The forms 88, stamped with all the board's recommendations, together with the forms 1010, are sent to the mustering officer at frequent intervals, who summons the men for mustering or furnishes them with a discharge, according to the information conveyed on form 88. The supervisor of the special physical examination units keeps the other blank reference card which contains the same information. These cards are in charge of a clerk and kept for future reference, so that in case the man breaks down from tuberculosis or from other causes, it may be traced back to the board and the examiner held

responsible for having passed the man. The tuberculosis examining board reports to the S. G. O. through the Division Surgeon each Saturday on blank 987 S. G. O., setting forth the details of each rejected case on the card form 986 for conscripts and form 440 S. G. O. for cases of tuberculosis arising after having been mustered.

(To be concluded.)

## MEDICAL NOTES FROM THE FRONT.

By CHARLES GREENE CUMSTON, M. D.,

Geneva, Switzerland.

Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London, etc.

### DIAPHRAGMATIC HERNIA.

An interesting lesion occasionally met with, caused by bursting shell in most cases, is diaphragmatic hernia of the stomach. In these cases, feeding is possible when the subject is lying down, impossible when sitting, because the patient vomits all the food taken, and thus an advanced cachexia rapidly occurs. This symptom is so distinct that a diagnosis can be made before radioscopy has been done.

Absence of thoracic symptoms is the rule; there is no pain on percussion, while the stethoscopic signs are vague and generally attributed to the remains of the pleuropulmonary reaction following the wound. If, in some cases, particularly in diaphragmatic gastric hernia, local complications are uncommon, the same cannot be said when with the stomach a bit of either large or small intestine is pinched in the diaphragmatic opening. In these circumstances, the phenomena of acute or chronic strangulation arise, and a perforation of the strangulated gut may take place if surgical relief is not forthcoming. As an example: A soldier received a through and through thoracoabdominal bullet wound which quickly healed, but, six months later, he entered the hospital with abdominal symptoms of partial occlusion and important left thoracic symptoms consisting of dullness at the base, edema of the thoracic wall and a temperature of 104° F. Puncture of the pleural cavity withdrew a fearfully fetid liquid and a free pleurotomy gave issue to fecal fluid. After this, the temperature dropped and the symptoms of occlusion subsided. The patient went normally to stool but a little intestinal liquid continued to come from the drain in the pleural cavity. The temperature remained normal and, at last report, the general condition was good. If the fistula does not close spontaneously a high laparotomy will be done to effect a cure.

I would say that such cases are not exceptional, and that Gaudier and Amenille have reported similar ones.

As to the surgical treatment of gastric diaphragmatic hernia, it is fairly well decided that laparotomy is the operation of choice, because it offers a large operative field and one can operate the reduction of the abdominal viscera which have passed through the diaphragmatic opening into the thoracic cavity. By the abdominal route, drainage of the subdiaphragmatic area is easily accomplished in cases where an infection is possible from contamination by septic pleural fluid. As to suture of the

diaphragmatic opening, it is, of course, better to close it directly by total suturing but this will undoubtedly be found difficult in the majority of cases on account of the rigidity of the edges, so that the surgeon must be content with occluding the aperture by suturing some omentum over it.

Now for the question of unilateral arthrotomy with immediate total suture in wounds of the knee joint. This procedure has been successfully carried out in numerous cases, particularly by Barnsby. In these cases a very early interference is ideal, but excellent work can be accomplished if the case is seen within the first twenty-four hours following the receipt of the injury.

The site of the entrance opening is the guide to the incision, but the data obtained by radioscopy and above all, the location of the missile dictate whether the incision is to be made on the right or left. Circumstances permitting, the incision should circumscribe the entrance opening, otherwise the orifice and track are excised after the joint has been closed. The incision should be made a good centimetre behind the edge of the patella and not more than from four to five centimetres to begin with. This is enough to explore the joint, clean it out and remove the missile when stuck in the synovia or cartilage. If a limited condyle or patellar lesion is encountered, the incision is enlarged with scissors at each end, but when the diagnosis of lesion to the bone is evident before operation, the incision, which is vertical, should be made long at the start in order to freely expose the parts.

In cases of comminuted fracture of the edge of the patella, or even one half of it, exploration when the limb is extended, is easy. The bone can be everted with ease by the use of Farabeuf's retractors and the interference rapidly carried out. If there is much damage to a condyle the limb should be flexed. When both condyles are involved it will usually be better to make a U incision, with division of the tendon of the patella, and it is only when the osteocutaneous flap is thrown back that the fracture focus can be thoroughly cleansed, excepting in those cases where excision of this sesamoid bone is indicated. The same applies in cases of severe injury to the tibial plateau. The loss of bone tissue may be filled with bits of cartilage but this is not always necessary. A complete hemostasis by compression with gauze, lasting from five to ten minutes, is usually obtained and will not be followed by a hemarthrosis. The joint cavity is washed out with ether, first in flexion, then in extension. The suture of the incision is made in three layers without drainage. Now, the particular novelty in the treatment is that the limb is simply placed in a fracture box and mobilization of the joint is begun on the day following removal of the sutures. A stirrup of surgeon's plaster is applied; a cord passing over a pulley carries a weight of from two to six pounds. The patient begins his movements himself, ten minutes morning and evening, increasing the time himself, as well as the maximum of flexion, and he soon reaches a séance of one hour twice daily. When the maximum point of flexion is attained a large pillow is put under the knee and maintains the joint in this position for about fifteen minutes. In the majority

of cases flexion at a right angle was reached by the twenty-sixth day. The results have been really astonishing and deserve the attention of American surgeons.

It is unquestionable that there are many advantages in early secondary suture of war wounds. The technic should be scrupulously carried out as follows:

Wait for the disappearance of every symptom of inflammation and the elimination of all necrotic tissue. Circumscribe the ulcerated surface by an incision in healthy skin, at least five millimetres from the wound edges, and carry the knife down to the aponeurotic layer, removing *en masse*, just as one would excise a neoplasm, the entire ulcerated surface. Next, disinfect the field of operation with ether and change gloves, instruments, and towels surrounding the operative wound. If union of the edges of the operative wound causes the slightest tension, the borders are to be freely mobilized by dissection with knife or scissors, as far as is required in order to attain an easy and even approximation. When the wound is wide, the deep layers are to be approximated with catgut. This suture completes hemostasis, which should always be complete. Besides, it facilitates the skin suture.

The integuments carefully approximated are sutured with silk-worm gut, particular care being taken at the angles of the wound. In the case of the limbs, the line of suture should follow the long axis and if necessary to accomplish this a supplementary incision to free the structures should be made.

During postoperative treatment the temperature should be closely followed and the first change of dressings should be made in forty-eight hours. In some cases, the latent infection being more serious than the clinical aspect of the case would lead one to suspect, two possibilities may occur. 1. The middle sutures tend to develop an inflammatory process around them and tend to give way. In this case they are to be supported by adhesive plaster. 2. A small focus of suppuration forms. All that is necessary is to remove the sutures at this point and after emptying the collection, dress the resulting wound with a little ether daily.

As an example of what can be accomplished I here give the statistics of forty cases recorded by Barthelémy, Morlot, and Jeanneney.

In twenty-six cases union *per primum* occurred in less than a fortnight. In eleven cases union was rapid in spite of a suppurating stitch or the development of a small pus collection, and was perfect at the end a month. Twice the results were only fair, due to a technical error, the sutures having been placed perpendicularly to the axis of the limb. And, lastly, one case was a failure because approximation of the wound edges was not preceded by excision of the infected tissues. A second interference undertaken a few days later with a proper technic was followed by perfect union.

In a general way, it may be said that a complete recovery ensues in from a fortnight to four weeks. Early secondary wound suture can be undertaken in most cases within a fortnight after the patient is in hospital and from the date of the receipt of the wound, the number of days in hospital will average about forty. The resulting cicatrices are solid, non-adherent and soft. The technic is simple, and in the majority of cases, can be done with local or regional anesthesia.

In closing, let me say to you, that surgery at the front is a far different matter from that of our



well furnished hospitals, a fact that must be remembered by the American surgeons who have as yet had no practical experience near the firing line. Even those who have been in France and seen the American Ambulance and other American hospitals, must not for the fraction of a second imagine they are to be professionally mollycoddled in that way. These institutions are luxuries and cannot be compared in any way to the real surgical outfits at the front. If they do indulge in such hopes, disaster faces both them and their patients.

### MEDICAL NEWS FROM WASHINGTON.

*Coming Promotion of Brigadier General Ireland as Major General, M. C., U. S. A.—Reduction of American Hospital Records in France by Use of Charts.*

WASHINGTON, D. C., July 29, 1918.

An interesting situation has arisen in connection with the new places with the rank of major general and brigadier general provided for the Medical Department of the army by the new army appropriation act, with the almost certain prospect that Brigadier General Merritte W. Ireland, Medical Corps, national army (colonel, Medical Corps, regular army), who is on duty in France as chief surgeon on the staff of General Pershing, will be raised to the rank, one way or another, of major general in the Medical Department of the regular army.

The appropriation act authorizes the increase of the Medical Department of the regular army "by one assistant surgeon general, for service abroad during the present war, who shall have the rank of major general, and two assistant surgeons general, who shall have the rank of brigadier general, all of whom shall be appointed from the Medical Corps of the regular army."

It also authorizes the President to "appoint in the Medical Department of the national army, by and with the advice and consent of the Senate, from the Medical Reserve Corps of the regular army not to exceed two major generals and four brigadier generals."

General Ireland is the officer most frequently spoken of in connection with the promotions to fill these places, and it seems certain, under the circumstances that have arisen, that he will be advanced to the rank of major general. However, it is uncertain at present exactly what method will be pursued in advancing that officer.

It is understood that the Secretary of War has decided to recommend to the President that General Ireland be appointed to fill the place of assistant surgeon general with the rank of major general in the Medical Department of the regular army. In view of the fact that all proposed promotions in the personnel under General Pershing are referred to that officer for his approval before they are made, the departmental recommendation in the present case has been referred to him before sending the nomination to the senate for confirmation.

Another angle is given to the case by the fact that practically all of the medical personnel in France, of all ranks and classes, are strong in their desire to see General Ireland appointed Surgeon

General of the Army to succeed Major General William C. Gorgas, when that officer retires for age on October 3rd, next; and it is understood that General Pershing favors the appointment, notwithstanding his reluctance to lose General Ireland as a member of his staff. This situation has been made known to the authorities at the War Department.

It has been decided that it would be contrary to law to continue General Gorgas as Surgeon General after his transfer to the retired list. It is suggested, however, that, if General Ireland is appointed Surgeon General, and, if it is desired to keep him on duty in France, General Gorgas might be retained at the head of the Medical Department as "acting" Surgeon General, provided he is willing to continue on active duty after retirement from the active list of the army.

Moreover, this course would afford opportunity to have two major generals of the regular Medical Department in France—General Ireland as Surgeon General and some other officer of the regular corps appointed to fill the place of Assistant Surgeon General with the rank of major general.

All together, the situation is an interesting one, with something more than probability that General Ireland will be advanced to the rank of major general in one or the other of the ways described.

\* \* \* \* \*

Reduction of red tape and the elimination of unnecessary paper work are being practised in our army hospitals, particularly those in France, where the demands upon the hospital personnel are increasing constantly. A system has been put into operation whereby two thirds of the volume of paper work is saved.

The system, which is based upon one followed in the British hospitals, was put into force just prior to the flow of wounded from the fighting near Chateau-Thierry, at a time when the former cumbersome system doubtless would have added greatly to the confusion.

The key to the new system is a field medical card, a simple cardboard chart, which folded twice will fit into a note envelope. This chart begins at the first point at which a patient is received, be it ambulance, field hospital, or evacuation hospital, and it is fitted by wire to his clothing similar to an identification disk. Wherever the patient goes, the chart follows him, even back to America. At each stopping place entries are made on the card, with the treatment administered.

Under the former ponderous methods, each hospital executed its own voluminous records, which were filed away with elaborate detail; and, if it became necessary suddenly to transfer several hundred patients, the regulations required that a complete transfer card be filled out in each case. Often the convoys would be made up with such a rush that there was no time to prepare the transfer cards, much less a transference of clinical records, etc., and the physicians and surgeons into whose hands a patient later might come were without information as to what had been done before.

Another improvement that has been made is the reduction of involved terminology and the elimination of unnecessary family history.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
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*A Weekly Review of Medicine*

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### SOME QUESTIONS REGARDING PENSIONS.

The subject of pensions will soon be a serious one again for our Government. Workman's insurance is calling into service the immeasurable advance made in methods of diagnosis, in greater surety of prognosis based upon a much clearer and a better defined separation and distinction among various diseases and traumatic conditions. So the vast addition to knowledge and experience gained on the battlefield and in the war hospitals should furnish also a broader and more assured background on which to adjust the matter of pensions. It is the members of the medical profession who should be the agents for lifting this from a mere political basis of degrading injustice, favoritism, and dependence to a scientific plane based upon actual conditions of health and ability.

A few practical suggestions along this line in the field of mental and nervous disabilities are made by R. Benon [Mental and Nervous Maladies and the Law Regarding Military Pensions,

*La Presse Médicale*, April 18, 1918]. Four points, he says, must be considered. These are, the previous state of the individual before the injury; the contradictory reports of examination; special dispositions to be made in regard to the pensions of those placed in an asylum for the mentally diseased, and the social situation of the wife of the man thus interned. The first point comprises several etiological considerations. These are whether, though the patient may have been in the best of health, he belongs to a family mentally and nervously afflicted; whether the patient has presented symptoms of constitutional disturbance either in character or intelligence, though there are no cases in his family of mental or nervous disturbances; whether disturbances on the part of the patient have appeared when there are others in the family afflicted with mental or nervous disturbance; whether there is evidence of syphilis, chronic alcoholism, or other such disease in the patient, and, finally, whether the patient had any mental or nervous malady before he entered the army. These considerations are all, however, of less weight if the patient has served a long period at the front and been under a great strain there. Moreover, the theory of a mental degeneracy is too obscure and unscientific to sustain much weight at present. In regard to general paresis, syphilis is only one of a number of factors which must be taken into account in the incidence of the mental condition. By no means do all syphilitics develop general paresis. The contradictoriness in reports of examination Benon considers inevitable, but it emphasizes the need of greater precision in medicine.

Special dispositions in regard to these pensions have already been resolved upon in France. These grant to the wife of a patient suffering from a mental disease, which necessitates his sojourn in an asylum, the pension equal to that given to a widow. Here, too, the question of antecedent causes for the disease may have to be considered. Another complication arises if the patient improves and can be given his liberty and yet must be supported by the family. His support and, perhaps, extra care must be provided for him, and this the pension law should provide. The same question arises in cases of blindness or other permanent disability. Another consideration has been brought forward, which may become a very practical one in the conditions which war has forced upon Europe, and that is the revising of the divorce laws for practical and moral interests, in

order to permit greater freedom for divorce to those women whose husbands are permanently secluded in the asylums for mental diseases as a result of their wounds or illness contracted during service.

Benon's very practical suggestions are such that they should arouse us to think of this complicated problem, which is even now arising as a result of the war. And even as political organizations should be better prepared to deal with such a situation than in the past, so should medicine be far more able to throw light upon its intricacies. At the same time the unprecedented numbers among the wounded and disabled, the far greater variety and seriousness of the injuries, largely evident in mental and nervous results, together with the far greater complexities of modern life, make the whole question one which can be adequately handled only with all the help which scientific experience and consideration can give to it.

#### "BOTTLEISM" IN TORONTO.

By the terms of the Ontario Temperance Act which became effective in September, 1916, physicians were permitted to keep ten gallons of alcohol in their lockers at any one time, write orders for quarts in either the shape of whiskey, or ale and other malt liquors, and carry around a quart bottle of "hard stuff" for the benefit of their patients. All has been going on comparatively well during the last year and a half, with the exception of a sporadic abuse here and there on the part of some too generous physician, who should have known better and should have had some consideration for the honor and standing of the faculty. Some believed in prescribing quite generously, even, in several cases, lavishly.

Coincident with the annual meeting of the Ontario Medical Council in that city, June 24th to 29th, a Toronto physician was summoned to the police court charged with having on four specific occasions unlawfully prescribed liquor for patients, or pseudopatients. He was convicted on one charge, pleaded guilty to the other three, and was fined \$300 on each count, the total therefore amounting to \$1,200. It was discovered that this physician had written 1,274 orders on vendors of liquor—there were two such in Toronto—in eleven days, as many as 122 prescriptions having been issued in one day.

The law having been satisfied by the handsome addition to the city's exchequer, the Medical Council took the matter in hand. Dr. Edmund E. King, the retiring president, found that his

Toronto confrères had been prescribing liquor to the extent of at least 4,000 prescriptions from June 1st to 11th. His brethren in Toronto, about 525 not yet drafted for overseas, wrote as many as fifty-two prescriptions, fifty-three, sixty-two, sixty-seven, sixty-eight, seventy-three, ninety-nine, and 215 each—that is, some of them. At least 275 of them had given one prescription, and nearly one third of that number had given ten; while four had issued twenty-four each; three, fifty-eight each; two, ninety-nine each. Further scientific and alcoholic search revealed the fact that in the month of April 5,369 prescriptions had been issued in Toronto; but as the warm weather drew on apace, these figures swelled to 9,255 prescriptions in May. Now the whole profession in Toronto have been dubbed Physician Bartenders, or, to be exact, those who are entitled to write the above quoted figures after their names. Should they not be known by their numbers?

It has not yet come out if any physicians have availed themselves of the provisions of the act in stocking up to the extent of ten gallons, and keeping stocked up. Nor has any information been forthcoming as to whether any doctor has been in the habit of dispensing his own liquors. What has resulted, however, is that the Medical Council promises to ask the Ontario Government to cut the quantity down to eight ounces; and that hereafter the body charged with the administration of the Ontario Temperance Act will require vendors to make returns of prescriptions issued by physicians for liquor, not later than the tenth of each and every month.

Liquor, of course, has been always a much debated and a very complicated question; but it would seem to be a wise provision on the part of the Government of Ontario, or any government elsewhere, to appoint to the administrative body a physician of standing, to visé all prescriptions, so that physicians may not be needlessly summoned to court in this or that prosecution. The law is the law, and there is no question that certain physicians in Ontario have abused their privilege; and the profession as a whole now rests under the stigma, perhaps inadvertently placed upon their shoulders by unthinking and too easily persuaded members.

What is the physician in Toronto, in Ontario, and other places where such acts are in force, to do? Can physicians be assured, if they give prescriptions for diseased conditions, that they will not have to appear in court to defend themselves against a charge of having done so wrongfully? Is an administrative board, upon which sits no

physician, to be the ultimate authority in saying whether liquor should be prescribed for asthma, rhinitis, constipation, atonic dyspepsia, etc.? Would it not be better to consider that every man or woman who applies to a physician for liquor should be treated as diseased? Then the physician would be obliged to state on his prescription that his disease was alcoholism pure and simple, and should so treat him to effect a cure. There is here a fine chance for the physician to carry on an effective temperance campaign. Let him prescribe his liquor to be taken according to usual directions, as is done in treating other diseases. If the patient abuses that—does not follow directions, swallows it all in two or three drafts, the doctor has the remedy in his hands to deny him more. The physician should not be held accountable, any more than he is held accountable in other drugs, if the patient swallows the whole bottle and poisons himself. If liquor is to be dispensed at all, it should be dispensed for disease—and surely alcoholism is a widespread disease—and physicians should feel it incumbent on them to treat and cure, if possible, the craving for alcohol, as they do in undertaking to treat and cure, if possible, any other disease.

Under the Ontario Temperance Act the conditions in that province looked to be ideal. Unhappily, several physicians have not recognized their responsibility in the matter; but it would seem a more just arrangement if delinquent practitioners had their prescriptions in some way visé by one of their own profession, who could better determine whether a given prescription were justifiable and recognized treatment for any disease for which it had been issued.

## THE STARVATION TREATMENT OF DIABETES.

Perhaps no other form of treatment has given such good immediate results both in reduction of the sugar content of the urine and improvement in the general condition as the starvation treatment carried out according to the plan of Allen. This form of treatment is consistent with the newer theories as to the causation of diabetes, at least as regards the part that excessive eating plays in the disease.

It is no longer held that only the carbohydrates are a factor in the causation of the sugar malassimilation. In all likelihood the proteins are as important a factor as the carbohydrates. In the gradual return to the stationary diet, after starvation, it is possible to determine which of the

two, carbohydrate or protein, is at fault, by noting the influence each has on the appearance of sugar in the urine.

It is a remarkable fact that in spite of the starvation there is practically no loss in weight. In these patients a little loss in weight is rather desirable. In the obese diabetic, who usually loses no weight under this treatment, it is impossible to eliminate all the sugar from the urine while his weight continues high. There is never any danger that the starvation will cause acidosis and coma, as is caused by the long continued withdrawal of carbohydrate from the diet of the diabetic. In this connection it is to be remembered that the amount of ammonia in the urine is an index of the degree of acidosis. Acidosis is marked if the ammonia output reaches three or four grains in a day.

As a prerequisite to the starvation treatment the patient must be kept in bed during the treatment, and until he is sugar free. While the water intake is not restricted he is allowed no food except coffee and whiskey. One ounce of whiskey in the black coffee is allowed every two hours between the hours of 7 a. m. and 7 p. m. The total amount of whiskey consumed during this period is six ounces and the total caloric value is 800. The patient, it must be remembered, is not really without food because alcohol can take the place of food for short periods. The administration of sodium bicarbonate, while sometimes advisable with marked acidosis, is not really essential.

The starvation treatments are carried out in two day series, never more than four day series. At the end of two days the patient is usually sugar free. Then he is allowed a diet of vegetables, cooked three times, in which the carbohydrate content does not exceed five per cent. Some fat in the form of butter may, however, be added. On the whole, the amount of carbohydrates allowed must not exceed fifteen grams. Allen has two dietaries from which to draw. One contains ten grams of protein, seven grams fat and fifteen grains carbohydrate, with a total caloric value of 200; the other contains seven grams protein, six grams fat, and fifteen grams carbohydrate, with a caloric value of 150. Allen's vegetable diet tables include string beans, asparagus, carrots, spinach, cucumbers, celery, cabbage, and onions.

This abbreviated vegetable dietary is maintained for a few days, whereupon the dietary is made gradually more generous. The proteins and the carbohydrates are added one at a time and watch is kept to see the addition of which



one first causes the sugar to reappear. Whichever element it is that one must be materially reduced. A fairly generous dietary for a diabetic to maintain who has taken the starvation treatment contains fifty grams each of carbohydrate and protein and 200 grams of fat. If in spite of this reduced dietary sugar reappears, the starvation course of treatment must be repeated from time to time. However, the point to be remembered in this after-treatment dietary is that in order to maintain the sugar free urine obtained by the starvation treatment it is necessary to continue to live on a very low diet as to quantity in order that the organism may never be taxed in the assimilation and elimination of large quantities of food.

### ERYTHEMA AND TUBERCULOSIS.

The striking fact in the reported cases is that the attack of erythema occurring in tuberculosis often preceded death only by a few days or served as a precursory sign of a tuberculosis which had been in a latent state; and it would also seem that the maculopapular form preceded death, while the nodose type of the eruption was the forerunner of an acute outburst of the latent disease.

This is not, of course, a fixed rule, and it does not necessarily follow that every time an erythematous eruption is met with in a tuberculous case, the prognosis is serious. But, at all events, it may be said that this eruption generally coincides with an acute outbreak of tuberculosis, in the phase of acute tuberculization. The erythema is due, not to the tuberculosis but to the specific bacillus. Therefore, it is during the granula that the erythema appears and also in the acute outbreaks occurring in chronic tuberculosis, when a superproduction of bacilli has taken place, and, as a consequence, an overproduction of microbic toxins.

As to the nodose form of erythema in particular, its importance is considerable as a premonitory symptom of a latent tuberculous infection, and when a case is encountered where the nature of the eruption remains obscure, it will be prudent to suspect tuberculosis. Therefore, the prognosis of these erythemata should be guarded, because they are often the index of an acute outbreak in a chronic tuberculosis or of the evolution of an unrecognized bacillosis.

The pathogenesis of these erythemata may be explained by an angioneurotic process. The toxins of the tubercle bacillus act upon the vasomotor centres by the intermediary of a vasodilator

substance called ectasine. A vasodilatation is the result, and this is accompanied by diapedesis and the production of exudates, the underlying phenomena of erythemata.

The diagnosis is important when an erythema occurs in a tuberculous subject. For example, one must not mistake a macular erythema for erysipelas, or for variola at its outset, or a purpura; a vesiculobulbous erythema for pemphigus or herpes; a nodose erythema for luetic or tuberculous gummata; lupic erythema for numerous cutaneous manifestations which have many points of resemblance to it and which are too long to enumerate.

Once the diagnosis of erythema is made, one should ascertain if it is not due to some common cause and not to the tuberculosis, because it does not necessarily follow that, because the patient is tuberculous, every symptom offered is bacillary in nature.

Above all, it must be remembered that there are erythemata due to external causal factors, such as the sun's rays, erythema intertrigo, erythrasma, etc. The fact that gastrointestinal disturbances or medicaments may cause erythema must not be overlooked; among the latter antipyrine, quinine, opium, arsenic, and ergot hold an important place.

Finally, when all causes of mistake can be set aside, there still remains the question whether or not the bacillus of tuberculosis is to be incriminated or if the eruption is not due to some concomitant infection, such as diphtheria, typhoid fever, infectious endocarditis, syphilis, or gonorrhea.

### THE AGE OF A MINISTERING ANGEL.

The Secretary of War was quite convinced that when pain and sickness wrung the brow woman was a ministering angel, but not quite sure at what age she ceased to be "uncertain, coy, and hard to please," or whether these failings might sometimes hinder the "ministering" when she was at the Front with her sisters where tactful cooperation and loyal obedience would tremendously influence all the work. So he wrote to General Pershing, giving him the casting vote concerning the age of women allowed to go over in connection with relief work. This age has been fixed as twenty-five, and the decision at once brought into evidence the very failing—want of self control—which the "angels" under twenty-five would have been the first to deny. They certainly consider themselves ill used—and say so in unangelic terms—because this new ruling has been added concerning any relief work to that regulation about the nongoning of any wife, mother, sister, or daughter of soldier or sailor or member of the Red Cross or Y. M. C. A. or any such societies.

## News Items.

**The British Medical Mission.**—The four photographs, illustrating the article on the New York visit of the Special British Medical Mission to America, published in the July 20th issue of the JOURNAL, were furnished through the kindness and courtesy of Lieutenant Badgley, of the British Pictorial Service, 511 Fifth Avenue, New York.

**Forty Bed Hospital Erected in Record Time.**—Under the direction of the Construction Division of the Army a forty bed addition to General Hospital No. 10, at Fox Hills, Staten Island, was erected recently and made ready for occupancy in exactly ten hours and thirty-eight minutes. The building is a one story frame structure, with a porch, and has in addition to the ward a diet kitchen, surgical dressing room, linen room, and bath. The finished building was fully wired, the lights ready to be switched on, water running in the pipes, and all the radiators set. The Construction Department is prepared for similar work in all cantonments should the necessity arise for increased hospital facilities.

**Women's Motor Corps Uniforms.**—In order to save khaki cloth, the War Department has requested the 6,000 women of the American Red Cross Motor Corps Service to discard their khaki uniforms and to adopt the Red Cross Uniform of oxford gray. Commanders will wear three silver diamonds embroidered on their shoulder straps; captains will wear two silver diamonds, first lieutenants one, and second lieutenants a gilt diamond. Pearl gray tabs on the collar will indicate staff officers. Cars will be designated by a white metal pennant bearing a red cross and the words "motor corps." The independent service in the principal cities has been amalgamated with the Red Cross Corps.

**College Students to Be Trained for Medical Department Officers.**—The Medical Department of the Army will shortly issue an appeal to American colleges and universities urging them to alter their curriculum so that third and fourth year students may receive special training which will enable them to qualify as officers and for other work in the Medical Department. The appeal will be sent to all the principal colleges and universities in the country, and the request is made that all directing heads of such institutions write to either Dr. Richard M. Pearce, of the National Research Council, Washington, or to the Division of Laboratories, Office of the Surgeon General, Washington, for details of the proposed plan.

**Safeguarding the Health of Soldiers at Sea.**—Strict medical and sanitary precautions are taken to safeguard the health of American soldiers on the transports going to France. Before embarking a thorough examination of troops is made by army medical officers to eliminate the sick. Within five days of sailing the commanding officer of troops submits to the senior naval surgeon a statement that all his men have received protective vaccinations; and if any have not, he designates the men to be vaccinated. After embarkation all troops must spend at least an hour and a half daily on deck, each man bringing his blankets to be aired. Commanding officers must see to it that their men receive thirty minutes of physical exercise during this period. The men are expected to stay in the open as much as the weather will permit. All men and their effects must be inspected twice weekly by medical and commanding officers to detect the sick and make sure that the men are observing the rules of hygiene. Men are not permitted to close the ventilators or otherwise interfere with the flow of air. They are not permitted to eat food in berth spaces. Food is not served in rooms or other unauthorized places unless so ordered by the senior naval surgeon in case of sickness. Guards are stationed day and night at drinking fountains and other points to enforce cleanliness. Spitting on deck is strictly forbidden. Every man must take a shower bath daily and change his underclothing at least once during the voyage. These and other regulations were promulgated by the Surgeon General of the Navy. The senior naval surgeon is made responsible for the sanitation of the ship and for the routine care of all men who are sick enough to require treatment other than first aid. Arrangement is made for the cooperation of the medical officers of the army aboard and members of the army hospital and sanitation corps.

**Epidemics in Germany.**—According to cable despatches from Amsterdam, dated July 29th, tetanus has broken out to a serious extent in the German army. The Netherlands Export Company has agreed to send a large consignment of antitetanus serum to Germany. Typhus fever is said to have appeared in epidemic form at Berlin, and malaria in Baden. Influenza continues to spread, and it is said that the health of the troops has been seriously affected by the epidemic.

**Appointments to the Harvard Cancer Commission.**—Dr. Robert B. Greenough will act as director of the commission and as surgeon in charge of the staff of the Collis P. Huntington Memorial Hospital. Dr. Channing C. Simmons will continue as his secretary, and, with Dr. Edward H. Risley, will serve as surgeon at the hospital. Other members of the commission are: Dr. James H. Wright, pathologist, in charge of diagnosis service; William Duane, research fellow in physics; William T. Boyle, research fellow in biology; Dr. Henry Lyman, research fellow in chemistry, and Clarence C. Little, research fellow in genetics.

**Status of Contract Surgeon.**—According to an opinion rendered recently by the Judge Advocate General of the Army, a contract surgeon is not a military officer and has no military rank; he is not a part of the military establishment but merely a civilian in the employ of the United States by contract for his personal services as a medical attendant to the troops. Accordingly he is not entitled to the benefits of the war risk insurance act of October 6, 1917; nor is he an officer within the meaning of section 9 of the selective draft act of May 18, 1917, authorizing the examination of officers by boards appointed to determine their fitness for service.

**National Medical Association.**—The twentieth annual meeting of this association will be held in Richmond, Va., August 27th, 28th, and 29th. The officers of the association and the Richmond Medical Society are endeavoring to make this session the best in the history of the organization. A programme of unusual interest, embracing important subjects in medicine, surgery, dentistry, and pharmacy, has been arranged; surgical clinics will be held at the Richmond Hospital; medical clinics will be held in conjunction with the regular programme; motion picture clinics will be held in practical dentistry; pharmaceutical demonstrations have been arranged. The scientific sessions will be held at Virginia Union University. Dr. J. H. Blackwell, 14 East Thirteenth Street, Richmond, Va., is chairman of the local committee of arrangements, and Dr. W. G. Alexander, 14 Webster Place, Orange, N. J., is secretary of the association.

**Child Health Organization.**—As the result of a study of war time problems of childhood, undertaken in New York some weeks ago by a group of specialists in children's diseases, the Child Health Organization came into existence. An important revelation made by these studies was the extent to which malnutrition existed in school children and its steady increase due to the rising cost of food. The Secretary of the Interior, to whom the matter was referred, urged the formation of a national committee, composed of lay and medical members, to study the problem and devise means for its solution, and as there were already a number of committees working along these lines, it was decided to affiliate with the National Child Labor Committee. Accordingly an organization to promote the health of school children has been formed as one of the branches of the Child Labor Committee. The proposed lines of activity as outlined by the committee include the following: To teach health habits to children and to secure adequate health examinations for all children in the public schools of the country; to consider the urgent problem of malnutrition among school children; to safeguard the health of children in industry; propaganda to awaken the public to the necessity of conserving the health of the school child as a basis of national security and stability; to promote, or cooperate with other bodies in securing legislation for the attainment of these objects. Among the members of the executive committee are the following physicians: Dr. L. Emmet Holt, chairman; Dr. Samuel McC. Hamill, Dr. Godfrey R. Pisk, Dr. Victor G. Heiser, Dr. Bernard Sachs, and Dr. Thomas D. Wood. The headquarters of the organization is at 289 Fourth Avenue, New York.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### RECENT OBSERVATIONS IN DIGITALIS THERAPY.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Concluded from page 159.)

Recent clinical and experimental work with digitalis has served to emphasize the benefit which this drug may yield by correcting the rate and rhythm of the heart. On certain cases at least, its direct action in enhancing the contractile activity of the heart muscle is apparently no longer of such exclusive importance clinically as was formerly thought. Yet, in whatever way this may be accomplished, it is generally recognized that the dilated heart decreases in volume, as a rule, under digitalis. In some valvular conditions, in particular mitral and tricuspid insufficiency, the drug is credited with power to reduce regurgitation by toning up a relaxed mitral or tricuspid ring, thus enabling valve leaflets previously unable to meet during systole to become more closely approximated. Similar assistance in valve closure may be afforded through removal of dilatation of the ventricular walls in their portions nearest to the mitral or tricuspid valve. T. W. King showed experimentally many years ago how much a complete closure of the tricuspid orifice depends upon adequate tone of the right ventricular muscle; the opportunity for benefit from digitalis in this particular manner is thus correspondingly enhanced.

Poor quality of the blood supplied to the heart often results indirectly from impairment of the cardiac function itself, insufficient circulation through the lungs, alimentary tract, and other viscera causing an imperfect renovation of the blood which reacts upon the nutrition and contractile power of the heart muscle. Under such conditions digitalis should be extremely effective, for by whatever process it may increase the output of blood from the heart and relieve venous stasis, the circulation through the coronaries and the viscera in general is thereby increased and cardiac nutrition improved.

Studies of the viscosity of the blood under both normal and abnormal conditions have been made in recent years by Martinet, of Paris. Increased viscosity, by augmenting the resistance to the passage of the blood through the vessels, tends automatically to raise the blood pressure and increase the work of the heart. Martinet observed no important effect of digitalis on the viscosity, the latter remaining stationary during the earlier stages of digitalis action but rising sharply as the diuresis waned and the absorption of edematous fluid was completed. Some other observers, however, have reported a diminution of viscosity at the height of digitalis diuresis.

*Digitalis and the blood pressure.*—On this subject, clinical investigations of the last decade have led to

a pronounced modification of former views, based on experiments in animals. Potain's observation that digitalis diuresis sometimes occurs simultaneously with a distinct reduction of blood pressure was one of the earlier indications that the prevailing explanations of the action of digitalis were at fault. The actual effects of the drug on the blood pressure in cardiac cases appear to be those stated in 1914 by Martinet, viz., the systolic pressure may be either unchanged, raised, or lowered, but the diastolic pressure is regularly lowered. Indeed, according to this author, the degree of effect on the diastolic pressure is of prognostic value, those cases being most hopeful in which this pressure is most reduced. Such reduction increases the differential or pulse pressure, and this increase appears to improve, in most instances, the blood flow through the various organs of the body. Martinet found in many instances that small doses of digitalis, such as 0.1 to 0.25 milligram of the French digitalin (mainly or wholly digitoxin), suffice to lower the diastolic pressure. Evidently this may be included among the earliest effects of the drug in a large proportion of cases.

A corollary of the findings just referred to is that digitalis may be administered without harm to patients with high blood pressure. Not only is it unnecessary to combine nitrites with it to prevent any injurious rise of pressure, but the drug has frequently proved highly useful in cases of high blood pressure with beginning cardiac failure. According to Norris, 1914, digitalis lowers the blood pressure with especial frequency in heart cases with high pressure stasis and in patients with hypertension due to retained toxic material through renal impairment. Lawrence states that digitalis may be safely given to patients suffering from arteriosclerosis or angina pectoris in the presence of cardiac decompensation, and Riesman has advised its use in hypertension cases attended with cardiac hypertrophy.

On the other hand, in cases in which cardiac impairment is accompanied by subnormal blood pressure, digitalis tends to raise and restore the pressure. Bishop, 1914, advocates continuous use of digitalis in many instances of the later stage of arteriosclerosis, in which the preexisting hypertension gives way to a level of pressure below the line of compensation.

*Digitalis and the kidneys.*—The last of the major effects of digitalis which have been more or less elucidated by recent observations is that concerning the renal function. The former view that digitalis diuresis depends mainly or exclusively on an increase of systolic blood pressure has proved erroneous. Clinically, diuresis and a diminution of systolic pressure frequently coexist. An increase of the differential or pulse pressure, on the other hand, whether due to digitalis (Martinet) or artificially produced (Gesell, 1913), is, in most instances at least, attended with diuresis. Martinet found digi-



tal diuresis especially pronounced when the increase in pulse pressure resulted mainly from a fall in the diastolic pressure rather than from a rise in the systolic pressure.

Again, Loewi and Jonescu in 1908 presented experimental evidence to the effect that digitalis in therapeutic doses tends to dilate the vessels of the kidneys while constricting those of other abdominal viscera. This constitutes another process by which digitalis may promote diuresis.

Thus, the indications from recent studies of the question are that digitalis causes diuresis not in one but in several different ways, viz., by increased pulse pressure, which enhances the blood flow through the kidneys; by reduction of pressure in the renal veins through increased flow of blood from the great veins into the heart; by dilatation of the renal vessels and a consequent increase of blood flow through the kidneys at the expense of other abdominal viscera, and probably also, at times, through hydermia resulting from absorption of edematous fluid into the blood stream. Doubtless it is because of the combined action of these several factors that diuresis, in appropriate cases, is so pronounced a feature in the action of the drug.

**Intraspinal Arsenobenzol Treatment.**—Beverley R. Tucker (*Virginia Medical Monthly*, May, 1918) believes this form of treatment justified both by experimental work and clinical evidence. It is attended with little or no danger if ordinary care is exercised in preparing the serum. Neosalvarsan should never be used. Many late and apparently hopeless cases were arrested by this treatment, and besides, relief of pain and improvement in the bladder condition were noticed. Arsenobenzol intravenously is very efficient in superficial nervous involvement manifested by headache, slight cranial nerve palsy, and luetic vascular conditions; but in the resistant affections formerly termed metasyphilis, the intraspinal method, systematically and judiciously employed, is far superior. Ogilvie's technic is used by the author, but the dosage never exceeds 0.5 milligram, and is preferably limited to 0.3 milligram. The serum should be used immediately, or certainly not later than three hours after its withdrawal. No spinal fluid is withdrawn unless it is under considerable pressure. The patient is kept in bed without pillows and with the foot of the bed elevated for twenty-four to thirty-six hours. The treatment is repeated until the Wassermann is negative and the cell count and globulin normal. After apparent cure these tests should be renewed several times a year for a number of years; any slight positive tendency indicates further treatment. The author reports six cases, including two of early paresis, in which the treatment resulted in clinical and serological recovery. Advanced paresis is rarely benefited by any measure. Intravenous treatment is chiefly beneficial in central nervous syphilis, giving both a positive blood and positive spinal Wassermann; often it is advisable to administer both intravenous and intraspinal therapy. Mercury and iodide should be included in the treatment of central nervous syphilis.

**Treatment of Malignant Measles.**—Ribadeau Dumas and E. Brissaud (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 21, 1918) report the case of a man in a grave condition from measles, with temperature of 41° C., a confluent eruption with ecchymoses, dry mouth and tongue, subsultus, albuminuria, and finally collapse, anuria, incontinence of feces, and toxic dyspnea. Death in coma threatening, transfusion of citrated blood from a man who had recovered a week before from uncomplicated measles was resorted to. Two hundred mls of the donor's blood were received in twenty-five mls of water containing one gram of sodium citrate, and about one hundred mls of the mixture were administered. Within a few hours there occurred not only a temporary fall in temperature but a complete transformation in the patient's general condition. The temperature dropped to 38.4° C., the pulse to ninety-eight, micturition occurred, and patient went quietly to sleep. Next day rales were noted and the temperature rose to 40° C. A second, similar transfusion was given. The injection being more rapid than before, a slight chill and temperature reaction took place. After this the patient gradually gained, and an unexpected recovery followed. The sudden improvement taking place after the first transfusion seemed definitely caused by the latter. In a case of equal severity in the future the authors would administer a more copious transfusion.

**Proctitis and Sigmoiditis.**—Charles J. Drucek (*Chicago Medical Recorder*, March, 1918) says that the treatment of acute proctitis varies with the exciting cause and therefore a very thorough examination should be made first under general or local anesthesia. The former is preferred, as it permits complete stretching of the sphincter and the removal of any local trouble at once. Impacted feces or foreign bodies if present must be removed carefully to avoid injury to the mucosa. A saline cathartic should be given to remove decomposing, infectious, or irritant material, and the dose should be large enough to cause good flushing of the intestine. Then the bowel should be irrigated several times daily with normal salt solution at 110° F. This is followed by the injection of about eight mls of 1-5,000 silver nitrate solution which is to be retained. A thirty milligram (½ grain) opium suppository may be used for the relief of tenesmus. This treatment is continued as long as there is any discharge of mucus or pus. If the rectal wall is ulcerated, the ulcers should be wiped clean and touched with pure ichthylol or five per cent. silver nitrate. The diet should be absorbable and non-irritating and should produce soft stools. Milk should not be given. Eight glasses of water should be taken daily and a glass of flaxseed tea every night. This tea is made fresh daily by boiling five tablespoonfuls of whole flaxseed in a quart of water, straining while hot, and flavoring with licorice, lemon, oil of peppermint, or wintergreen and sugar before cooking, or with wine after it has cooled. The patient should be kept in bed as long as there is pus or blood in the stools. Chronic proctitis, due to rectal causes, requires the same treatment plus irrigations of extract of krameria.

**Potency of Antipneumococcic Serum.**—N. E. Wayson and G. W. McCoy (*Journal A. M. A.*, June 8, 1918) point out the desirability of having all supplies of antipneumococcic serum tested in one official laboratory, the Hygienic Laboratory of the U. S. Public Health Service. They present a number of protocols of tests of serum for type one, in which they show that the method of testing gives somewhat irregular results, even with desirable modifications in its technic. The results, nevertheless, give a valuable measure of the potency of the serum when controlled. Tests of a number of commercial and noncommercial serums showed that the former were of as high potency as the latter.

**Ozonized Chlorinated Oil of Eucalyptus.**—J. Thompson Schell (*Medical Record*, May 11, 1918) describes a preparation which would seem to be better than Dakin's solution or dichloramine-T. It is made by the direct application of ozone and chlorine to oil of eucalyptus. The ozone oxidizes the oil, destroys impurities, and makes it more readily chlorinated while the chlorine is obtained from sodium chloride by electrolysis and is passed into the oil until a twenty or thirty per cent. solution is made. This oil can be diluted with oil or even water, it is nonirritant, stable even when long exposed to air, does not injure metal and no cumbersome apparatus is required for its use. Wounds may be washed with the watery solution (.02 per cent.) and then painted with a fifty per cent. solution of the oil in paraffin. An ointment of the eucalyptus oil one half to one dram in one ounce of vaseline is valuable in burns and crushed wounds; the watery solution may be made by putting one dram of the oil in a gallon of water.

**An Abduction Splint for the Femur.**—Dennis W. Crile (*British Medical Journal*, April 27, 1918) says that fractures in the upper third of the femur, especially when complicated with extensive wounds of the hip and buttock, present great difficulty in treatment with the Thomas or other available splint. Abduction and extension must be provided, the wounds should be accessible for dressing, and the splinted patient should be easily transported without disturbing the immobilization of the fracture. To meet these requirements a splint has been devised, modeled on the lines of the Thomas. The ring of the Thomas splint is transposed to the sound side, taking the ischial tuberosity of that side as a base for the extension. The inner rod of the splint is attached to this ring, an offset being made for the genitals. The rod is continued into the outer rod which ends above in an iliac pad which fits just below and parallel to the crest of the ilium on the fractured side. This pad is continued in a well protected broad band which passes around behind the pelvis fitting snugly into the sacral hollow and ending in a leather strap in front. At the front of the splint the iliac pad and the ring are connected by an iron rod which runs transversely across the body and to which the leather strap is also attached by means of a buckle. The outer and the transverse rods are provided with screws and nuts for adjustment for length. The plan of the splint is shown in a number of illustrations. Abduction is secured by the tilting of the pelvis through

pressure on the ischial tuberosity of the sound side and extension by weight and pulley or by a graduated spiral spring. Flexion at the hip can be secured by bending the splint or elevating the foot. The splint is light, inexpensive and easily carried.

**Ethylhydrocupreine (Optochin) in Lobar Pneumonia.**—H. F. Moore and A. M. Chesney (*Archives of Internal Medicine*, May, 1918), in clinical studies in seventy-five cases, found ethylhydrocupreine hydrochloride to fulfill at least some of the requirements of a chemotherapeutic agent. Even in high dilutions it kills the pneumococcus in the presence of body fluids. It is absorbed from the gastrointestinal tract, and when injected into the muscles may pass into the blood stream. When a sufficient amount is given by mouth—0.024 to 0.028 gram per kilogram of body weight every twenty-four hours—the blood serum becomes pneumococidal in vitro, and when such a condition obtains in the blood, the pericardial fluid also becomes pneumococidal. The necessary amount cannot always be given with safety, for in one instance of the series total blindness lasting six days resulted, and in eight others there occurred visual symptoms of sufficient gravity to demand discontinuance of the drug. From the standpoint of the effect of the drug on the duration of the disease, extension to previously uninvolved lobes of the lung, the pneumococcemia, and the mortality rate, the results did not afford much support for routine use of the drug. The main reason it has not yielded more striking results seems to be that its toxicity is such as to keep the limits of dosage below the limits of effectiveness.

**Bloodless Repair of Cervix.**—A. Heineberg (*American Journal of Obstetrics*, April, 1918) finds marked advantages in a bloodless method of repair. After introducing a selfretaining speculum in the vagina, he grasps the anterior lip of the cervix in the median line with an ordinary double tenaculum and dilates the cervix moderately, mainly to determine the exact location and direction of the canal. The cervix is then drawn to one side and a special angulated tenaculum forceps, with a pedunculated metallic ball attached to the outer aspect of each blade above the angle, is applied to the cervix well above the level of the proposed amputation or denudation. Next the cervix is drawn to the other side and a second angulated forceps applied opposite the first. The ordinary tenaculum is now removed, the handles of the two special forceps brought together, and a rubber ring, such as is sometimes employed to hold together the tops of umbrella ribs, stretched over the forceps and carried up on the cervix to a level above the balls on the forceps. The handles of the forceps are then separated and handed to an assistant, thus acting also as lateral retractors of the vagina. Finally the repair operation is proceeded with, care being taken throughout not to tear the cervix by excessive traction on the forceps. When the vagina is long and narrow or the cervix cannot be easily drawn down, forceps provided with balls but with a long curve instead of an angle can be applied more easily than the angulated forceps. Where it is desired to remove the forceps and rubber ring before tying the repair sutures, the ring is simply cut through.



**Drainage of Deep Thigh Wounds.**—W. Sampson Handley and P. J. Hanlon (*Lancet*, May 25, 1918) suggest that the special gravity of infected deep thigh wounds lies in the enclosure of the structures in the inelastic sleeve of the fascia lata. This leads to extensive spread of the inflammation under great pressure. Hitherto the methods of drainage have been very inadequate, but a study of the anatomy of the thigh in cross section reveals that the most important intermuscular space is that between the vastus externus and the crureus, which also communicates with many other intermuscular spaces and extends the whole length of the thigh. This space is very readily opened by a longitudinal incision in the line of the external intermuscular septum at the posteroexternal aspect of the thigh. The incision runs for two thirds the length of the thigh and the separation of the tissues is made along the plane between the hamstrings and the external intermuscular septum. When the linea aspera is reached the external intermuscular septum is cut through along its attachment. This gives free opening, good drainage, and does not endanger any important structure.

**Influence of Treatment on Bacterial Flora of War Wounds.**—Kenneth Goadby (*British Medical Journal*, May 25, 1918) draws his conclusions from three years of study of the bacterial flora of war wounds as seen in home hospitals and finds that the mass infection of wounds has shown progressive diminution while the persistence of anaerobic organisms in the wounds has not undergone a similar reduction. The use of the two common antiseptic dressings—Bipp and hypochlorite—has not materially diminished the anaerobic flora. Of the various methods employed in the immediate treatment of wounds at the front, early, complete excision of the damaged tissues seems to be the only one which has materially reduced the anaerobic wound flora. The question of latent infection as contrasted with persistent infection is of great importance in relation to the performance of subsequent operations. Since the organisms in latent infection are found in close proximity to healthy tissue, they are likely to be at the site of the subsequent operation. Finally, it is found that bone fragments split off at the time of the original injury invariably become sequestra, probably due to the proteolytic action of the bacteria.

**A Vaccine for Bronchial Asthma.**—J. Morrison Hutcheson and S. W. Budd (*American Journal of the Medical Sciences*, June, 1918) prepare their vaccine in the following manner: One c. c. of washed sputum is incubated in ten c. c. of broth and one or two drops of guineapig serum for forty-eight hours. The culture is then standardized and killed by heat of 60° C. for a period of two hours. Further decomposition is prevented by adding carbolic acid until a one per cent. solution results. This is cultured out to ensure sterility of the suspension. The vaccine is then diluted with normal saline until each cubic centimetre of the suspension contains 500,000,000 to 1,000,000,000 organisms. The initial dose is five minims; each subsequent dose is increased by one minim up to a maximum of fifteen minims. This amount is not in-

creased, though the treatment may be continued several weeks. The authors report the following results obtained in twenty cases of typical bronchial asthma. Complete relief in twelve after one to five injections. Longest period of freedom from symptoms, sixteen months; shortest, six weeks. Distinct improvement in five cases. No effect was observed in two patients, one an elderly man with emphysematous lungs and a history of asthma for over twenty years, the other a case in which asthma followed injury to the chest and the x ray showed ununited fractures of several ribs. In one case the vaccine seemed to increase the intensity of the paroxysms; the explanation seemed to be that too long a time was allowed to elapse between injections. Injections in most cases were made twice a week, but the writers think that a shorter interval would prove more desirable.

**Chronic Septicemic Endocarditis with Splenomegaly.**—David Riesman (*Journal A. M. A.*, July 6, 1918) calls attention to the fact that the spleen is practically always enlarged in cases of chronic septicemic endocarditis, and points out that the spleen is well known to be a filter for bacteria in the blood. The organisms filtered out by the spleen may not be destroyed, but may multiply there, throw large quantities of toxins into the circulation, and keep up the infection even after the primary focus has ceased to exist or to be active. On the strength of these views and since the use of autogenous vaccines, transfusions, drugs and other measures failed to avert death, splenectomy was thought of as a possible measure of value. One case was submitted to this operation after preparation by blood transfusions, and during the month of the man's subsequent life his general condition and blood picture showed decided improvement. Death resulted accidentally from an intercurrent abscess of the larynx.

**Effect of Phosphorus on Growing, Normal, and Diseased Bones.**—D. B. Phemister (*Journal A. M. A.*, June 8, 1918) says that since the researches of Wegner, in 1872, phosphorus has been used in disorders of ossification, but there has been little evidence brought out as to just what changes it produces. From a careful röntgenological study of three cases Phemister finds that, given alone, phosphorus stimulates markedly the production of bone and calcium accumulation in the normal zones of growth in healthy children. The stimulant effects on endochondral bone growth are particularly marked, and the overproduction of bone in juxta-epiphyseal regions of the shafts of the long bones continues for some time after the administration of the drug has been stopped. In diseased bone there are certain differences in effect; thus in the florid stage of rickets there is no x ray evidence of increased bone growth, due probably to the loss of power of lime deposition. During the healing stage the drug should stimulate bone growth. The primary union of fractures is aided by phosphorus, but union is not promoted in cases of nonunion after the normal reparative processes have been exhausted. In osteogenesis imperfecta bone growth is greatly stimulated. The entire subject of the effects of phosphorus on bone growth and repair demands much detailed investigation.



### Corpus Luteum Extract in Repeated Abortion.

—John Cooke Hirst (*American Journal of Obstetrics*, April, 1918) refers to a type of case—the “irritable uterus”—in which the uterus will stand distention up to a certain point, usually three or four months of pregnancy, then expels its contents. There is no apparent cause, such as uterine displacement, lacerations or erosions of the cervix, or pelvic adhesions, and the Wassermann is negative. In the case of a patient just beginning her seventh pregnancy, previously attended several times in abortion about the third month, the thought presented itself to the author that the cause of the miscarriages might have been a premature absorption or blighting of the corpus luteum of pregnancy, the relation of which to pregnancy is well known. Upon this basis, intramuscular injection of corpus luteum extract was instituted, one mil of the extract, representing twenty milligrams of the dried substance, being administered once daily. Thirty-six injections were given in the course of two months. The patient had never before gone beyond the fourth month and one week of pregnancy, but this pregnancy resulted in a living child delivered at term. A second patient had had five miscarriages, never going beyond three and one half months. In the sixth pregnancy corpus luteum was begun when she was seven weeks pregnant. She was also delivered at term. A third patient had a similar history and was successfully treated. Further experience by various observers will be required to establish definitely the value of the procedure. Intramuscular rather than oral use of the extract is recommended.

**Forced Feeding and the Nitrogen Equilibrium in Pernicious Anemia.**—Herman O. Mosenthal (*Bulletin of the Johns Hopkins Hospital*, June, 1918) in order to study the question of whether forced feeding has any influence on the assimilation of protein in pernicious anemia and allied diseases, observed three cases so treated, and an additional one of secondary anemia, as a control. The criteria by which the results were judged were the production and maintenance of a positive nitrogen balance, and an improvement in the blood picture. The patients were put on high diets of as appetizing food as possible, conforming to their individual tastes, and selected without any attempt to maintain a definite proportion of proteins, fats, or carbohydrates. They were kept in bed, and the only medication given was dilute hydrochloric acid. In one instance the patient was transfused twice. In all of the cases a positive nitrogen balance was obtained by this forced feeding, and a rise in the red cell count and hemoglobin was observed. One of the patients retained 3.4 grams of nitrogen a day for twenty-eight days, another 3.4 grams a day for thirty-two days, and the third 6.8 grams a day for thirty-six days. In the first case the hemoglobin rose from thirty-six to forty-eight per cent.; in the second, from twenty-five to sixty per cent., and in the third from seventy to seventy-seven, with a corresponding increase in red blood cells. The case of secondary anemia, treated in the same way, except that no hydrochloric acid was given, showed a positive balance of 8.7, a rise of hemoglobin from twenty to fifty-five per cent., and

in red blood cells from 912,000 to 3,056,000. While this may have been accidental, it is interesting in that, as Mosenthal says, it suggests that the element of protein destruction does play a considerable rôle in pernicious anemia. In considering the improvement in the blood picture, the tendency to remissions which occurs in pernicious anemia, must be considered, so that it is impossible to say just how great a factor the forced feeding was in this instance.

**Treatment of Deep Facial Scars.**—A. Poulard (*Presse médicale*, April 25, 1918) asserts that complete removal with the knife is justified only in superficial, elevated scars. In deep, depressed scars adhering to the underlying bone, complete removal may lead to great difficulties by reawakening deep infectious processes that had subsided. Often the scar is acting as a stopper in an opening leading into one of the sinuses or the skull cavity, and its removal is useless and dangerous. Poulard makes a deep incision in the healthy skin around the scar, then removes with the knife the superficial epidermal layer covering the scar, leaving, however, the main fibrous mass of the latter behind. The margins of healthy surrounding skin are then freely loosened, brought together, with a thick layer of adipose tissues, over the cicatricial mass, and sutured there. Esthetically this procedure obviates the unsightly depression left after complete excision of a scar. The scar itself fills up the base of the depression, and the thick, healthy tissues brought over it suffice to form a level surface. The sutures should, of course, be skillfully placed to secure the best esthetic results.

**Treatment of Malaria.**—C. A. Johnston (*British Medical Journal*, May 25, 1918) describes a method of treatment with subcutaneous injections of quinine which has given him uniformly good results in years of use in malarial regions. The method of giving the injections must be followed to the finest detail if it is to prove satisfactory. The materials required are: A sterilized, all glass, twenty minim hypodermic syringe with stout needles; half per cent. sterile saline solution; sterile three inch, wide mouthed test tube; five per cent. phenol in oil; pure quinine bisulphate. The patient's flank between the iliac crest and the last true rib is prepared by cleansing with soap and water and smearing with the phenol in oil. Four grains of the quinine bisulphate are put into the test tube and twenty minims of the saline are squirted in from the syringe. Bring to the boiling point over an alcohol lamp, fill the syringe with the solution, dip the needle into the phenol in oil, and when the solution of quinine has cooled to about 100° F., pick up a good lump of cutis vera of the prepared flank between the fingers, plunge the needle in to its hilt, sweep its point from side to side through the connective tissue to break down small trabeculae, and inject the solution. Withdraw the needle quickly and massage the spot with some cotton containing the phenol in oil. Repeat daily for five consecutive days in alternate flanks. The patient should also take for one month a daily dose of one twentieth grain of arsenious acid and five grains of quinine, well diluted, the latter being taken in the morning.

# Miscellany from Home and Foreign Journals

**Acute Meningitis in Congenital Syphilis.**—Hutinel (*Presse médicale*, April 22, 1918) states that attacks of meningitis in the presence of congenital syphilis are by no means rare. Some are insidious and latent in type; others, occurring among older children, may simulate tuberculous meningitis, at times so closely that confusion is practically unavoidable. The condition should be borne in mind especially when the clinical picture in a case of meningitis presents unusual features, when the child shows suspicious evidences of syphilis, when his heredity is doubtful, and especially, when recovery occurs. Even in the presence of what appears to be a tuberculous meningitis, running a regular course and the diagnosis of which is almost certain, it is wise not to render a definite diagnosis too soon, for such a diagnosis implies a fatal termination. Whenever any doubt is felt, specific treatment should be at once instituted, beginning with mercurial inunctions while awaiting the opportunity for more vigorous measures. Such inunctions have no prejudicial influence in tuberculous meningitis, and may cause rapid improvement in syphilitic meningitis, thus revealing the nature of the disturbance.

**Splenic Enlargement in Malaria.**—R. Porak (*Presse médicale*, April 22, 1918) calls attention to cases of malarial splenic enlargement occurring in the absence of all fever. This condition doubtless often escapes notice. In two of the author's sixteen cases the patients came under treatment for disorders other than malaria, and the attack of splenic enlargement was only discovered by chance. In six cases they complained of more or less severe pain in the splenic region, sometimes with added reflex disturbances such as colonic spasm, incessant cough, and pain in the loins. Six others were admitted because of their general condition of pallor, emaciation, and lassitude, together with headache and digestive disturbances. Finally, in two cases a rare manifestation of malaria was the initial disturbance, *viz.*, a diffuse erythema in one instance and sciatica in the other. In some of these cases of splenic enlargement the organ is merely sensitive to percussion or palpation. A single observation of an enlarged spleen is without diagnostic value; the organ must be found to have increased in size upon repeated examination. The temperature in these cases shows, in general, an undulating curve, with a tendency to hypothermia and a range of one to one and a half degrees centigrade; it is not periodic. Slight tremor of the fingers occurs when the temperature is rising. The general condition is one of asthenia with diffuse muscular pains. Anorexia, diarrhea and atrophy of muscular tissue are other accompanying manifestations. The diagnosis must be confirmed by blood examination. The author looks upon the splenic enlargement as an evidence of defensive activity on the part of this organ against the malarial parasites. Healthy carriers of the parasites are kept healthy by the protective action of this organ. In malarial districts all illnesses are accompanied by marked enlargement of the spleen, in the absence of all manifestations of ma-

laria; in such cases the splenomegalic form of malaria has evidently run its course unnoticed by either patient or physician. In splenic enlargement occurring as the initial evidence of malarial infection, quinine sulphate in large doses rapidly reduces the organ and leads to a gain in body weight. In secondary malaria, however, in which gametes have already been formed, quinine is incapable of effecting a complete sterilization of the organism, and must be supplemented by measures calculated to augment the resisting powers, such as rest, good food, open air treatment, and arsenic. Even after apparent recovery the patient must be kept under observation. Prophylactically, a search for and treatment of gamete carriers is as important in this as in other forms of malaria.

**Experiments Outlining the Limitations of Operations on the Abdominal Aorta.**—Charles Goodman (*Journal of Experimental Medicine*, May, 1918) reports the results of various operations on five dogs with such satisfactory results that he concludes that injuries of the abdominal aorta may be corrected with subsequent perfect restoration of the continuity of the vessel. Even when the aorta is completely occluded for thirty minutes there need not necessarily be serious consequences. Where it is necessary to resect part of the aorta, it is safe to use an arterial segment taken from another animal as a transplant. When the aorta is completely severed the safest operation is to transplant a segment, for while it is possible to reestablish the continuity of the severed aorta by a circular suture, the method entails so much difficulty to approximate the cut ends that thrombosis is likely to occur. It is fairly safe to use an arterial tube of increased calibre made of the smaller vessels, e. g., the carotid, as a transplant to the severed aorta, while fascial transplants can be employed to correct defects in the aorta with a minimum danger of thrombosis.

**Megacolon.**—Charles Greene Cumston (*British Journal of Children's Diseases*, January-March, 1918) describes this condition as one of extraordinary size of the colon. It may involve the entire colon or one of its segments. The walls of the intestine are not thinned. It may be present in the newborn and manifest itself by retention of the meconium. Two symptoms predominate: obstinate constipation and abdominal distention. Vomiting is present in about thirty-three per cent. of the cases reported. In children tetany is often seen, unquestionably the result of an intoxication due to intestinal putrefaction. Fever is rarely seen. The final symptoms are extreme cachexia, short rapid respiration, small pulse and cold and clammy extremities, and coma. This condition is to be differentiated from rickets, tuberculosis of the peritoneum or of the mesenteric lymph nodes. A rise in temperature, the presence of ascites, etc., will eliminate megacolon. Prognosis is serious as medical treatment is usually useless. Colostomy has given a mortality of thirty-five per cent. Colopexy has been used. A simple enteroanastomosis is said to produce atrophy of the useless colonic segment.



**Intermittent Claudication Following Ligation of Main Artery to Lower Extremity.**—Babinski and Heitz (*Presse médicale*, March 28, 1918), among fourteen wounded men in whom ligation of the femoral or popliteal artery had been carried out, observed intermittent claudication in five instances. Pain compelled these patients to stop after they had walked a distance varying from a few steps to a few hundred metres. The condition was still present months after the operation. In no cases were there pulsations in the dorsalis pedis or posterior tibial arteries. The oscillations shown by the Pachon instrument when applied above the malleoli were greatly reduced and failed to increase upon immersion of the extremity in hot water. Of the nine patients who did not show intermittent claudication, six could only walk slowly with crutches because of contractures or deep injury of the sciatic nerve. In the remaining three, collateral circulation had been largely reestablished so that the oscillations were almost as large on the affected as on the normal side.

**Preservation of Complement.**—B. W. Rhamy (*Journal A. M. A.*, June 29, 1918) finds that the use of sodium acetate is ideal for preserving the complement for the Wassermann reaction for the following reasons: 1, it is not hemolytic; 2, it is not anti-complementary; 3, its solutions can be sterilized; 4, in solution in physiological saline it has the same hydrogen ion concentration as the blood; 5, it preserves and stabilizes the complement for from two to three months at icebox temperature; 6, it can be used in any strength from five to fifty per cent., or even in crystal form; 7, its action is not antibacterial; 8, it is anticoagulant when added to whole blood in certain strengths; and, 9, it will preserve human complement. The best method of obtaining and preserving guineapig complement is to bleed the pig by severance of both carotids, gently break up the clot as soon as it has formed, centrifugize, pipette off the serum, and dilute it to forty per cent. with twelve per cent. solution of sodium acetate. This is then preserved in the icebox. This serum loses only about 0.02 unit of complement per week when kept cool. The complement must be titrated against every new batch of red cells, owing to the variability in the latter.

**The Nutritive Value of Maize Protein: Phosphorus and Calcium Requirements of Healthy Women.**—H. C. Sherman, Lucile Wheeler, and Anna B. Yates (*Journal of Biological Chemistry*, May, 1918) studied the nitrogen, calcium, and phosphorus balances in two healthy women during seven consecutive periods of four days each, using in the first series a diet of wheat bread, butter, peanut butter, milk, meat, apples, and grape juice, and in the second series with one subject a diet which included 200 grams of corn meal a day, about one-third of the protein thus being derived from maize, and with the other woman a diet largely made up of wheat bread for twenty days, and then for eight days corn meal was substituted for much of the wheat flour used in the bread and also for part of the sugar previously used, so that about one-fifth of the protein of the last period was derived from maize. Unless eggs or milk were used plentifully

in cooking it was difficult for one unaccustomed to eating maize to live on the diet without a disturbance of appetite or digestion. However, the conditions of the experiment were very severe, so that the authors regard the results as very favorable to the use of maize protein in normal adult nutrition, because on a continued low protein diet, where forty-seven per cent. of the total protein was from wheat flour and thirty-one per cent. from corn meal, the latter was used efficiently in maintaining the nitrogen equilibrium, and also because when maize protein was substituted for wheat protein to an extent affecting one fifth of the total protein intake, there was no unfavorable effect on the nitrogen balance. The minimum output of phosphorus per day of 0.71 to 0.69 gram in these subjects, who weighed sixty and fifty-four kilos respectively, would correspond to the minimum requirement of an average sized man per day (0.83 and 0.89 gram respectively in a man weighing seventy kilos). In both subjects there was a constant negative balance for calcium and no tendency to equilibrium.

**Heat Production.**—Soderstrom, Barr, and Du Bois (*Archives of Internal Medicine*, May, 1918), in ten experiments on five subjects, administered small breakfasts of bread, butter, sugar, and milk, each totaling 222 calories. In the first hour the heat production increased seven per cent., in the second and third hours, two per cent., while in the sixth to eighth hours the metabolism was slightly lower than before the breakfast. Only during the first hour could absorption of food have been sufficient to produce a "metabolism of plethora." The experiments seemed to indicate that taking five or six small meals a day instead of two or three large ones would result in a saving of five or ten per cent. of the basal metabolism, or about 200 calories a day. Practically, however, this would be of little importance, and one must remember the waste of time in taking frequent meals and the tendency to overeat.

**The Influence of Parathyroidectomy on the Gastrointestinal Mucosa.**—G. A. Friedman, (*Journal of Medical Research*, March, 1918), was able to produce gastric or duodenal lesions after parathyroidectomy in eleven out of fourteen dogs, and in two dogs appendicitis lesions were present, in one associated with a duodenal ulcer, and in the other with a gastric ulcer. Similar results were obtained with rabbits, so that Friedman believes the initial lesion of peptic ulcer and appendicitis may be produced by a disturbance in the thyroid secretion. These lesions did not show a tendency to heal because of the continued thyroid disturbance. As the degree of thyroid insufficiency in man is less than that produced experimentally in animals, there is the likelihood that the anomalous constitution created by lack of thyroid secretion may be corrected, but if this does not happen, through the irritation of food and the effect of excessive secretion of hydrochloric acid, the acute ulcers may become chronic. It therefore appears that the thyroid, and perhaps the parathyroids and adrenals, may be responsible for the association of peptic ulcer and appendicitis.



**Circulatory Reactions to Graduated Work.**—Theodore B. Barringer, Jr. (*American Journal of the Medical Sciences*, June, 1918) concludes that the occurrence of a delayed rise in systolic blood pressure after work indicates that the preceding work has either overtaxed, or is on the point of overtaxing the heart's reserve power. The presence of a delayed rise can be determined by the infrequent method of plotting the pressure curve with almost as much certainty as by the frequent method. A small number of experiments upon normal people and upon patients with cardiac insufficiency showed that no definite relation existed between the time required for the pulse rate to return to normal and the condition of the cardiac reserve power.

**Bordet-Wassermann Reaction of the Cerebrospinal Fluid in General Paralysis.**—J. A. Sicard and H. Roger (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 21, 1918) obtained a positive reaction in the spinal fluid in 100 cases of paresis, and maintain that a negative reaction in a suspected case, especially if the test is twice repeated at weekly or fortnightly intervals with the same result, excludes a diagnosis of this affection. Such differentiation is now of especial moment, as certain concussion states more or less closely reproduce the symptoms of chronic diffuse meningoencephalitis. High albumin content of the spinal fluid generally accompanies a positive reaction; the albumin varies independently of treatment and depends upon the congestive attacks sometimes clinically noticeable in these patients. The Bordet-Wassermann reaction of the blood was positive in about ninety-five per cent. of the cases before treatment and in only thirty-five per cent. after vigorous intravenous arsenobenzol therapy. On the other hand, the same reaction in the case of the spinal fluid always remained positive after treatment, even when doses of arsenobenzol so large as to cause severe intoxication were used.

**Comparative Activity of Local Anesthetics on Sensory Nerve Fibres.**—Torald Sollmann (*Journal of Pharmacology and Experimental Therapeutics*, February, 1918) studied the activity of various local anesthetic agents on sensory nerve fibres by applying them to the sciatic plexus in the frog and observing the presence or absence of reflex response to stimulation of the foot by dilute hydrochloric acid. Cocaine, novocaine, and tropacocaine were found about equally efficient. Potassium—in the form of potassium chloride—alypin, quinine, and urea hydrochloride, and especially antipyrin, proved less active, and their efficiency ratio in comparison with cocaine was lower as regards sensory fibres than the author had previously found to be the case as regards motor fibres. Alkalinization by the addition of 0.5 per cent. of sodium bicarbonate to the anesthetic solutions was found to increase the efficiency of the organic anesthetics from two to eight times. Even this enormous increase was only about one half that previously noted from alkalinization in the case of motor fibres. Addition of epinephrin, one in 10,000, to one quarter or one eighth per cent. solutions of cocaine or novocaine hydrochloride failed to increase their paralyzing action on sensory fibres as it had failed similarly in

the case of motor fibres. Mixtures of cocaine hydrochloride with novocaine hydrochloride or with quinine and urea yielded a simple summation of activity, without potentiation—a result similar to that noted with motor fibres. Mixtures of the anesthetics with potassium chloride likewise failed to show potentiation on sensory fibres. This was in marked contrast to the effects on motor fibres, in the case of which the efficiency was potentiated eight times with the potassium salt. Thus apparently the sensory fibres show some important differences from motor fibres in their response to local anesthetics.

**Optic Atrophy and Multiple Neuritis from Manufacture of Explosives.**—Arthur S. Hamilton and Charles E. Nixon (*Journal A. M. A.*, June 29, 1918) reports in detail the first case so far encountered of bilateral atrophy of the optic nerves and peripheral multiple neuritis which has developed as the result of exposure to binitrotoluene. The patient was a man thirty-nine years old, of good general health and habits and good past and family histories. About a year after beginning to work with the binitrotoluene he first noticed numbness and prickling in the feet, extending up to the knees after five months. After a month at outside work these symptoms passed off, except from the feet. He then returned to his former work and after five months the symptoms began to return and his sight began to fail. He also became slightly cyanotic and seemed anemic. After stopping work again his sight continued to fail rapidly for some time until it was only 6/200 in each eye. The eye grounds showed well developed atrophy of the optic nerve and general examination revealed a well developed multiple peripheral neuritis. Under treatment with potassium iodide, laxatives, and sweating his condition improved and recovery was almost complete from both the neuritis and the optic atrophy.

**Cranial Bone Plates in Cranioplasty.**—Sicard, Dambrin, and H. Roger (*Bulletin de l'Académie de médecine*, April 30, 1918) have been resorting successfully to this procedure for two years, and have now operated in eighty-five cases without mortality, with perfect tolerance of the bone plate, and with excellent esthetic and protective results. The plate is obtained from a human cadaver at autopsy and is taken from the corresponding region of the skull. It is properly shaped, thinned down, then freed of fat and sterilized. The few persistent local sinuses and complications necessitating removal of the plate in three or four of the earlier cases were entirely obviated by strict technic in the latter portion of the series. Of the other methods hitherto used, metallic plates are open to the objection of ultimately inducing local irritation. Cartilage and osteoperiosteal plates sometimes give way and become absorbed, even to the point of reappearance of the cerebral pulsations. Cartilage plates placed in blood or blood serum for a few hours show marked changes in curvature. Bone plates, on the other hand, promote subjacent osteogenesis, or rather, fibrogenesis. While they are similarly susceptible to absorption, there remain locally very firm fibrous or osteofibrous residua which continue to serve the purpose of the plate.

# Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.\*

*Stated Meeting, Held on May 2, 1918.*

The President, Dr. WALTER B. JAMES, in the Chair.

**Specific Prevention of Poliomyelitis.**—Dr. H. L. ABRAMSON read this paper which presented only the salient facts brought out in work extending over a period of two years, and dealt with efforts made toward the development of a method for protection against acute poliomyelitis. The first effort in this work consisted of an attempt to adapt the virus of poliomyelitis to the rabbit, but after rather extensive experience with this animal it was found to be unsuitable. Attention was then directed to the use of monkeys of the rhesus variety. This animal, as had been amply demonstrated in a wealth of experimental work, was highly susceptible to experimental poliomyelitis. The virus of poliomyelitis used was obtained from the Rockefeller Institute and was of such potency that .05 c. c. of the supernatant fluid of a centrifuged five per cent. emulsion inoculated into the brain of a monkey produced a fatal poliomyelitis infection. This virus had passed through a large number of monkey generations at the Rockefeller Institute and through ten additional generations at the Board of Health Laboratory. It was very reliable and had not yet failed to produce lethal poliomyelitis in normal animals that had been inoculated intracerebrally with .05 c. c. or more of a five per cent. emulsion. It was decided that the injection material ought to be modified or attenuated in some manner so as to remove any possibility of harm from the method itself. Also, in order to render the emulsion utilizable in time of epidemic, it was decided that the time consumed in administration of the method ought to be as short as possible consistent with the production of a degree of immunity sufficient to protect against a reasonable exposure to the disease.

The first method tried, an effort to attenuate the highly potent monkey virus by exposure to formalin, which was later removed by dialysis, was not satisfactory. Two other methods were tried, the killed virus method and a method involving the use of virus subjected to graded heat with a final injection of unheated material. The first produced some immunity, but not of a high degree. The second produced protection of considerable degree against an unusually severe method of testing, the sera of these animals all containing neutralizing substances, but in varying degree. The latter method also produced no ill effects as a result of the treatment itself; the injection of graded attenuated material prepared the animal to take care of the final injection of live virus; it produced sufficient immunity to protect animals against a multiple intracerebral dose of a highly potent virus, which was a hundredfold severer exposure than that to which persons were exposed in the natural infection; and it produced neutralizing substances in the blood in such concentration as should be amply able to com-

bat the comparatively mild infection which might lodge on the mucous membrane of persons exposed to poliomyelitis. Furthermore, the series of injections were completed in five days, which rendered it highly practicable in time of epidemic. It could be easily prepared from the glycerolated virus which might be kept on hand over a long period of time without deterioration and required only moderate laboratory facilities.

**Pneumococcus Type Determination in Pneumonia.**—Dr. CHARLES KRUMWIEDE presented the results of a successful effort to establish a rapid method for the determination of the type of pneumococcus. Observations, made in an attempt to determine the earliest time at which precipitable pneumococcus antigen was demonstrable in the washings from the peritoneal cavity of mice inoculated with pneumonia sputum, indicated that pneumonia sputum contained considerable soluble pneumococcus substance. This fact, as well as the knowledge that sputa of pulmonary origin contained albumin, suggested the following rapid method for the determination of the type of pneumococcus. If the sputum was of satisfactory quality, it would coagulate if the test tube in which it was poured were placed in boiling water for several minutes. The clot was broken up and the fluid separated from it was added to the type sera. With positive sputa the readings were usually made within fifteen or twenty minutes after the receipt of the specimen. The success of the method depended on the quality of the sputum submitted. About three c. c. of sputum was desirable for the test.

Of 183 sputa received in the regular routine of the department, 129 had been satisfactory for this method of testing. Of the good specimens, ninety-nine contained a fixed type and about ninety-five per cent. gave a promptly positive reaction. Of the poor specimens, sixteen contained fixed types, but mouse inoculation was necessary to determine this. Of fifty sputa containing a Type I pneumococcus, forty were satisfactory for this method and thirty-nine gave a positive result. As Type I serum was available for therapeutic purposes, in these instances it was possible to send the serum back with the messenger who delivered the sputum which resulted in the serum being administered within half an hour instead of the usual twenty-four hours, thus hastening the possibility of the patient's recovery.

**Technic of Complement Fixation in Tuberculosis.**—Dr. M. A. WILSON said that in this study of tuberculosis complement fixation two points of technic had been found which had increased the efficiency of the test. The first had to do with the standardization of the guinea pig serum to determine the value of the complement, and the second dealt with the advantage of testing the patient's blood several days before bleeding. The latter point was discovered by Doctor von Wedel and would be explained by him in his paper. The method for making the tests was as follows: All reagents were used in one tenth the classic Wassermann volumes.

\*Program arranged in cooperation with the Laboratory of the Board of Health, William H. Park, M. D., Director.



Fixation period, one hour, 37° C. The patient's serum was inactivated for thirty minutes at 56° C. Two antigens were used; one was made from twelve stock cultures of human tubercle bacilli, the other from a strain used for tuberculin production. The antigen was standardized to be used in such a dilution that one c. c. would contain two standard fixation units and one fourth or less of the anti-complementary dose. The unit was determined by titrating varying amounts of the antigen with one c. c. of a known positive tuberculosis serum and two hemolytic units of a complement known to be potent for tuberculosis fixation. These antigens were not anticomplementary. They had given uniform and constant fixation reactions. The tests showed they were specific and stable. They were made ten months ago and were perfectly efficient today.

The complement was obtained from guineapig serum twenty-four or forty-eight hours old, pooled from six to ten pigs, the serum from each pig having previously been tested for its hemolytic strength, for antishoop amboceptor, for anticomplementary reaction and for fixability with the combination of tuberculosis antigen and tuberculosis serum. This last test was emphasized as essential if uniform results were to be obtained with different lots of complement; it had been proved beyond a doubt that although a guineapig serum might react perfectly in all other respects, it might fail to be fixed by tuberculosis antigen and serum. A table, giving the number of pigs efficient for complement fixation showed that out of 129 guineapigs only forty-six were efficient for tuberculosis, 117 for meningococcus and eighty-eight for gonococcus complement fixation. The conclusions were that all guineapig serums were not efficient for tuberculosis complement fixation; and that the serum from each guineapig should be tested for fixability with tuberculosis antigen plus tuberculosis serum before pooling the complement for diagnostic tests.

**Clinical Results of Complement Fixation in Tuberculosis.**—Dr. H. VON WEDEL presented the preliminary results of a study of the complement reaction for tuberculosis made to determine the value of this reaction as a means of diagnosis and prognosis. In the course of this study he made a very interesting observation which might possibly account for some of the wide discrepancies in the various complement fixation results reported by the different workers. The complement fixation results on sera from positive cases made the first day after taking the specimens from the patients were in a very large percentage of cases negative or weak positive; while in most instances, seven days later these same sera gave a strong positive reaction and continued to give this strong positive reaction week after week with unvarying regularity. None of the nontubercular sera gave a positive reaction the second, third, or fourth week after taking the specimen from the patient. The conclusions so far reached in this study were as follows: 1. The tubercle bacillus antigen used was not anticomplementary in four times the amount necessary to give positive fixation results with sera from the majority of active tuberculosis cases. 2. Pooled complement

from at least six guineapigs was used in making the tests, or the complement from single guineapigs was tested for its complement fixation value with known positive sera. 3. Double the original Wassermann amount of patients' sera was used. 4. No report was made until the sera had been tested after having been kept under sterile conditions in the ice chest for from four to six days, but probably six days. 5. The results seemed to indicate that if the aforementioned modification of the original complement fixation tests were used, 100 per cent. of nontubercular cases would give absolutely negative results; nearly 100 per cent. of the primary and active cases would give positive results with the exception of the late cases; and about twenty-five per cent. of the partially inactive and negative cases would give only weak positive results. Before definite conclusions could be drawn, however, it would be necessary to make many more tests in a large number of sera from active, inactive, and incipient pulmonary tubercular cases with a large number of controlled sera from nontubercular cases. The results on about 3,000 cases would probably be reported in the autumn.

**The Meningococcus Carrier Problem from the Laboratory Standpoint.**—Dr. ANNA W. WILLIAMS said that the investigations in regard to the detection of meningococcus carriers in the Bureau of Laboratories had been carried on chiefly from two standpoints: 1, that of developing a method of making an accurate and rapid diagnosis that could be of practical use in examining large series of cases such as occurred when meningitis appeared in camps, and 2, that of determining the types of meningococci found in carriers and their relation to case strains. The work was undertaken because of a request for aid in the hunt for carriers in certain camps, aviation fields and ship stations in the vicinity of New York City. First the different culture media recommended were tested out, and this was done by using freshly isolated cultures, and these in one in fifty dilution. Among those tested was the so called hormone medium recommended by Lloyds in England and Doctor Hunston in this country, which had been found to give the best results but only when a small amount of blood was added to it. Every lot of this medium should be tested by planting plates of it containing blood and plates without blood with a one to fifty dilution of two recently isolated strains and only those lots should be used giving at least a moderate growth on the plates containing no blood. A comparison of this with other methods showed the time shortened to twenty-four hours and procedure and apparatus much modified.

In regard to the second standpoint (the types of organism in these carriers and their relation to case strains) this part of the work and the more important part of helping to decide the necessity of continued weeding out and isolation of meningococcus carriers had only just begun. The work had so far been limited by the inability to determine accurately the extent of apparent contact. Still, two groups of cases had been studied in connection with the case strain in each group which seemed to promise some interesting data. One of these groups came from



an aviation field: the case developed in one of three carloads of soldiers coming from the south. The man had given slight symptoms for a day before arriving and the soldiers from all the cars had mingled freely at several stops on the way up. The immediate contacts of the case, as far as could be determined, were thirty in number and among these were eight carriers, or twenty-three per cent. In the rest of the squadron, numbering 187, twenty-one carriers, or eleven per cent., were found. The whole number examined, 217, gave thirteen per cent. carriers. The second group came from a receiving ship station. The immediate contacts gave twenty-four per cent. carriers and the others gave nineteen per cent. The whole number examined, 293, gave 21.5 per cent. carriers. The difference in percentage between this group and the one from the aviation field was significant.

Gordon and his coworkers claimed there were four distinct types of pathogenic meningococci demonstrated by absorption of agglutinins; Griffith and others thought there were only two rather indefinite types, and the last Rockefeller division gave three groups. Gordon stated that those strains that did not fall into his four types were probably non-pathogenic and did not need to be isolated; if this contention was correct it would simplify matters from the standpoint of an efficient army but it would increase the complexity of the laboratory test. In the speaker's study by the method of absorption it was found that in the first group the case strain and nearly half the contact strains fell definitely into Gordon's type I group, one fourth belonged to type III, those most nearly related to type I, and the rest either belonged to type IV or were heterogeneous. These results seemed to bear out Gordon's claims. The study of the other groups proved, however, how much study was still needed to clear up this problem.

#### Immunization of the Infant against Diphtheria.

—Dr. WILLIAM H. PARK, Director of the Laboratory of the Board of Health, said that a number of the workers at the laboratory had been engaged for three years on the question of active immunization against diphtheria, and now a special attempt was being made to immunize the infant. It was not necessary to go over the history of the development of this work, but there were several points in connection with it that might be of interest at this time. The results obtained during the last three years showed not only the possibility but the feasibility of immunizing the child population against diphtheria.

The injections were perfectly harmless. The tests were carried out on children in institutions. The children first were given the Schick test and then immunized. It had been possible to check up the results, and up to the present there had been no untoward consequences. Some showed a reaction, but in none were there any aftereffects. There had been no cases in which any harm had resulted. The blood and urine were examined at regular intervals, but revealed no changes. There had been no local reaction beyond a slight redness and hardly appreciable swelling. The injection was made in the arm; the amount was one half cubic centimetre in infants, two thirds cubic centimetre in those one

year old, and one cubic centimetre in older children. Recently one cubic centimetre had been given even to infants, as there had been no bad aftereffects.

If the injections could be given combined in one amount, this would simplify the process, and experiments were being made along this line, with a view to giving two or three cubic centimetres in scattered regions. At present it was found that three injections gave immunity in ninety-eight per cent., two injections in ninety per cent., and one injection in seventy-five per cent. Most of the work had been done with three injections.

As to the time, it had been found that no immunity developed for two weeks, but from the second to the fourth or fifth week there was rapid increase in the number that were immune. In the fifth week three fourths were immune, and in two months all were immune. All the immunity was tested by the Schick reaction, and there was in addition the result that no diphtheria had followed in the immune cases. In a home for infants, where this immunity had been produced, they had had no diphtheria for two years.

At birth a child had a positive immunity transferred by the mother, but this generally disappeared during the second six months of life, though in some not until the end of the second year. Therefore one could not depend on a negative Schick as an indication of permanent natural immunity until this time. If after four years of age the child was immune, it was so through the production of the child's own cells, and the immunity was permanent. This brought up the difficulty of knowing what to do in immunizing infants. They could all be immunized without regard to the Schick reaction, and that was probably the best way except in institutions where regular tests could be made and any change from negative to positive instantly noted and acted upon. Outside of institutions it was best to immunize all children whether immune or not, and a retest should be made in six months or a year of all those that reacted. It depended on the family and the circumstances, but whether the child was immune or not during its first year, three injections would give active immunity, though a little less would develop in those already immune than in those susceptible.

It was essential to immunize the infant and not the schoolchild. The statistics of death in New York City from diphtheria in 1917 showed 133 in the first twelve months, mostly from two to six months; 274 in the second year, 186 in the third year, 152 in the fourth year, and 97 in the fifth year. At the primary school age there were only twenty per cent. that were not immune, but when one thought of the deaths that occurred before school age, the necessity for conferring immunity was very apparent. The immunity thus induced in infants lasted probably for life, for once having been instituted, it was continued as a natural immunity. It was a question whether the amount of diphtheria warranted the trouble of giving the injections, but on the part of the infant and the parents there was no objection; there was no wound and no discomfort like that of vaccination for smallpox. The department of health urged upon the general population the consideration of the value of this immunity.

*Discussion.*—Dr. ABRAHAM JACOB said that after

listening with intense interest to the account of the valuable work of the health department, he was more than ever of the opinion that the health department, as it had been in existence in New York for the last few years, was well worth while maintaining, and it was the duty of every one to see to it that the department was not changed from without in any particular in its most important aspects. All that had been said in defense of the health department had been worth while and all should echo it, not only to the public but in private practice. Doctor Jacobi concluded by declaring that what he could do to uphold the health department and all those who had been doing this good work, that he would do, and he wanted every one to do the same.

Dr. I. L. FEINBERG reminded his hearers that this city and the health department owed much to Doctor Park; that the United States of America and other countries throughout the world had always listened keenly to the scientific pronouncements of Doctor Park on all of the subjects relating to the bacteriological questions at issue in this municipality. He recalled the picture presented (a quarter of a century ago) of children dying in myriads of diphtheria, dying of acute meningitis of the most virulent and horrible type, of typhoid that predominated and spread, and he realized how this picture had changed in the city, how the death rate from these diseases had fallen. And yet today one was confronted with the almost incredible fact that the health department was in jeopardy and that its scientific department might be annihilated. He echoed Doctor Jacobi, and in addition moved that before adjournment the audience arise as a vote of thanks to Doctor Park and his fellow workers, who had shown that in the face of misappreciation, of antagonism, of unwarranted interference, they were continuing their work for the benefit of their fellow citizens, and as a token of firm confidence in them in their ventures for the betterment and safeguarding of the health of the citizens of New York.

#### PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Meeting held Wednesday, April 10, 1918.*

The President, Dr. FRANK C. HAMMOND, in the Chair.

#### SYMPOSIUM ON THE MODERN TREATMENT OF BURNS AND LEG ULCERS.

**Treatment of Burns.**—A paper by Dr. Walter Estelle Lee and Dr. William F. Furness was read, on the treatment of burns by exposure to the air and the application of dichloramine-T through paraffined mosquito netting. Doctor LEE said that Stewart's definition of an ideal dressing for severe burns was one "that would be 1, aseptic or 2, mildly antiseptic; 3, that would provide free drainage; 4, that would not macerate or 5, stick to the tissues and 6, would not necessitate frequent changing." Still another might be added, that 7, it should minimize the abnormal radiation of body heat from surfaces devoid of the protection of the skin and subcutaneous tissues. We did not have at the present time any one method of treatment of burns in which all these conditions were attained. Am-

brine and the many forms of paraffin films now used did meet some of the necessary conditions. The recent interest in paraffin film treatment had for the time being induced many surgeons to abandon a method which for some time had given excellent results (the exposure of the burned surfaces to the air). The open air treatment of burns more nearly met the theoretical requirements of an ideal dressing than any other that had been proposed. The following modification of the open air treatment of burns was suggested: the covering of the entire burned area and a generous portion of the surrounding skin with a single layer of mosquito netting previously impregnated with paraffin wax. The paraffin netting might be held in place by single layers of a circular turn of gauze bandage or by adhesive strips applied over the netting and the uninjured skin (never over the burned area). Such a dressing was aseptic, and the large open meshes provided perfect drainage for the wound secretions to the outer surface of the netting. When this scab formation on the outer surface of the netting interfered in the slightest way with the drainage of the wound secretions, it was completely and painlessly removed by lifting the nonsticking paraffin net from the surface of the wound, usually once in twenty-four hours. The paraffined netting rarely adhered to the wound surface and then a generous spraying with sterile paraffin oil always loosened it. The only remaining condition to be met in order to have the air treatment fulfil all the requirements of the ideal dressing was the use of an antiseptic. A one or two per cent. solution of dichloramine-T dissolved in chlorinated paraffin wax (after the method of preparation proposed by Dakin and Dunham) could be used on burned surfaces without causing any objectionable subjective or objective irritative phenomena. This oil solution could be readily applied in the form of a spray (at the room temperature no heating was required as with the paraffin films) to the entire burned surface, before the paraffined net dressing was applied, and subsequently, through the meshes of the net on to the surface of the wound, if for any of the above mentioned reasons, it was unnecessary to remove the dressing each day. Doctor Lee and Doctor Furness had employed this modified air treatment of burns upon eighty-six cases of burns at the Pennsylvania and Germantown Hospitals during the last seventeen months. With it, the doctors felt that because of the surprisingly small degree of infection occurring in these wounds, they had healed more promptly and with more satisfactory scars than with any other method heretofore used. (The paper outlined the preparation of the paraffined mosquito netting used to minimize the sticking of the dressings to, and permit the drainage of the discharges from, the surfaces of the wounds and extensive burns.)

Dr. ROBERT PERRY CUMMINS said that in the steel industry one saw almost every type of burn. Among the most common were those caused by molten metal splashes coming in contact with the tissues, those caused by setting fire to clothing, and those due to back drafts from furnaces. In treatment, all burns had to be regarded as infected



wounds; shock had to be considered and the question of the primary dressing; also treatment after subsidence of the acute inflammatory stage, the constitutional treatment and the treatment of sequelae. For the immediate treatment of shock he relied more upon the use of adrenalin and ergot than upon strychnia and digitalis, and would caution against over stimulation. For the cleansing of wounds benzine was the best agent. The dressing should be warm sterile boric or normal salt solution changed once or twice every twenty-four hours, and continued for three or four days. In the healing period the ambrine treatment or one of its substitutes, or the open air method, had given the best results. If the ambrine method was employed Doctor Cummins advised that its use be suspended for a few days that the wound might be freed of pus by the application of an antiseptic such as dichloramine-T. He was decidedly opposed to the exclusive use of the ambrine method in burns of large area; and he did not use ambrine over a sloughing area. Exuberant granulations should not be cauterized; these were soon strangled by the elements of regeneration of the skin. A very striking characteristic of the scar of ambrine was the absence of hard, poorly nourished scar tissues. It almost invariably resembled normal skin. The open air treatment was more satisfactory in application if the patient was a hospital case. When scar and contractures were likely to lead to deformities, splints, postures, and passive motion formed as important a procedure as technic and dressing. Important factors in the treatment of the complicating toxic nephritis were an abundance of concentrated liquid food and water, stimulation, elimination by every possible avenue. The prognosis presented a difficult problem; the outcome was uncertain until the patient was well advanced toward recovery; alcoholics had little chance of recovery in extensive burns. In treatment, careful surgery and technic were of equal importance with the dressings.

**Iodine Fumes in the Treatment of Burns.**—Dr. JOHN J. GILBRIDE said that about a year and a half ago he had read in the *Journal of the American Medical Association* of the satisfactory results in treatment of ulcers with iodine fumes, and that he had employed this method in a severe burn of the leg from a hot water bottle in a patient who had had his appendix removed. The burn had resisted the ordinary treatment given for a month or two. At the time of the first application of the iodine fumes the ulcer was about three quarters its original size. One subsequent treatment was given and in a week following the ulcer had completely healed. Doctor Gilbride said that he had since used the fumes in four other cases of burn with most satisfactory results.

**The Treatment of Leg Ulcers.**—Dr. PENN-GASKILL SKILLERN, JR., discussed the principles of the treatment of ulcer, 1, sterilization of the ulcer and 2, support of the part. Since congestion was the first stage of inflammation, the patient should be put to bed and the limb elevated to an angle of twenty degrees. Sterilization of the wound should then be effected, and this was best accomplished by the use of dichloramine-T. Following the applica-

tion of a twenty per cent. solution of dichloramine-T, the paraffined widemesh mosquito netting described by Doctor Lee was placed over the area and secured at the edges with adhesive plaster. The next dressing was made in from twenty-four to forty-eight hours and consisted of a five per cent. solution of dichloramine-T. If the ulcer was large skin grafting might be needed. The best method had been carried out by Steele in 1870, and utilized a greater thickness of skin, giving a graft from the size of a pea to a finger nail. These grafts took hold and made a more pliable scar. The treatment after the skin grafting was almost the same as before, that of the open method. A basket of wire gauze was placed over the open wound and the graft allowed to heal underneath. The best treatment for a small ulcer, practically sterile with healthy granulations, in which the patient was able to be up and about, was that proposed back as far as 1776 by an English surgeon and recently revived, consisting of the application of imbricated adhesive plaster strips two thirds around the limb from below upward in the direction of the venous current. These strips supported the edge of the ulcer, compressed it and kept the blood out of the edge, thus preventing the granulations becoming edematous. Discharge was reduced to a minimum by means of the compression, and calomel powder dusted on kept the wound dry. If there happened to be a concavity between the floor of the ulcer and the surface of the leg, the compression by the adhesive plaster strips was transferred to the base. In certain cases of simple ulcer in which this method was not effective, others had to be used, the simplest of which was the Nussbaum operation. In addition to local treatment there must sometimes be exposure of the nerves supplying the ulcerated area. In the treatment of leg ulcer it was essential to remember the underlying congestion and the other fundamental etiological factors involved.

**Discussion.**—Dr. EDWARD J. KLOPP said he had had opportunity to see Doctor Lee's method for the treatment of burns, and believed it to be the best. Our experience with the ambrine treatment had been limited but disappointing. For the removal of the carbonized tissue in the third degree burn he believed that the dichloramine-T was probably not necessary. The method formerly had been the use of salt solution. Most of the textbooks recommended the immersing of the patient in a tub of warm salt solution at a temperature of 100-105° F. Unfortunately, in the majority of instances the water was not maintained at this temperature and the already shocked patient was further depressed. To facilitate the removal of carbonized tissue when the tissue was not removed with the forceps under anesthetics, the surface was covered with narrow strips of sterilized gauze separated for about a quarter of an inch. The surface was then covered with gauze saturated with warm sterile salt solution. The dressing could be changed and warm salt solution added without interfering with the wound. We had nothing at present to take the place of the dichloramine-T. Concerning the end results, Doctor Lee had said that the scar was less than by previous methods. Sometimes it was sev-



eral years before the maximum contraction of a scar was attained. In the presence of a large burned area with healthy surface, skin grafting should probably be attempted because it expedited matters. Here, of course, the method of choice was the Thiersch procedure.

Dr. WILLIAM L. CLARK said that the ulcers which he saw were usually advanced cases in which ordinary methods had failed, when they were sent to him with the idea that electricity might be beneficial. The diagnosis of the ulcer was of first importance. Syphilitic ulcer had been referred to him for epithelioma; epithelioma, for simple sluggish ulcer. For the different types different treatment was required. We had found that various physical measures often did good. The principle on which electricity was used, was first, destruction of the granulations; second, sterilization; third, relief of passive congestion.

Dr. KATE W. BALDWIN had found nothing more soothing in cases of burns and more healing than the application of the violet ray of moderate strength. The value of the treatment was completely demonstrated in a child brought to the hospital in whom one third of the surface of the body had been burned. The child had been treated outside until it was in a septic condition. The child was placed on the table and without an anesthetic the moderate current was applied; the electrode was in contact before the current was turned on. The child went to sleep and remained asleep while the application over the involved surface was made.

Dr. MOSES BEHREND thought that the treatment of burns with ambrine had given good results. He believed, however, that the dichloramine-T was the better method because of its antiseptic quality.

excellent feature of his presentation is the illustrations. A great number of original photomicrographs, generously distributed two and more to a page, supplement and enrich the text. His avowed purpose, to point out the essentials of a profoundly fascinating science, to indicate some difficult and apparently irresolvable histological propositions, to attempt to elucidate, illuminate, and complete other recondite and unfinished studies, and to establish upon a permanent and convincing basis many accepted postulates and uncontested facts—this complex purpose has apparently been accomplished. The work should prove an interesting and stimulating exposition of the subject.

*Applied Bacteriology. Studies and Reviews of Some Present Day Problems for the Laboratory Worker, the Clinician, and the Administrator.* By C. H. BROWNING, M.D., D. P. H. Director of the Bland-Sutton Institute of Pathology, the Middlesex Hospital. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1918. Pp. xvi-291. (Price \$2.50.)

This book of only 291 pages represents a good nucleus of information on some of the special present day problems in bacteriology. It does not attempt to cover the whole field but reviews for the most part the latest and most scientific studies in special departments whose vital importance has been emphasized by the creation of immense armies and the exigencies of medicomilitary practice. These reviews include full résumés, with the editor's reasoned opinion on conclusions, of the latest work in the enteric infections; the diphtheria group; *Bacillus pyocyaneus* and the tetanus bacillus; as well as the general work upon antiseptics; the relationship between bactericidal action and chemical constitution, with special reference to selective inhibitory action on different species of pathogenic organisms; the special work upon the isolation of typhoid-paratyphoid bacilli by enrichment with brilliant green and telluric acid; and the use of ultraviolet radiation to differentiate organisms, etc., etc. Some of the chapters incorporate with extended comment material already published as separate papers, and this is further enriched by full references to further work.

## Births, Marriages, and Deaths.

### Died.

CLARK.—In Buffalo, N. Y., on Monday, July 22d, Dr. Joseph C. Clark.

GRAY.—In East Orange, N. J., on Monday, July 22d, Dr. Thomas N. Gray, aged sixty-five years.

HERRICK.—In Brent, France, on Sunday, June 16th, Dr. Henry Burt Herrick, of Cleveland, Ohio, aged fifty-three years.

LAWRENCE.—In Flushing, Long Island, on Friday, July 26th, Dr. Enoch P. Lawrence, aged sixty-two years.

LOFTON.—In Richmond, Va., on Sunday, July 21st, Dr. Lucien Lofton, aged forty-three years.

MARVIN.—In Albany, N. Y., on Monday, July 22d, Dr. Frederick Rawland Marvin, aged seventy years.

O'KEEFE.—In Boston, Mass., on Tuesday, July 16th, Dr. Michael Wallace O'Keefe, aged seventy-four years.

POLHEMUS.—In Nyack, N. Y., on Saturday, July 20th, Dr. Jacob Outwater Polhemus, aged eighty-four years.

POTTER.—In Lisbon, Me., on Thursday, July 11th, Dr. Augustus W. Potter, aged sixty-four years.

SANDERS.—In New York, on Monday, July 22d, Dr. Charles Walton Sanders, aged seventy-one years.

SANFORD.—In Centerville, Conn., on Tuesday, July 23d, Dr. E. W. Sanford, of Johns Hopkins University Medical Faculty, aged twenty-five years.

SHOLL.—In Birmingham, Ala., on Friday, July 12th, Dr. Edward Henry Sholl.

STOWELL.—In Watertown, N. Y., on Friday, July 19th, Dr. Olmsby Stowell, aged seventy-two years.

STUART.—In Boston, Mass., on Wednesday, July 17th, Dr. James Henry Stuart, aged sixty-one years.

YOUNG.—In Batavia, N. Y., on Monday, July 22d, Dr. Ruth A. Young, aged thirty-two years.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Normal and Pathological Histology of the Mouth.* Being the Second Edition of *The Histology and Pathohistology of the Teeth and Associated Parts.* Revised and Enlarged by ARTHUR HOPEWELL SMITH, L.R.C.P., M.R.C.S., L.D.S., Professor of Dental Histology and Comparative Odontology, University of Pennsylvania. Volume I: Normal Histology. Five Colored Plates, Three Hundred and Sixty-two Illustrations. Philadelphia: P. Blakiston's Son & Co. Pp. xvii-345. (Price \$4.50.)

This two volume work upon the histology, normal and pathological, of the mouth contributes important material to dental practice. The first volume, which we have before us, deals with the dental tissues, the oral tissues, and the histogenesis of the teeth of mammals, fishes, and reptiles. A more and more thorough preparation for scientific dental practice will do much to bring this specialty into its proper relation with the other branches, and this preparation is obviously and essentially dependent upon the same careful investigation and research into the minute normal and pathological construction of these special parts as has been found necessary in other fields with which it would and should find itself on a par. Doctor Hopewell-Smith has a singularly direct, thorough, and scientific style, and his material is well arranged. An

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## Original Communications

### THE BLOOD AND THE SOUL

*In Ancient Belief and Their Relation to the Evolution in Medicine of Humoral and Pneumatic Theories.*

BY JONATHAN WRIGHT, M. D.,  
Pleasantville, N. Y.

#### II.

#### THE BLOOD IS THE LIFE.

We have not had much trouble in tracing the connection between the pneumatic theory of disease or its counterpart in its affiliation with the soul in the beliefs of primitive men, but it is less easy to take note of the humoral theory as existent in primitive ideas of the blood. Most of the physiological ideas primitive men arrived at were the result, apparently, not of consecutive thought and analysis, but the result of direct observation to which were applied faulty mental methods, hardly to be dignified by the term "thought." There is nothing which could so immediately and impressively influence them in this method of forming opinion as the observation of the blood. We have seen that in West Africa, according to Miss Kingsley, "the blood is the life," and as Schoolcraft (30) asserts of the North American Indians, the practice of the hunters in cutting up the carcasses of the game evidently gave them some elementary ideas of the internal bodily functions. "Experience got by viewing the vital organs would, apparently, inform them, that the heart is the distributing reservoir of the blood, and the central point of vitality. Such their language and experience appear to regard it, if we examine the etymology of the word denoting heart. Taking the numerous Algonquin dialects as the subject for comparison, this is the primary meaning of the word denoting this organ, although we have no authority for saying that they have any just conception of the doctrine of the circulation of the blood. The liver is called okoon, and the lungs opun—terms which, as they contain the sign of the third person, o. lose their elementary character, meaning, in this form, his liver and his lungs; a common feature of Indian lexicography. By okoon, the softer texture of the liver appears to be denoted, compared to the more firm and muscular structure of the lungs." The Tonga Islanders (31) "have no clear distinction between the life and the soul, but they will tell you that the right auricle of the heart is the seat of life. The liver they consider to be the seat of courage, and they pretend

to have remarked (on opening dead bodies), that the largest livers (not diseased), belong to the bravest men."

After a fatal gush of blood from a wounded enemy or friend or animal it is natural for the savage to conclude that the blood is indeed the life. Crooke (32) speaks in this way for northern India. Indeed the idea is prevalent everywhere and the explanation is obvious, nor, in this instance, can we say that it is fundamentally wrong without awakening our feeling of the impossibility to define "life" at all. It is interesting, however, to follow some of the consequences which pantheistic beliefs have associated or deduced from this natural idea of the blood. "The flesh with the life thereof which is the blood thereof. . . ." In Cornwall the burning of blood from the body of a dead animal is a very common method of appeasing the spirits of disease and the blood sacrifices prevalent all over the world are performed with the same object. . . . There are many cases where blood is rubbed on the body as the antidote of disease," but the examples the author quotes are chiefly to be ascribed to the influence of primitive homeopathic ideas in therapy, though evidently they are remotely derived from the same trend of thought. The Emperor Constantine, it is said, gained popularity by refusing to follow a recommendation to bathe in the blood of children, and was miraculously cured. "In South Africa (33), among the Amaondo, one of the Kaffir tribes, it is customary for the chief, on his succession to authority, to be washed in the blood of a near relative, generally a brother, who is put to death on the occasion, and has his skull used as a receptacle for blood." It was a common belief in the Middle Ages that the blood of young persons, especially of children, had a beneficial or curative effect upon disease. It is embodied in many a gruesome tale, frequently associated with ideas of a mystic or religious character, nowhere more artistically set forth than in the medieval tale of Amis and Amiles, in which the father is directed by the Angel Raphael to murder his children in order to use their blood to wash his leper friend clean of his malady, in the performance of which awful task a miracle brought the story to a satisfactory conclusion. The persistence of the most cruel and unnatural practices of old time sorcery is illustrated by the fact that only a few years ago, in the Island of Cuba, three women were condemned to death for murdering a white baby so as to use the heart and blood as a cure for diseases.

The aborigines of north central Queensland (34) treat various obscure affections by the smearing of blood, drawn from the posterior ulnar vein of another man, but not from a woman, over a patient from head to foot, rubbed in with the flat of the hand, the massage lasting for a quarter hour. In addition the patient may drink a portion or all of it. Among the northern tribes of central Australia (35, 36) the drawing of blood from the body is of frequent occurrence, being often used for purposes apparently not medicinal or magical. Very large quantities, according to the reporters, are drawn sometimes, as often as twice a week. "It is a very common practice to give both men and women blood to drink when they are ill, and when this is done blood may be drawn either from a man or from a woman; when drawn from a woman it is always taken from the labia minora. In every case the idea is to impart to the patient some of the strength of the blood giver. One morning, at the close of a consultation of five doctors over a Tjunguri man amongst the Warramunga who was so ill that he died a day or two later, it was decided to give him some blood drawn from women to drink. This is only done in very serious cases. Every one left the sick man's camp except four or five old women who were his tribal mother's and father's sisters. The blood was allowed to drain into a pitchi, and then some of it was rubbed on his body and some given to him to drink. In the Kaitish tribe it is the custom, when a man is ill, for another individual who stands to him in the relationship of gammona—that is, daughter's husband—to go to the sick man's camp, open a vein in his arm, and allow the blood to spurtle down into the patient's mouth." Among the native tribes of Central Australia (37, 38), as among many other races of savage man, there are certain rites concerned with the ceremonial letting of blood which may be of some interest in view of the science of serology which has risen of late years. Blood of two individuals mingled together is supposed to give them a tie of relationship which prevents the possibility of treachery. Blood drinking is also associated with special meetings of reconciliation which sometimes take place between two groups which have been on bad terms. Moreover, blood is used in a certain ceremony where young men open the veins in their arms onto and over the edge of a ceremonial stone, which thereby acquires certain mystic properties. I have recently read in an account of the Croats in the October, 1914, number of the *Fortnightly Review*, of a ceremony amounting to a pledge of mutual friendship which is performed by the individuals allowing a certain amount of their blood to fall in a cup and the two drinking it up by alternating swallows. This is supposed to give them a blood relationship. Among the Australians, blood may be given by young men to old of any degree of relationship and at any time with a view to strengthening the latter.

In southeast Australia (39), at Port Stephens the Koradjji treated a sick person by winding round him a cord of opossum fur, and then around the body of some female relative or friend, who held the end of it in her hands, and passed the cord to and fro between her lips, until the blood dropped

into a bowl, over which she held her head. It was believed that the evil magic which caused the disease passed up the cord into the body of the operator, and thence with the blood into the bowl. Some of the Australians are particular that the blood should never fall on the ground but flow over the body of another man in a crossing network of lines (40, 41). Roth says that also in Tasmania the blood of another was often employed as a healing draft. While most of the accounts of a copious blood therapy among primitive men thus come from the Australian quarter of the globe, its use is by no means absent among those in other continents for the same purposes. In Lower California, "if the sick person has a child or sister, they cut its or her little finger of the right hand, and let the blood drop on the diseased part." Before passing to another phase of the subject I quote the above to illustrate what we have already just seen for Australia, and what may be noted as incidentally related of practice in Africa and elsewhere—that a superior virtue resides in the blood of relatives for therapeutical purposes. This has a curious coincidence with our most recent ideas as to homologous blood in transfusion and homologous blood sera in various laboratory reactions. I also draw attention to the minute directions as to the nonessentials, as we believe, in the technic, a certain finger of a certain hand, the network pattern of the flowing lines of blood, etc. In uncertainties of therapy these things are of much practical use, since confident assertions as to the beneficial result to be expected, when they are found not to be fulfilled—may be justified by careful inquiry to reveal that "the medicine was not given as directed."

According to Doctor Nassau (42) quoting Trumbull: "The widespread popular superstition of the vampire and of the ghoul seems to be an outgrowth of this universal belief that transfused blood is revivifying. The bloodless shades, leaving their graves at night, seek renewed life by drawing out the blood of those who sleep, taking the life of the living to supply temporary life to the dead. . . . An added force is given to all these illustrations of the universal belief that transferred blood has a vivifying power, by the conclusions of modern medical science concerning the possible benefits of blood transfusion. The primitive belief seems to have had a sound basis in scientific fact."

It is difficult to select from the literature of the blood beliefs of man to illustrate any one bearing which they may have without introducing irrelevant matter, yet from its general trend, despite its copiousness, it leaves the impression on the mind of the existence, from the very beginning, of a theory of humoral pathology. I may venture to transgress a little further on the patience of my readers, in the domain of primitive man. In northern India (43) a "favorite way of counteracting the spells of a witch is to draw blood from her. This is probably a survival of the actual blood sacrifice of a witch." In New Guinea (44) "pointing at a rainbow, which is regarded as the blood of the murdered people rising to heaven, causes axillary abscess." The Singhalese (45) believe "bleeding should always be stopped as quickly as possible, because the least appearance of blood attracts Riri-yaka (the devil of



blood), who will endeavor to make the patient ill, in order to obtain more of his blood." A scarcely more coherent blood idea concerns the function of menstruation in women. The physiological reason for this still remains one of the mysteries of biology. Its very mystery must of itself have always given rise to the usual surmises which attach to mystery—a divine origin and this allies itself naturally to the mystery of life itself. In evolution it is one of the landmarks by which we recognize that the brute is emerging into man. Nearly all tribes of primitive men have deduced from it certain taboos and civilized men continue to build untenable theories upon it.

Although Schoolcraft describes a ceremony of a naked menstruating woman among the North American Indians making the circuit of a planted field at night to insure the protection of the crops from depredating vermin, it was due to the belief of her being able thus to thwart their plans and it had no connection with the idea of adding fertility to the field. Most of the taboos which exist in all wild tribes ascribed some sort of evil influence to the menstuous blood, and the idea of the menstruating woman being unclean, which permeated all the earlier civilizations is found fully developed among the most primitive men. Though this is markedly so for the Australians, they, as we have seen, ascribed many therapeutic virtues to blood drawn from the labia minora of women. Blood drawn from the scrotum of the male and from his navel mingled with the water of a stream causes the multiplication of fish (46), and in many of their ceremonies the evidence, according to Frazer, points to the belief that there is a fertilizing virtue inherent in human blood, which we have seen in Africa and which we will find in Babylonian and Biblical literature "is the life." In Abyssinia the Galla tribe has a sacred tree which, among other attentions it receives in veneration, has its roots watered with the blood of animals (47), and another tribe in East Africa do likewise, though the idea of fertilization perhaps in both cases is confused with that of the propitiation of demons, the smearing of tree trunks with blood being evidently akin to smearing the door posts of dwellings in Egypt and Palestine and Babylon. Demons were supposed to reside in the blood itself, such as the demon of fatigue among the South American Indians (48), but the therapeutical virtues as evidenced in the practice of many tribes and its fertilizing properties as symbolized in many ancient cults point unmistakably to the fact that in the view of many primitive men the blood embodied the principle of life.

In this and the preceding paper we have thus noted the prevalence of two sets of beliefs, which have naturally flowed from phenomena likely to be earliest impressed upon the attention of primitive man not only on account of their obvious and striking character but because of their importance in his struggle for existence from the very first. They exhibit tendencies to unite in some concept common to both. Subsequently in the history of medicine they appear both as rival and as mutually explanatory theories of health and disease.

(To be concluded.)

## ETIOLOGY EN ECHELON.

BY WILLIAM P. CUNNINGHAM, M. D.,

New York.

Visiting Dermatologist to the Misericordia Hospital; Associate visiting Dermatologist, New York Children's Hospital and Schools, Randall's Island.

On superficial examination there would appear to be a play of cross purposes, a confounding of etiologies, a contest for approval between several pathological theories, in some of the more recent developments of medical science. It is certain that two truths cannot clash. No matter how divergent they seem there is a point at which they can be made to harmonize, if we seek diligently to locate it. A bar of steel will promptly sink to the bottom of the sea. A ship constructed of steel will float. The air contained within the hollow vessel imparts sufficient buoyancy to overcome the disproportion in density between the metal and the water. An aeroplane without a motor obeys the law of gravitation and lies inert upon the ground. The same machine activated by its cylinders defies the pull of gravitation and soars into the empyrean. Its propeller has created a vacuum into which rushes the eager air that pushes it fleetly onward.

In the domain of pathology, acidosis, endocrinopathy and intestinal stasis, put forward their claims to individual and exclusive efficacy in the production of many abnormal conditions. It is quite the usual thing for the tale of the lethargic gut to fascinate the student into a belief in its wonderful revelations. There is a completeness about it that is deeply satisfying. It appeals to our earliest preconceptions; for we have always recognized the evil influence of delayed evacuations. We are prepared to believe anything of intestinal putrefaction. The imagination of the ardent etiologist cannot carry us beyond our nimble concurrence. Swarming in the bubbling broth of noxious nitrogen are myriads of bacteria capable of inducing every ill that flesh is heir to, or with which it may become invested in its stumbling progress through the centuries. There is pathogenesis personified. There is the source of disease. Microbial mutations dependent on the battle for survival hotly contested in that ever seething swirl of portentous putrescence, bring about the many varieties of perverted function and structural alteration that we denominate disease in our more or less intelligent nosology. There is no limit to the possibilities of such pernicious activity. Cross breeding induces diversification.

This in turn favors fecundation. New types mean virulent intensification. It is thus in the mind of the "stasis" advocate that rheumatism, gout, epilepsy, diabetes, cancer, tuberculosis, arthritis deformans, psoriasis, dermatitis exfoliativa, *et multa omnis generis* originate. The instances are taken at random from a list as long as human disabilities. Much is to be conceded to this contention. The names of those who support it are warrant of credibility. The results obtained from a practical application of the theory are very often brilliant. If short circuiting the intestine has cleared up diabetes or tuberculosis upon the testimony of grave and prudent witnesses, we may not disregard this aston-

ishing confirmation because it runs counter to our rooted prepossessions. We must accept what is demonstrated and make it coapt with the sum of our information. Retiring into the shell of a pathological ritual and refusing to discuss a heresy mark the end of ideation. We have reached the term of our mental activities. We have become fossilized. There is no question then that the statements of Lane, Bainbridge, and other diligent pioneers in this field of surgical endeavor, are absolutely trustworthy; that their conclusions are based on expert and painstaking observation; and that the cures effected of the diseases involved are unquestionably due to the operations performed. Etiology here would appear to have been established without the shadow of a doubt.

And yet—the doctrine of acidosis looms controversially in a great shadow of doubt. It disputes the pretensions of stasis at several important junctures. It claims rheumatism and gout for its very own. Urticaria, erythema multiforme and angioneurotic edema, are boldly displayed upon its casualty list. Nephritis and cancer are gloomily insinuated also. And it must be admitted that a telling case is made out. The men behind the propaganda are of the highest standing and as in the case of the surgeons their statements must be accepted as conservative and true. Aside from this appeal to credibility the inherent strength of the acidosis idea is considerable. The increased capacity of colloids to absorb water under the influence of an acid environment is demonstrated. It explains many phenomena hitherto perplexing.

It puts in concrete and comprehensible terms what was hitherto vaguely surmised or utterly misunderstood. Among our quite remote professional forebears it was generally accepted that alkalies were of decided advantage to the maintenance of health. This idea has survived in some form to the present day. Now we realize that, while hitherto incompletely developed, it contained the germ of the carefully elaborated and minutely demonstrated doctrine of acidosis. Gravely impressed with the importance of this condition, and seeking to square with it many of the diseased manifestations of undetermined association, we have been confronted with another factor of immense complexity whose radius of activity dwarfs all etiological competitors.

Endocrinology rears its massive front in contradiction of some of our pet delusions, in confirmation of some of our sage suspicions, in a general reapportionment of the whole field of pathogenesis. The pity of it is that here appear to go by the board all the conclusions we had based on the supposititious efficacy of acidosis and chronic intestinal stasis. We believed we had certain facts established. Now these endocrinous glands standing on the defensive against all the assaults upon our physical integrity upset our calculations, and compel a reconsideration of the entire scheme of disease invasion.

It has been observed that all truth is complementary. No matter how apparent the contradiction two verities will dovetail somewhere and harmonize perfectly. The results obtained by straightening intestinal kinks are just as authentic and just

as valuable as they were before we discovered the overshadowing influence of hypothyroidism in the perversion of nitrogenous metabolism. It is of little consequence whether the patient is poisoned at the beginning of the process in the intestine (because of an obstructed channel) or at its completion in the tissues because of defective enzymes. The net result is poisoning. Prevention may be applied at either end; we may limit the ingestion of the offending pabulum; we may hasten its progress along the intestinal tract by lubricating or mending the road; or we may supply at the termination of the process the lack of energy permitting its incomplete conversion. Thyroid secretion is intimately concerned in the final disposition of nitrogen. Intestinal digestion is intimately concerned in the initial preparation of nitrogen for absorption.

It is not contended that stimulating or supplying thyroid secretion will counteract all the evils of an inefficient bowel. But where there is question of the intoxication from animal proteid the remedy may lie either at the beginning or the end of the process of conversion. Thus the testimony of the stasis advocate is found to square with that of the thyroid advocate; instead of being contenders they are really confederates, each having hold of a different thread of the argument but both pulling in the same direction.

Acidosis enters as a factor in the problem of proteid intoxication in as much as it is a consequence of the imperfect combustion of nitrogen, and is revealed by the presence of ethereal sulphates in the urine. Those who zealously defend the alkaline surcharging of the blood and lymph, with the object of neutralization, are just as clearly right in their attitude as the supporters of the endocrine or intestinal therapy. To prevent proteid intoxication by cleaning the sewer, to control it by thyroid pressure, or to neutralize its terminal condition by an antacid tide are all measures operating in perfect harmony, and despite the occasional hyperbole of overwrought enthusiasm, are equally entitled to the confidence of the practitioner. The main purpose being to preserve the level of normal assimilation in the organism, it is a matter of choice where we shall direct our effort, at the initial disturbance in the intestine, at the intermediate phase in the blood, or at the concluding development in the tissues.

Arguments based on the success of all these methods deserve careful consideration. They actually involve no antagonism while apparently establishing a different cause for the same phenomenon. It is much as if one said that a certain fire was due to the presence in a building of inflammable materials; and another said that it was due to the presence of a lighted cigarette; and still another that it was due to the absence of available water. All three hypotheses would be correct. The removal of any one of the factors mentioned would have prevented the destruction wrought by the flames. Undoubtedly the best preventive would be the removal of the inflammable material. Undoubtedly the best preventive of proteid intoxication is the cleaning out of the source of supply. But those who favor that conception should view with tolerance the equally well sustained opinion of the



thyroid therapist. All roads lead to Rome. It is up to the pilgrim which he shall pursue.

A sturdy school of aggressive pathologists attribute rheumatism to dietetic errors. They ignore the suggestion of microbic infection, and point to the amelioration experienced upon the exclusion of animal nitrogen, as the final word upon this topic. The endocrinologists are as vigorously insisting upon the deficiency of thyroid secretion and the consequent failure to dispose of the nitrogen as the necessary prerequisite to the arthritic outbreak.

In the midst of this debate bursts clamorous acidosis. Is it not perfectly plain that a condition in which the saliva is acid, the sweat is acid, and the tears are acid, should come into this etiological association? With acid oozing everywhere argument is superfluous. In the whirl of these opinions how is the bewildered practitioner to choose? With little chance for individual investigation how is he to incline to this or that group of grave and reverend teachers? The respectability of the witnesses is the greatest cause of confusion. If any weight might attach to one group over another, decision would be easy.

In this uncertainty let us apply the touchstone of common sense and concede that all of these able contenders may be right; that the contrariety is only apparent, and that perfect consonance may be brought to supplant it. To begin at the end: acidosis is so marked a feature of rheumatism that tradition has carried it down to us through ages under one designation or another. Uric acid has been the popular epitome of the prevailing opinion for a generation past. To be sure uric acid was only a vague apprehension of the great disturbance in the alkaline tide of the normal metabolism. But grasping the existence of such a disturbance, however incompletely understood, cleared the ground for a rational therapy. But obviously acidosis does not arise *de novo*. It is an induced condition. Disturbances of nutrition, disturbances of circulation, overexertion, insufficient exertion, bacterial invasion, various drugs, such as alcohol, ether, morphia, and cocaine, tend to the reduction of the normal alkalinity of the tissues, and the production of the phenomena included in the term acidosis. Being a consequence of a previously existing abnormality, it cannot be put in competition with it for the distinction of causing rheumatism. Whether it be the consequence of microbial activity, or of nutritional deviation, is all one in the reckoning: for a consequence it is and not a cause. The rheumatism may in truth be attacked via the acidosis just as water will put out a fire. But the fire, like the rheumatism, is only the product of the conjunction of favorable factors.

With acidosis assigned to its proper place in the sequence of events, we are confronted by the endocrinologists with the proposition that derangement of the internal secretions is answerable for rheumatism, since the internal secretions control metabolism, and faulty metabolism is the cause of the disease. Here again instead of combating the idea we are prepared to reconcile it with the broad general scheme of etiology en echelon. If the inflammable material in the house needs the touch of

the lighted match to set it in combustion, the faulty diet may need the relaxation of endocrine influence to permit of its development of poisonous products. Given the reestablishment of that influence and we gain control again of the process of metabolism and insure the perfect disposal of the nitrogenous elements.

How about the germ? Where does it fit in? If the bacteriologist is right is not all of this other speculation the merest empty vamping? Let us follow our method of deduction and determine how the germ may be acknowledged without weakening our position in the least. First of all the germ is not demonstrated. It is assumed because rheumatism presents so many of the symptoms of infection. Its presence in the blood would induce derangement of the adrenals, which are very susceptible to the influence of infection. This would react at once upon the thyroid through the agency of the hormone and the combustion of nitrogenized matter would be imperfectly performed. Now we are again at the point where we stood before we postulated the germ. Furthermore, one of the inevitable results of infection is acidosis, and we have seen that acidosis is invariable in rheumatism.

So the germ may be duly admitted to its share in the etiology without in any degree weakening the claims of the other factors mentioned. But now we come to another problem—whence the germ? If faulty diet is defended as the cause of rheumatism and the germ is conceded to be in the same category, we have reached a fine scientific dilemma in which, to use the language of the street, “we don’t know whether we are coming or going.” But clinging to the supposition of etiology en echelon or etiology in phases, the mind reverts to that colossal culture tube of an intestinal canal in which are generated more varieties of noxious elements than we can, in the imperfect state of our bacteriological development, either classify or conceive. May not the bacillus rheumatismi invoked to explain the phenomena of the disease have come to mischievous maturity in that sluggish stream of putrefaction? This admitted and the putrefaction properly attributed to the indiscreet ingestion of inconvertible pabula, we have rounded out our mosaic of etiological phases in the production of rheumatism. Herein it will be noted, that no established fact has been contested; no reasonable deduction has been disregarded; truths apparently at variance have been brought into consonance by seeking their points of cohesive contact. Seeing an object from a different angle, may give a different picture. But all pictures of that object (no matter how numerous the points of observation) are true. Their combined features represent the complete delineation.

In selecting rheumatism to illustrate the idea of harmony in our seemingly diverse etiological concepts, it was felt that because of its frequency, familiarity and controversial prominence it would be an excellent case in point. Doubtless many other general conditions will occur to the mind upon the slightest reflection in substantiation of the position here assumed. But it has been the object of this paper not so much to multiply instances of this character as to establish a principle applicable to the



elucidation of diseases of the skin. For there we have a big field of disputatious and discouraging dissension. Attempts to explain many of its gravest problems have begun and ended in talk. Theory has set itself against theory and often opposed a kindred truth. The zeal of the ergoteur has blinded him to the modicum of knowledge possessed by the nonconformist. Unconsciously employing the method of the theologian he decides that doubt in one particular destroys the whole fabric of faith. He who does not utterly agree, opposes. So that he who has grasped a frayed end of eternal verity, considers that he has become like unto God, and will tolerate no contradiction and will brook no participation. Nothing, as we have seen, is less defensible than this arrogant attitude.

There are several dermatoses more or less correctly identified with rheumatism, which naturally arouse the same reflections. There is the interposition of a word between the cause and the effect but the connection is just as perfect. The escape of blood into the tissues variously described as *peliosis rheumatica*, *purpura hemorrhagica*, *diapedesis rheumatica*, and *Schönlein's disease* is demonstrably an acidosis with or without the recognition of the qualifying term. Being an acidosis it is due to infection or protein poisoning or lack of oxygen. In any case it harks back to endocrine derangement or may be traced to the influence of intestinal stasis.

*Erythema nodosum* is characterized as rheumatic by all dermatologists. In so far as there may be unanimity among the brethren it exists in this case. The disease occurs in connection with constitutional disturbances and arthritic pains which seem to sustain the accepted etiology. Painful nodes suddenly appear upon the tibial ridges in successive crops. The total duration of the attack may be several weeks. *Endocarditis* has been noted as a comitant. This gives added weight to the rheumatic conception. From the character of the lesions and the pathological relations just enumerated it is obvious that *erythema nodosum* is an acidosis. The peculiar propensity of colloids to absorb water while under the influence of an acid irritant, accounts for the nodular and abrupt tumefactions of this extraordinary disease. It may be rationally combated therefore on this interpretation of its pathology. As a phase or manifestation of the ideate complex called rheumatism, it may be met by the therapeutics sanctified by hoary usage. Carried beyond the name to the causes of things we may find ourselves groping about in the pantogenous putridity of the halting gut. There we may discover the *Bacterium idoneum* or, failing that, we may discover the nitrogenous toxins that, upon absorption, defeat the efforts of the ductless glands to maintain the level of normal metabolism. It has been warmly advocated that the efficacy of the salicylates in rheumatism depends upon their power to stop intestinal putrefaction. Shutting off the supply of fuel is an excellent way of putting out a fire.

*Erythema multiforme* is a toxic erythema. Its source is the incapable intestine. The intermediary is the overwhelmed adrenal, so readily succumbing to infection. The progression involves the development of acidosis producing the local infiltrations.

In *erythema bullosum* the process is seen in its fullest expansion. It will occur to the clinician at once that this disturbance may be attacked at its origin, along the route, or in its terminal phase. Active catharsis, intestinal antiseptics, adrenalin, or alkalies are rationally indicated. Prudence might suggest the combining of all these forces in one massed attack. Setting up an academic antagonism between these several stages of the one disease, and contending for therapeutic preeminence upon any shade of immaterial opinion, is a stupid waste of time and energy. It were better to recognize the title of the dissenting theory to careful consideration and endeavor to reconcile the apparent contradictions. It will quickly become manifest that the fact discovered by one investigator cannot run counter to the fact discovered by another.

Intimately associated with *erythema multiforme*, clinically and etiologically, is the bane of the dermatologist—*urticaria*. They have been somewhat fancifully linked as cousins. There are some outbreaks in which either classification is permissible, in which capable men take open issue on the question. It is habitually and credulously asserted by medical writers that *urticaria* is readily curable by stopping certain suspected ingesta and cleaning out the bowels. This is optimism gone mad. Occasionally such a consummation is vouchsafed us. But the sober truth is that it is not readily curable at all. There seems to be some impression made upon the skin by the effective cause which keeps it in a condition of irritability, even after heroic efforts have been made to regulate the diet. The sudden vascular dilatation casts instant suspicion on the adrenals. The wheal is a product of acidosis. The acidosis is rationally referable to disordered metabolism. Disordered metabolism is redolent of intestinal putrefaction. If it is desired to interpolate rheumatism, between the putrefaction and the acidosis there will be no substantial alteration in the situation.

After the ready remedy of sweeping out the bowels has failed, adrenalin will be worth a trial; it is frequently effective—for a while. Its action proves the implication of at least one of the endocrine glands in the pathological process. Inferentially this brings in the whole chain, because they are intimately interdependent in response to disturbing influences. The hormone derived from the Greek word *αἰμα*, "I incite," is a secretion that entering the blood incites the other endocrine glands to synergistic or antagonistic action. The hormone balance is delicately adjusted upon the maintenance in proper proportion and quality of these various secretions. No untoward influence can strike one of the endocrine chain without being promptly felt in the rest. Those that oppose will be stimulated to increase their opposition. Those that assist will be put to it to overcome the handicap. The wheal being the manifestation of an acidosis, in the opinion of competent observers, demands the exhibition of alkaline neutralizers.

There is absolutely no conflict of purpose in these different measures. They are all grounded in fact, and the soundest of deduction. They are all directed to the same end and along parallel lines. One

starts from a certain point—far distant from the wheal—the putrescent intestinal tide, or the presence in the normal chyle of elements prejudicial to the individual. Another starts half way on in the course of the process, namely at the deranged adrenal which permits the vascular dilatation. The last starts very nearly at the finish; at the acidosis induced by the foregoing irregularities. While it is obviously prudent to assail the disease at its origin, still in the event of indifferent success, it is quite as prudent to attempt a flank movement on the timorous ally, the adrenal. Failing here also, opening the dykes and flooding the region with counteracting alkalies, offers a chance of nullifying the effects of the preliminary disturbance. Again is it made manifest that the labors of the earnest workers in the field of etiology and rational therapeutics, harmonize as all truths must. The fruitful method of selection consists in acknowledging the facts of anybody's offering, and refusing to set them in opposition to any other facts. Find the points of consonance. The differences will be seen to be illusory.

Pathology has been enriched by the acne bacillus. Except with regard to the making of vaccines this has proven a barren possession. And figuring on the rather episodal efficacy of the vaccine the bacillus has not been worth the labor of its discovery. However, conceding the bacillus, how does it operate? All bacteria induce an acidosis. They interfere with the proper oxygenation of the parts and the elements of inflammation and effusion quickly appear. The inflammation with its dilated arterioles immediately indicts the adrenals. Recalling the universally recognized association of injudicious alimentation, we work around again to the involvement of the intestinal tract. We all know that carelessness in eating and drinking and failure to get adequate fecal evacuations, will frustrate every attempt to cure the exasperating deformity. Hence we must give due consideration to the question of faulty metabolism. Curiously enough it is not the proteids but certain carbohydrates which are proscribed in acne. But it is altogether likely that the acid fermentation consequent on the ingestion of sweets, interferes with the proper conversion of the proteids in the intestines. With flatulence and hyperchlorhydria, digestion must be imperfect throughout. If intestinal digestion requires an alkaline environment, hampering it with inordinate streams of acid reaction is certain to result in a failure of substantial proportions. When we mention faulty metabolism we embroil the thyroid. This is effected also by the hormone from the unstable adrenal. Verification of this hypothesis is seen in the improvement produced in certain acne cases, by the administration of thyroid extract. Local applications to the pimples and comedones prove unsatisfactory, unless reinforced by measures looking to the general well being. The Kromayer lamp is a case in point. There is a disposition to attribute quasimiraculous powers to this form of radiotherapy possibly because of its spectacular properties. While disclaiming any desire to belittle the reputation of the violet light, and recognizing that in some dermatoses it is unquestionably of great advantage, still it must not be forgotten

that acne is from within and nothing of a purely external nature can have a permanent effect upon it. Conversely internal measures alone may and often do rid the patient of the affliction.

Bearing this in mind, we resort to the restriction of detrimental pabulum, to the complete and regular elimination of waste material, to insistence upon active exercise, with its salutary circulatory acceleration, to the exhibition of alkalies and as already noted to the speeding up of endocrine activity. Any of these procedures is wise. None interferes with the others. The supply of incomplete converted protein is prevented. The unavoidable entrance of some of it into the blood is met by the increased metabolic vigor of the tissue enzymes stimulated by the artificial thyroid, and the quickened circulation. Contributory acidosis is obviated by the alkalies and the increased supply of oxygen. None of the theories of acne causation is here discredited. All are seen to work in unison. Even the bacillus may be admitted without disturbing the etiological harmony because if it attacks from without it requires a spot of lowered resistance; and if it attacks from within, it is not only under the same necessity, but probably has developed in the intestinal cloaca which we are going to clean out.

Far back in the twilight of dermatology the puzzle of eczema began. It is one of the most venerable of diseases because of its great age and the mystery surrounding its origin. Today its secret is just as closely kept as it was before the bacteriologist illumined our clouded understanding. We do not know the cause of it or the cause of its manifold manifestations. We are in possession of certain information regarding its phenomena which is usually trustworthy. We know that external irritants will excite it—in the predisposed. But we do not know what constitutes predisposition. It is possible that a germ will be found. When it is we shall be in exactly the same position as we are in relation to acne. The germ will be a useless appendage if we do not discover what provides its opportunity. At present we observe that lye, dyes, acids, soaps, lime, terpenes, wood alcohol, bichloride of mercury, beer (externally), water, cold, and wind will bring on an attack after more or less prolonged exposure. These precipitants are taken at random. There are many others such as woolly underwear. Of internal precipitants we may cite beer again; whisky; glutiny; excessive sweets; oatmeal; pork, and veal; tea, coffee, and constipation. Doubtless there are many others conforming to narrower idiosyncrasies.

It is a fact that any or several of these exciting causes may be operative without inducing the cutaneous reaction. Eczema is not as common as constipation, as dietary indiscretion, as irritating manual duties. Eczema while a very frequent disease is in small proportion to the number of people subject to its accredited provocatives. Clearly there is something out of gear in the individual who succumbs. If we could put our finger on that defect we might be able to devise a remedy. The endocrinologists believe that they have found it in the internal secretions. The idea has much to recommend it. While still only in the humble posture of



an hypothesis, it presents possibilities, of a fascinating character. It is undeniable that here, as in acne, thyroid has achieved some brilliant results. It is only fair to add that it has also sustained some dismal failures. But dealing with an extensive and complicated system of practically unknown secretions, whose potentialities are looming through a haze of dubiety and surmise, it is possible to miss the localization of some particular influence. Hence the method of election will be not to surrender the quest but to extend it. It is rational therefore to submit this influence as one of the etiological factors of eczema and one of the indications for treatment. If we are drawn into a divided judgment by the pretensions of intestinal stasis and auto-intoxication, we may fairly reconcile the two. If we are bacillophiles and must have a microorganism for every pathological departure, there is no reason why we may not indulge that propensity also. Imbued with the enticing doctrine of acidosis we shall be at no loss to make all taut, as the sailors say. It has been the purpose of this paper to impress by frequent repetition that every one of these propositions contains a strain of truth which cannot possibly conflict with any other truth. All are headed one way and no mistake can be made by following any of them. The mistake will be made by rejecting any of them in a narrow interpretation of the etiology.

When we approach psoriasis we are confronted by a problem compared with which that of eczema is trivial. As far as our discernment goes it is dependent on internal causes. A germ may be discovered but neither that nor any other external factor has been yet made out. The avocations that excite eczema seem powerless to excite psoriasis. The palm of the hand, so frequently the site of eczema owing to its exposure to irritating contacts, is rarely the site of psoriasis. Delicate regions like the axilla, breast, and groin are not especially liable to psoriasis. The prolonged provocation of wet diapers will readily induce eczema but not psoriasis. An acrid nasal discharge will have the same result. Instances might be multiplied indefinitely in support of this position. With its recognition, we have to face the question of internal causation with very little prospect of a satisfactory outcome. We may derive some instruction from the circumstance that a meat free diet seems occasionally to exert a controlling influence over the eruption. This would suggest that proteid metabolism is somehow at fault in the psoriatic. Either he cannot take care of the nitrogen in his assimilative processes, or nitrogen from animal tissues is in any amount noxious to his organism.

That other factors may be operative also is evidenced by the failure of abstinence in this regard, to affect all patients alike. We can all recall how our promises of immunity have recoiled upon our heads after a faithful adherence to the regimen prescribed. Despite these disconcerting exceptions we may safely cling to the reasonably supported postulate that animal nitrogen is usually prejudicial to the patient. This has been assumed to involve the thyroid, which we have learned by persistent reiteration, is concerned in the process of proteid metabolism. The endocrinologist is demanding

psoriasis by right of paternity. He has proved something and has failed to prove much. His science being immature may develop some surprises as progress is made. Those who concede the toxicity of animal protein, content themselves as a rule with forbidding its ingestion. But it is quite in accord with that attitude to seek the support of the internal secretions. There is no possible antagonism between them; nor between them and the doctrine of acidosis. The latter developing as a consequence of the preceding abnormality calls for management along parallel and not diverging lines.

Dermatitis herpetiformis, one of the pests of dermatology, also known as Dühring's disease because of the illustrious American who rescued it from the conglomerate bewilderment masquerading as eczema, is groping blindly for an etiology. Our information on that point is perfect in its incompleteness. We are offered neurosis with unblushing effrontery by perplexed investigators, who find in their own nerve the only etymological association. A neurosis is not a disease, any more than a fever, a pain, or an itch. It is a symptom. It cannot be urged as a cause of anything. It cannot be urged as the consequence of nervous malfeasance, because that omits the reason for the latter, without which we are in no better position than he who should assert that a certain person was irritable because he was nervous. We are still "shy" on causes. What is back of this nervous instability which permits the development of the tormenting lesions of dermatitis herpetiformis?

Instinctively, by force of a habit often amply rewarded we turn to the intestinal tract for aid, comfort and information. Is there a bacterium or other *materies morbi*, evolved in that polygenetic hotbed of noxious reactions which is capable of bringing out the peculiar eruption of this obstinate disease? Shall we find in animal proteid—incompletely enzymized under the conditions existing in intestinal stasis—the explanation of the perplexing phenomena? Or perhaps we shall be asked to agree that the inefficiency of the internal secretions pre-empting over proteid metabolism is responsible. We have already observed how urticaria may be attributed to incompetent adrenals. From urticaria to prurigo, from prurigo to Dühring's disease, is a transition of measured smoothness. It is not attempted to set up a definite etiology for Dühring's disease in marking this transition, but simply to illustrate that manifestations, so easy of comparison, may be traced to the same or a similar origin. Infection will perturb the adrenals. Infection will induce an acidosis. Intoxication from incompletely assimilated or katabolized protein will also induce an acidosis. Once more we are visualizing three correlated and coordinated pathological processes, which appear constantly in acute and chronic cutaneous conditions, of a nutritional character. This persistent association should indicate the stupidity of setting these processes in competition and dogmatically urging the recognition of one to the exclusion of the others.

Without multiplying instances at the expense of interest, we may deduce analogies to a great many others, from the foregoing considerations.



Any dermatosis not merely of external origin like scabies—not purely of specific origin like lupus or gumma—may be reasonably ascribed to nutritional disturbance. Aside from the organic origin of such disturbance, for example cirrhosis of the liver or chronic nephritis, which will be elicited upon careful examination, we shall be driven to the acceptance of one of the vigorously urged hypotheses here under discussion. It will be of great assistance to the clinician in choosing his course to remember that he cannot go astray in following any of the sign posts. He is not at a cross roads. He is not at head of three divergent paths. He is facing parallel highways leading directly to his main objective.

In the heat of animated argument, the stenopia of the enthusiast may lead him into intemperate depreciation of every other conception but his own. He sees straight to his own demonstration and naturally concludes that all competitive propositions are sophistical and false. That is the error of the zealot; he is a one punch fighter; that punch has carried him so far that he considers it the only effective method of attack. He reasons that truth is single and indivisible. A thing cannot be partly true. Part of a proposition is true perhaps and part is false. But the part that is true is utterly true and the part that is false is utterly false and the proposition *in toto* cannot be partly true. This is the logic of the metaphysician and not that of the physician. The latter ought to deal only with facts not with dialectics. He is not considering any proposition as a matter of faith, to stand or fall upon the acceptance of all its parts. He is considering every part of it as a distinct proposition in itself, the credibility of which in no way depends upon the credibility of any associated factor.

Exempli gratia, there is a pathological condition commonly denominated gout. It is attributed usually to over indulgence in eating and drinking; to gourmandizing in the popular phrase. It is characterized by inflammation of the joints (the smaller ones mainly), by calcification of the arteries, by chronic interstitial nephritis, by the deposition of tophi in various situations, and in subacute manifestations by pains and disabilities of a vague and indeterminate description. The tophi are composed of urate of soda. They are found in the helix of the ear, the perichondrium, the periosteum, the periarticular connective tissue, the tendons and their sheaths, the spongy texture of bone and bursal sacs. More rarely these deposits are found in the outer sheaths of vessels and nerves, the dura of the cord, the larynx, and the sclera of the eye. When the kidneys are affected calcareous dots and streaks are to be detected there also. Independently of the long-recognized dietetic provocation of this disease, the presence of these concretions would indicate the nutritional disturbance involved. It is plain that much acid has been demanded for the formation of the extruded salt. Or to put it another way, it is plain that much alkali has been drawn from the tissues by the excess acid developed therein. The acidosis is unmistakable. The thyroid having to do with the control of proteid metabolism (manifestly out of order) is charged with inefficiency.

The ardent supporters of these different doctrines do not acknowledge the merit of any but their own. With visual fields narrowed to purely frontal perception, they arraign as heresy any hypothesis not in strict conformity with their point of view. The dietitian refers to the results of abstinence in gout as sufficient vindication of his own position and sufficient confutation of every dissenting opinion. The interjection of other factors he considers superfluous and mischievous as tending to weaken belief in the accredited causation, and carry everything down in a wave of scepticism. The acidosis propagandists assume about the same attitude. Intolerance of competition and a disposition to dogmatize mark their presentation of the case. The endocrinologist, a later comer, has all the fervor of the missionary, and—some of his repellent bias. Demanding acceptance of his plausible pretensions, without qualification, he brooks no divided allegiance, and arrogates to himself the absolute domination of the pathological controversy. The act of faith must be abject and complete. The dietitian, depending on the uniform confirmation of his proposition during a long experience, is unable to explain the occurrence of gout in those who are undernourished! The so called poor man's gout simply takes the legs from under him, and his patient! But the watchful eye of the rival detects the crack in the armor and immediately he cries "Acidosis! Starvation acidosis!" There is no question of the effectiveness of that thrust! It tumbles the "one punch" fighter in the dust! It demolishes the whole fabric of his theory! For if hypernutrition is the cause of gout, how can it occur in an organism inadequately nourished? Acidosis then proceeds to show that either an over supply of ordinarily assimilable nutriment or an under supply of absolutely necessary nutriment will result in the reduced alkalinity of the tissues bringing about the clinical picture of "gout."

Just as this comfortable adjustment has been effected and Acidosis has assumed the arrogance of the successful contender, along comes Endocrinology with the disconcerting question, "If hypernutrition induces acidosis and acidosis is the cause of gout why does not everybody who is overnourished get gout?" "Idiosyncrasy," retorts Acidosis unconscious of the trap. "Exactly so," triumphantly exclaims Endocrinology, "and idiosyncrasy resides in the internal secretions! All the assaults made upon the organism would fail completely if they encountered a stiff constitutional resistance. It is a matter of indifference what may be the nature or the vigor of the invader if normal internal secretions interpose an effective barrier. The last word therefore is with endocrinology, and it is the only factor worth consideration since it teaches that the others are powerless against its commanding preponderance."

As a matter of sober truth this apparent rivalry is part of the great jointed correlated scheme of pathogenesis. All parties to the discussion have contributed indisputable evidence of sound conclusions. There should not be question of discrimination, but of coaptation between them. When each recognizes that he has only a part of the truth

and is not authorized to issue an index expurgatorius stigmatizing every body else (with another bit of the truth) as a deluded and untrustworthy teacher, we shall begin to grasp the scope of our pathological problems, and shall have made a long stride toward the solution of many of them.

323 WEST FOURTEENTH STREET.

## ACUTE CORYZA.

### *Its Intranasal Complications, Diagnosis, and Therapeutics.*

BY ERNST DANZIGER, M. D.,  
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It is said that acute coryza is a disease that is more disagreeable than serious, and that therapeutical attempts seem to have but little effect in influencing the cause of the affection.

These statements are not correct. The acute cold in the head may lead to grave consequences, and with appropriate treatment not only can the discomfort of the patients be alleviated, but they will be protected from serious complications. The importance of the subject forced itself upon me during recent years when we have been exposed every winter to epidemics of the grippé.

Acute coryza has to be regarded as an acute infectious disease caused by the pneumococcus, streptococcus, or bacillus influenza which are found chiefly associated with staphylococci. We know that the nasal secretion contains certain bacteria normally, but to make one certain germ responsible for the infection it is necessary to find such germ in a pure culture with the normally present bacteria absent.

If a disturbance of the local circulation is produced by a sudden change of temperature or by exposing an isolated part of the body to a draft or moisture (head or feet), pathogenic germs find a suitable soil for development, and acute coryza makes its appearance.

Chemical irritating substances may produce an inflammation of the nasal mucosa, but only temporarily.

Hay fever is caused by the pollen of plants in the atmosphere only in subjects who react to it in an anaphylactic way. There is one other form of coryza which is not due to infection, but rather to an irritation of the mucous membrane of the nose from some metabolic conditions. In certain individuals, certain substances, spices, alcoholic beverages, will produce the sudden appearance of all the symptoms of acute coryza, which will disappear within a day after elimination of the toxic substances. These are the cases which are controlled by adrenalin or other medicaments. They would have disappeared in the same time spontaneously. We know that in anemic children with a tendency to rheumatism, sugar or egg albumin might be the source of a never ending nasal discharge, the treatment of which is, of course, self evident.

Acute coryza is ushered in by a more or less marked feeling of chilliness. In the nose is experienced the sensation of burning and itching which leads to repeated attacks of sneezing. In

about twelve hours, the nose starts to discharge a colorless seromucous secretion which, within a few days, changes to a thick yellowish greenish mucopus.

This condition improves slowly, and in two or three weeks, complete *restitutio ad integrum* takes place.

But not always is the course so favorable. In quite a few instances, the secretion from the nose continues for weeks or months; sometimes the patient complains of headaches and facial neuralgia; the nasal secretion is of such an amount that the patient cannot carry handkerchiefs enough to receive it. Occasionally symptoms disappear for a week, only to return at the slightest change of temperature.

What are the pathological processes taking place during an acute coryza? At the onset we find the mucosa hyperemic, with a bluish red, glassy, dried appearance. As soon as the second stage of secretion is reached, the mucous membrane is swollen and edematous, and covered with watery secretion. It is not so much the seromucous secretion which prevents nasal breathing as it is the edematous swelling of the mucosa of the turbinated bones, which fills the whole nasal cavity. On inspection we find the lower nasal meatus filled with grayish glairy mucus interfering with expiration. Gradually the edema of the mucosa disappears, the amount of secretion diminishes, and normal conditions are reestablished in about three weeks.

The treatment of acute coryza has been the following: During the stage of chilliness and irritation, urotropin has been given with the idea that by the secretion of formaldehyde the development of the coryza can be prevented antiseptically. So far as I am concerned, the results have been decidedly disappointing. Powders, consisting of aspirin, phenacetin, Dover's powder, and caffeine give the patient a feeling of well being and relieve the headache. A thorough evacuation of the intestinal tract with calomel is indicated.

The purpose of local treatment is to remove secretion, to reduce the edematous tumefaction, and by so doing establish good drainage from the accessory sinuses. The patient should irrigate the nose with warm saline solution (say one teaspoonful to a pint) a few times a day with the following precautions:

1. The point of the nose piece of the syringe must not occlude the nostril.
2. The stream must be horizontal.
3. If irrigated from a douche bag, same should not be elevated higher than the ear. In case of difficulty in starting the flow, remove nozzle from nose, elevate the bag until fluid starts, lower the bag to the desired height, and insert nozzle into the nose.
4. Patient should bend the head forward during the irrigation.
5. Under no condition should the patient blow the nose directly after irrigation. When he blows his nose he must not touch or compress either one or the other nostril.

It is not the irrigation itself, but the improper blowing of the nose afterward, which causes ear complications. After removal of the secretion, the

patient uses an adrenalin ointment which by reducing the swelling of the mucosa promotes drainage from the sinus and enables the patient to breathe more freely. During the second week, I add to this treatment a spray with an oil containing one of the volatile antiseptics.

With such therapeutic measures, the patient feels much more comfortable, and by the establishment of better drainage of the accessory sinuses, complications in that region will be avoided to a great extent.

And now let me speak about the clinically important complications which the rhinologist sees very frequently after they have not been recognized by the general practitioner.

Unless there is a cessation of the nasal symptoms of acute coryza after three weeks, the question presents itself: What is the cause of the continuation of the symptoms?

In this connection we have to consider various etiological points.

1. The presence of enlarged or diseased adenoid tissue in the vault of the pharynx, for which we have to look not only in children. With the knowledge that almost all adults still are the more or less happy possessors\* of their adenoids, it should not be a matter of surprise to find even in adults a chronically diseased Luschka's tonsil as the cause for re-infection or long continuation of a coryza. As a digital examination in acute or subacute infections is contraindicated, and the inspection with a retro-nasal mirror is not very satisfactory, the use of Holmes's pharyngoscope should supplant any other method of diagnosis. By means of this instrument the retronasal space can be examined without hurry, and the difference in coloring will often show the site of some focal infection.

2. We have to consider the possibility of an involvement of the accessory sinuses, which is mostly caused by interference with normal drainage. During an edema of the nose, the normal ostia of the sinuses become obstructed, so that proper drainage is not possible.

The presence of the stagnating secretion of the sinuses keeps the mucosa in a state of congestion. And, finally, if the pressure within the cavities increases, trophic disturbances occur and ulcerations take place. We have then to deal with a serous, seropurulent, or purulent inflammation of the accessory sinuses. Retention of secretion will be brought about much more readily in patients who suffer from anatomical abnormalities, which make one side especially narrow, as a deviation of the septum or a large hypertrophic anterior end of the middle turbinated bone.

The object of the treatment is to establish normal drainage, and this often simple procedure will promote a quick restitution to the normal state.

The intranasal symptoms in these cases are of the greatest variety and intensity, and are sometimes entirely wanting, and we have to depend upon other methods to arrive at a correct diagnosis.

In very acute cases the patient may suffer from intense pain over the antrum or frontal region, which, with their periodicity might easily lead to a mistaken diagnosis of malaria. The cheek with the

infraorbital or supraorbital region might be edematous, or the region of the antrum or frontal sinus only painful on pressure.

With such symptoms present, there is no doubt of the diagnosis, and immediate steps should be taken to establish normal drainage—not necessarily surgical means, as most cases will readily yield to a more conservative form of treatment—as the often repeated application of adrenalin or cocaine to the region of the infundibulum into which the ethmoidal cells and frontal sinus drain their contents, and a little further back in the middle meatus where the normal ostium of the antrum is located. At the same time, irrigation with warm saline solution three to four times a day will prevent the mechanical obstruction of the normal openings with sticky mucus. In case of swelling or severe pain, the ice bag should be employed. Internal medication consists in doses of sulphate of quinine, five grains three times a day, which seems to have a specific action in these cases.

While the diagnosis of these complications is simple enough, if the symptoms are as obvious as in the clinical picture just presented, the reverse is true in a great number of cases where the only symptom present is a prolonged nasal discharge; or often the frequent occurrence of a headache is the only indication of something radically wrong. Even the typical stream of pus between the middle turbinated bone and the outer wall of the nose, exuding from one or the other sinus, is often absent. In these cases we have to take refuge in other diagnostic methods which I will enumerate in the sequence of their reliability: 1, diagnostic puncture and lavage; 2, transillumination; 3, Röntgen pictures. Before entering into the discussion of diagnostic puncture, I will dispose of the subject of transillumination and skiagraphy.

If we find on transillumination a decreased transmission of light on both sides, it is often due to a thickness of bone which may be normal for that individual. Even a one sided shadow with diminished transillumination on the other side has often led to a diagnosis of empyema of the antrum which was not substantiated by lavage. But where we get intense transillumination on one side with a decided shadow on the other, the diagnosis can be safely made.

Nothing has been more disappointing to me than skiagraphic pictures in connection with the diagnosis of affection of the accessory sinuses. Where the clinical picture of the disease is typical, the picture will always corroborate the diagnosis and will show the formation and extent of the sinus; but in doubtful cases the picture and the interpretations of some of our best röntgenologists have misled me so often that I have grown quite skeptical in accepting their diagnoses.

In puncture of the antrum followed by lavage, we have one method which does not leave any doubt concerning the diagnosis.

Paracentesis of the nasal wall of the antrum in the lower meatus, about one half inch back of the anterior end of the lower turbinated bone through the membranous portion of the wall, can be done after thorough cocaineization. Lavage will show



either a clear return flow or turbid dirty looking fluid, or it will contain plugs of mucus, or sometimes a brown jellylike secretion. The procedure is harmless and painless. Doctor Coffin and Dr. Harmon Smith have tried to supplant the puncture and lavage by suction and injection of either antiseptics or astringent remedies into the sinuses after the production of a vacuum.

**Treatment.**—In acute cases, where the conservative treatment has given no relief from the symptoms within a few days, I use the puncture followed by lavage repeated every twenty-four hours, three or four times, which seems to be sufficient to produce a cure. The reason that some of the cases do not yield to the conservative treatment is due to the fact that sometimes the secretion in the sinus is so thick that it cannot drain through the natural opening. During irrigation of the antrum the pressure of the water will often force a big plug of mucus through the ostium and empty the sinus completely. With the suction method of Coffin and Smith—an injection of medicament—we sometimes do get results which are due to the passive hyperemia so produced (Bier method), but by prolonged hyperemia we also produce a swelling which might easily obstruct the ostia and prevent drainage.

Whether we irrigate with saline solution or a stronger antiseptic, is immaterial, as the reason for the cure is the removal of the secretion. Antiseptics, and even chlorazene (modification of Dakin solution) are useless, as the germs are either embedded in the mucus or located deep in the glandular tissues of the mucous membrane.

In some cases where an actually enlarged anterior end of the middle turbinated bone prevents drainage from the ethmoidal cells or frontal sinus, if the enlargement is not due to a temporary edema, the removal of this obstruction is indicated.

It is the early diagnosis of such affections, which travel under the cloak of a prolonged head cold, that promises the patient escape from a trouble which, unrecognized, would stick to him for the rest of his days, even if operated. While an operation might give him relief and prevent a systemic intoxication, it will not forestall relapses, and the peculiar dry feeling in the nose, and in the case of professional speakers and singers will undoubtedly affect the voice.

Prevention, of course, has been attempted by immunization with vaccines made from the bacterial fauna of the nose—a procedure which in my hands has been a complete failure, in spite of the enthusiastic reports of others. The reason for the failure, in my opinion, is that the normal bacterial flora does not represent the pathogenic germs.

285 CENTRAL PARK WEST.

**Sugar in the Cerebrospinal Fluid.**—M.-P. Weil (*Presse médicale*, May 2, 1918) asserts that excess of sugar in the spinal fluid in cases of war concussion is both of diagnostic value and of interest from the standpoint of pathogenesis. It indicates an organic element in the effects of the concussion and proves the rôle of congestion in the production of the morbid manifestations.

## THE FOOD VALUE OF BREAD.\*

BY ROBERT McDOWELL ALLEN, M. D.,  
New York,

Formerly Food and Drug Commissioner of Kentucky; Head of the Research Department, Ward Baking Company.

Bread is the staple food of all people. It ranges from ten to eighty per cent. of the total. The daily garrison ration for the United States soldier contains:

	Ounces
Fresh beef .....	20.
Flour .....	18.
Baking powder .....	.08
Beans .....	2.4
Potatoes .....	20.
Prunes .....	1.28
Coffee, roasted and ground .....	1.12
Sugar .....	3.2
Milk, evaporated, unsweetened .....	.5
Vinegar .....	.16
Salt .....	.04
Pepper, black .....	.04
Cinnamon .....	.014
Lard .....	.04
Syrup .....	.32
Butter .....	.5
Flavoring extract, lemon .....	.014
Total .....	68.908

When it is considered that meat contains from fifty to seventy per cent. water in addition to from ten to forty per cent. of waste, that potatoes contain about sixty-five per cent. water together with twenty per cent. waste and that flour contains from eleven to twelve per cent. water with no waste, it will be seen that bread is even the soldier's main food dependence and why there is so much concern during times of war for the adequate production, transportation and conservation of bread cereals.

### CEREAL PRODUCTION.

Somewhere today wheat is being harvested; somewhere it is being planted. It is the white man's cereal. He takes it wherever he goes and adapts it to all climates. It is grown at the equator in India, and in Canada only 600 miles from the arctic circle. It has been bred to all conditions, although it is wild only in the temperate zones. The ancient Egyptians prized their abundance of wheat even more than their gold. The Roman legions were strongest when their granaries were filled with wheat. When the armies march, wheat is the first food for which there is concern. The bread line is the source of food for the unemployed. How much does the world grow? How much of this is available through war limited distribution? Is there enough? Have the greatest wheat producing nations always had the balance of power? Where wheat lands are kept fertile and acreage production is maintained and increased there too is a nation in the full of its great reserve power.

What other cereals have we for bread? In what combinations can we make an acceptable, wholesome, and nutritious loaf?

Bread was the first concern in the food controls of all of the nations at war. It was Mr. Hoover's greatest concern in feeding the stricken Belgians

\*An address delivered to the city employees on April 3, 1918, under the auspices of the Municipal Civil Service Commission. Leonhard Felix Fuld, Ph. D., Assistant Chief Examiner.

and his first concern in organizing war control of the food supply here.

The agricultural extension service with trained agents in each county is the system through which official activities operate. The Federal Department of Agriculture and the agricultural colleges were provided for by Congress in 1863, as a civil war food measure. The states were given blocks of public land as a nucleus for endowments. The experiment station organized later with experts in chemistry and biology accumulated a wealth of sound facts relating to agriculture and live stock. The experiment stations have been supported both by federal fund and state funds. Some five years ago Congress through the Smith-Lever Act appropriated money for joint cooperation with the states in sending trained men in agriculture and trained women in domestic science to take this wealth of fact to the farm and to the farm home.

The agricultural county agents, backed by experiment station research, are producing results. Where they have worked they have increased the crop yields per acre, for corn 15.5 bushels, for oats 14.7 bushels, for wheat 8.1 bushels, for barley 6.5 bushels. They have done this through seed improvements, farmers' meetings, field demonstrations and a close study of the soil and cropping needs of each locality. Their work was largely responsible for the increased oat and corn yield last year. Eight bushels per acre for all the crop would add over four hundred thousand more bushels to our 1917 six hundred and fifty million bushels of wheat.

When the war was declared Secretary Houston had at hand a complete survey of our agriculture. He called other leaders into conference, outlined a plan for increasing particularly the 1917 corn, oat, potato, sweet potato, bean, and soy bean, and peanut crops. This organized effort with the backing of the American farmer gave the nation six hundred million extra bushels of corn, two hundred and thirty extra million bushels of oats, twenty extra million bushels of barley, two extra million bushels of rye, five extra million bushels of buckwheat and twenty-three extra million bushels of Kafir corn. This harvest result relieved the food crisis of our Allies in Europe.

The United States should have for the coming year approximately the same amount of corn, oats and rye and in addition from eight million to one billion bushels of wheat. With this accomplished the food supply for our Allies will be more a problem of transportation than production. As the shipping crisis becomes easier we should import wheat from Australia into this country rather than have it shipped direct to England. The Russians, Germans, Swedes, and Danes have more rye and barley than wheat. The Russian, Roumanian and Ukranian situation will make more food available for Germany, but farming, threshing, elevator, and transportation facilities are far inferior to those in the United States and the people of inland Russia will demand something more than paper money before they will give up their cereals without force.

#### AMERICAN FOOD CONTROL.

The federal food control act covers distribution and sales from the farm through manufacturing,

storage, wholesale and retail distribution, prices, and hoarding. Under this act Mr. Hoover has brought many of the leaders in food industries into a voluntary organization, men big in the fields of buying, manufacturing, and distributing. To this he has added and is adding experts in food nutrition. He has asked for and is fast gaining the cooperation of the food consuming public. In outlining plan and purpose of his administration he states:

There is no force by which conservation could be imposed upon the American people. Conservation can be accomplished in some countries by ironclad law, or by forcing legal limitations on every individual in the country, but in our country that is not only unfeasible from the governmental point of view but it is against the instincts of the people. . . . There is the possibility of demonstrating that democracy can organize itself without the necessity of autocratic direction and control. If it should be proved that we cannot secure a saving in our foodstuffs by voluntary effort, and that as a result of our failure to our country we are jeopardizing the success of the whole civilized world in this war, it might be necessary for us to adopt such measures as would force this issue, but if we come to that unhappy measure we shall be compelled to acknowledge that democracy cannot defend itself without compulsion, which is autocracy and is a confession of failure of our political faith.

If we can secure allegiance to this national service in our twenty million kitchens, our twenty million breakfast, lunch and dinner tables; if we can multiply an ounce of sugar, or fats, or what not every day by one hundred million, we have saved one hundred and eighty million pounds in a month. If we save a pound of flour per week, we save one hundred and twenty-five million bushels of wheat per annum. It is this multiplication of minute quantities—teaspoonfuls, slices, scraps—by one hundred million and three hundred and sixty days that will save the world. Is there any one in this land who cannot deny himself or herself something? Who cannot save some waste? Is not your right to life and freedom worth this service?

The big part of Mr. Hoover's food control task is a war against waste. There is waste in production, due to unscientific and uneconomic methods, due to drought, too much rain, frost, and the spoilage of butter, eggs, milk, meat, vegetables, and fruit. The fight of the entomologist and biologist against blights, bugs, and animal diseases is a soldier's fight in the war. Not more than two thirds of the animal and vegetable foods intended for human consumption raised from the earth are saved and consumed and of that saved there is enough and more, if mobilized and properly utilized, to feed double our own population. There is waste in the feeding, preparation, and distribution. Uninspected and uneconomic slaughtering houses lose valuable food and fertilizer. There are losses in retail stores. There is waste in the home kitchen. The known methods of constructive sanitation organized and applied through the American public health and pure food officials can cut down a food spoilage waste amounting annually in this country to more than one billion of dollars. The domestic science expert has the remedy at hand against food waste in the home.

In but few homes is there concern to keep the fat cut from meat, the extra slices of bread and eatable parts of vegetables out of the garbage pail, and in but few cities is there systematic effort to conserve the food in the garbage pail for feeding meat animals. There is improper eating, overeating, unnecessary night eating. Preventable food waste today is a national crime. There are enough bread cereals if properly combined in bread making and if waste

is stopped, to handle the situation well until next harvest.

#### THE FOOD VALUE OF BREAD.

Wheat stands first among bread cereals. Its protein and starch and its mineral salts, when balanced with calcium, are particularly fitted for human nutrition. Its protein produces a gluten which gives more volume and consequently better leavening properties to the loaf. For this reason, among others, it is best to distribute wheat all around so that all of the yeast bread mixtures will contain some wheat flour. Cereals are not only a staple food for men but with forage crops the staple food for domestic animals. Milk, butter, and cheese, meats, poultry, and eggs are produced from grains and grasses. Plant foods contain their nutriment in varying degrees of digestibility. The animal can take care of the less digestible portions. In this field there is opportunity for dividing and conserving sufficient food for the production of meat and milk on the one hand and sufficient cereals and other plant foods for the direct feeding of human beings on the other. There is, of course, far more food economy in feeding cereals direct for human consumption, to the extent that reasonably balanced rations can be maintained; there is, further, more economy in feeding grains for the production of milk than for the production of meat. But we must also have meat.

The food needs for both animal and human beings vary. A mixture in which wheat bran predominated with ground corn, with still smaller amounts of cottonseed meal, alfalfa hay, or silage is the proper ration for a dairy cow in full milk production. Corn can predominate in the fattening of hogs. Oats and timothy hay constitute the basic part of the ration for the thoroughbred horse during the racing period. The fertilization of soils and the feeding of animals have had more of scientific direction than has the diet of human beings. The young and the old, the laborer by hand and the laborer by brain, with less exercise of muscles, require different amounts and kinds of food. The average individual on the football team of the East consumes daily 226 grams of protein, 354 grams of fat, and 634 grams of carbohydrates; while the average man engaged in professional work consumes daily 104 grams of protein, 126 grams of fat, and 423 grams of carbohydrates. The soldier on the battle field or in training needs the football diet.

Proper food for the human system includes: 1, proteins and the proper balance of different proteins; 2, carbohydrates, including the proper balance of fats, sugars, and starches; 3, mineral salts and their proper balance; 4, a proper amount of as yet not fully determined substances which some investigators refer to as vitamins and other investigators refer to as protective foods; 5, freedom from harmful substances which exist in many foods, freedom from unwholesomeness produced by spoilage or contamination with disease producing germs; 6, pleasing color, flavor and other similar qualities which stimulate immediate sympathy from the digestive juices.

Wheat, rye, barley, and oats add not only carbohydrates but a large supply of proteins to the diet.

Rice and corn have less protein. Beans and peas are high in protein. Beans were combined with the corn diet of the American pioneer. Soy beans, high in protein, are combined with the rice diet of the Oriental. Peanut and cottonseed flours constitute, with beans, peas, and soy beans, cheap sources of vegetable protein. Some big results to the food supply are at hand for scientific and industrial endeavor in these vegetable protein fields. Bread made from wheat, rye, oats, or barley, or combinations of these, is richer in protein than bread made from corn or corn and wheat flour. One needs to eat more of beans and meat with bread made from corn than with bread made from wheat, oats or barley. But corn looms a great hope to the hungry world. It is easiest to double its bushels per acre. The increase of its protein content and the development of a corn protein with better leavening properties is not impossible under modern botanical advance.

The loaf of bread should not be looked to as an all sufficient food. It should be kept what it is, a cereal food.

Widespread attention is being given to the mineral salt needs in nutrition. It has for a long time been observed that the mineral content of soil and water is at the foundation of progress or poverty among the human race. As we become better acquainted with the facts there is no reason why the nutritional advantages of one district should not be adopted throughout the entire food supply.

Doctor McCallum, formerly of the University of Wisconsin, now of Hopkins, Doctor Mendel and Doctor Osborne, of Yale, Doctor Sherman of Columbia, Doctor Lusk, of Cornell, Professor Forbes, of the Ohio agricultural experiment station, and others, have been following the work done in protein and carbohydrate nutrition by Atwater and his coworkers with a farreaching investigation of the mineral salts and other protective food needs in the diet. The present conclusions are that the staple foods, including bread, should be supplemented with milk, fruits and vegetables, including the leaves of vegetables. With such additions, the cereals will continue to take a fundamental place in the diet.

These studies in human nutrition have been based upon experiments with animals. Companion experiments in scientific baking have been conducted with yeast and enzymatic actions. It was for a long time observed in brewing, distilling, and baking that the mineral content of both the water and the grain has an influence on the action of yeast. A study of the cause has led to some very interesting results, to a closer control of fermentation, and already it is being seen that the mineral salt balance which stimulates yeast and the enzymatic processes in bread making parallel closely the mineral salt needs in the human diet.

Milk or milk solids will and should be more and more included in the loaf of bread. The milk protein adds a perfect protein balance to the protein of the cereals for human nutrition and the lime rich milk supplies in part this recognized, mineral salt deficiency of the cereals. There is vast opportunity for the economic conservation of milk solids for



bread making without in any way trespassing upon the fluid milk supplies for children. Progressive bakers have already made milk in the form of condensed milk or dried milk a staple ingredient in their bread formulas and the amounts introduced into the loaf will increase as the public comes to appreciate the increased nutritive value of the loaf.

How much bread shall we eat? This may be answered by referring again to the ration of the soldier. All of us do not need the soldier's ration and many need only half of it. Until next harvest we must use as little wheat as possible, but there is no reason why we should stint ourselves in the consumption of other cereals, and baking as regulated now by the food administration requires sufficient introduction of other cereals to make up for the wheat deficiency. Cereals, with milk, vegetables, and fruit constitute the cheapest way of feeding our people. We have had some difficulty in organizing the cereal situation but it is being brought under proper control, and with the coming harvest there will be sufficient cereals to meet all food demands, and sufficient wheat to make the cereals into an acceptable loaf.

The food value of the protein and carbohydrate constituents of food has been reduced to units called calories. The average daily food need of the individual ranges from 2,500 to 4,500 calories. This does not mean that we can select all calories from a particular kind of protein or from a particular kind of carbohydrate, but is a general measurement. In reducing food to calories the balance of the protein with the carbohydrate, the balance of proper proteins one with the other, the adequate balance of mineral salts and of other protective foods must be taken into consideration.

A pound of wheat bread averages from twelve to thirteen hundred calories of food value. From twelve to sixteen ounces of bread can be taken as the average daily need in the diet of the healthy adult. This is in terms of yeast made bread, but it can serve as a general measurement for the consumption of cereal prepared in any form.

Hunt and Atwater in *Farmers' Bulletin 824* of the United States Department of Agriculture have summarized the needs in nutrition, especially from the standpoint of sufficient protein with reference to bread as follows:

Since the protein foods include many of the more expensive foods in common use, and since an adequate supply of protein is essential to the growth and upkeep of the body, it is especially important for the housekeeper to know how much her family needs and to be able to choose the materials which, in her particular circumstances, will best provide the proper kind and amount.

Among the generalizations made are the following: The foods usually classed as rich in protein are: Milk and cheese; eggs; meat, poultry, and fish; dried legumes, such as peas, beans, cowpeas, soy beans, and peanuts; and almond, and some other nuts. Wheat, oats, and some other cereals also furnish considerable amounts of protein. Milk is the best source of protein for children. There is about one fourth ounce of protein each of the following: one glass of milk, one egg, one and one half to two ounces of meat, one ounce of cheese, and thirteen ounces of bread. A man at moderate muscular work is believed to need about three and one half ounces of protein a day, and a family consisting of father, mother, and three small children about twelve ounces a day.

It is possible to plan an attractive and wholesome diet in

which one half of the necessary protein is supplied by bread and other cereal foods which are relatively cheap. . . .

Cereals stand out as staple foods not only because of the cheap form of carbohydrates which they afford, but also because of their desirable protein and mineral salt content. There is a great opportunity ahead of the baker in working to perfect the economic, protein value of bread. The consuming public can safely turn to the cereals for economic protein as well as economic carbohydrates.

The food administration has asked for and will enforce the restriction of wheat in bread and other cereal foods, at least until the next harvest. It recommends that not more than two ounces of bread containing seventy-five per cent. of wheat be served in the restaurant, at one meal; which would mean six ounces a day. This may be raised to four ounces at one meal, if the bread contains sixty-six and two-thirds per cent. of other cereals than wheat, which would mean twelve ounces per day. This is in addition to the consumption of breakfast foods made from other cereals than wheat.

Let it be repeated that no one food should be emphasized as the complete food, to the exclusion of other needed foods. It can be emphasized, however, that grain, properly supplemented, forms the cheapest source of food for human consumption. Contrary to the prophesy of some economists the world's cereal crops, except as temporarily affected by war conditions, show constantly increased production. During the last twenty years the bushels of wheat and oats have increased by about one-third. Barley and rye show a substantial though less increase, while it is now possible, through applied science in seedling and cultivation to practically double the corn crop at will.

It is not generally known that the baking industry is the largest of the food industries. This industry is now the subject of the closest control exercised by the Federal and State food administrations. The food administrations have turned to the baker to help put oats, corn, and barley into an appetizing, wholesome and economic form for human consumption. Bakers are meeting the task. Light and nutritious loaves are now being baked from combinations of oats, barley, corn and rice with wheat flour.

All baker's bread is now "Victory" bread.

**Simple Wrist Drop Splint.**—The *Lancet* (May 25, 1918) presents, under "New Inventions," a simple splint for cases of wrist drop which was invented by G. W. Clyne, of the Surgical Supply Depot of the Ladies' Needlework Guild of the First Scottish General Hospital. It consists of a single piece of ten or eleven gage coppered, mild steel wire, about two feet long, bent to follow accurately the palmar aspect of the forearm and hand, and having its ends inserted into a flat, dome shaped piece of hardwood about 1¼ inches in diameter to fit the palm. Two lugs are bent into the wire to hold the strap which buckles about the forearm, and the protrusions at the base of the wrist serve the same purpose for the wrist strap. Any degree of hyperextension can be secured without pressure on the thenar or hypothenar eminences and with the fingers left free.

## IMMUNITY IN TUBERCULOSIS.

By MAX STALLER, M. D.,

Philadelphia,

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Immunity is secured by a person having in his blood certain chemical substances capable of neutralizing a toxin, of producing an enzyme for the leucocytes which enables them to digest the invading organism, or of producing a substance able to destroy the power of the germ to reproduce itself. In some infections, all these substances are present, and in others, only one of them. These substances are attached to a complex molecule of the stationary cells and leucocytes as a free ion, and they remain inactive until a substance known as antigen appears in the circulation. The antigen is able to tear away these ions and form a new molecule which is capable of causing a rearrangement in either the toxin molecule or the parasite itself by combining with an ion that is essential to reproduction, thus destroying in the parasite the main phenomenon of infection and causing a rearrangement of the entire constitutional makeup of the organism.

Immunity to a certain disease can be acquired only by those who have suffered with the infection, either in severe or in mild form. Its duration depends altogether on the stability of the antibody formed by the antigen. If the antigen is polyvalent, there will be several immune bodies formed, such as precipitin, agglutinin, complement and lysin. If the antigen is monovalent, only one immune body will be formed, and the immunity, therefore, will be of only short duration, as in diphtheria. Immunity may be produced by the direct action of living or dead organisms introduced into the circulation either by chance or by artificial means. Vaccination in smallpox and typhoid fever is the artificial introduction of the organisms in order to create immunity in these diseases. Antibodies can be formed only in the presence of living and dead organisms. These organisms sensitize the cells of the body, which in their turn respond by introducing an enzyme or antibody capable of destroying that parasite or its protein. The mechanism does not appear so complicated if the physiochemical facts are borne in mind. Let us analyze certain facts.

How the organisms are destroyed is of little importance. In order for them to disappear from the body, the leucocytes must be able to digest the organisms or break up their complex molecules into the original elements. Those elements that can be assimilated by either the stationary cells or the leucocytes are utilized, and whatever is left over is carried away by the leucocytes into the tissues. Those elements remaining attached to the cells and leucocytes act as receptors for the antigen. These receptors remain for a short or a long period or in some cases permanently, and constitute the body defenses to be utilized later. As the original germs enter, a ferment is formed, which has the power of digesting the parasites.

Many varieties of bacteria are constantly ready to gain entrance into the body—saprophytic, pathogenic or pyogenic; yet, they do not destroy the func-

tional equilibrium of the bodily organisms. This is good evidence that they have been destroyed. We may, therefore, conclude that a slight amount of immunity is left. It has been proved that leucocytes yield substances that are bactericidal, on account of the remaining elements abstracted from the organisms in the course of their migration into the body in small numbers. Hiss and Zinsser, by injecting extracts prepared from leucocytes obtained from rabbits following the intrapleural aleuronat injection were able to modify the course of staphylococcus infection and various other diseases, such as pneumonia, typhoid, meningitis, and cholera infection in animals, and in many cases the animals were saved from a fatal dose of these germs by this means. Opie also found that otherwise fatal experimental intrapleural tuberculous infections in dogs could be made to heal by the introduction of living dog leucocytes. Mainwaring noted a similar protective influence of leucocytes in experimental tuberculous meningitis in dogs. These substances need not necessarily be specific. They simply are able, by combining, to form a ferment which enables the leucocytes to digest the parasites or so modify their toxins as to make them harmless for the body.

Yet not all germ diseases confer immunity. Pneumonia and tuberculosis rather predispose to new infection. In pneumonia, however, we assume that the second attack is caused by a different strain of pneumococci. This is, however, merely an assumption, as no one, to my knowledge, has proved with clinical cases a first and a second attack of pneumonia to be exclusively from different strains. I have had cases in which I have treated the patients for pneumonia four times within the last ten years. Since but one of the four types of pneumococci which have so far been recognized, is always fatal, this leaves only three nonfatal types; yet my patients had pneumonia four times and recovered.

In tuberculous infection, a large number of the so called arrested cases have been followed by reinfection. This, no doubt, is due to the fact that the tubercle bacilli still remain in the lesion. Until a short time ago, we had no positive means of determining whether a given case was arrested or cured. Craig and Miller have adopted a plan, which has been tested in a number of cases, and which is valuable as bearing on this subject. It is that the disappearance of clinical symptoms and arrest of the activity of the disease do not mean that the patient is cured. If, however, in the absence of clinical evidence, the patient's blood, when tested for complement fixation with tubercle bacilli, proves negative, then we may apply the term "cured" to his case. If the blood is still positive, in spite of the absence of clinical evidence, the disease is arrested, but not cured. He still has tubercle bacilli, either in the old focus or in a new one whose presence could not be detected clinically.

We must recognize the universality of tuberculosis. If absolute, no immunity to it could be obtained, the whole of mankind and animals would suffer from either acute or chronic tuberculosis. The fact that this is not the case is evidence of immunity. It is true, however, that when an overwhelming dose of tubercle bacilli gains entrance



into an organism predisposed to the disease by weakness, exhaustion, alcohol, or syphilis, the immunity is lost. In 1915, while in Vienna, I witnessed 1,000 post mortems on the bodies of persons dying with diseases other than tuberculosis, between the ages of eighteen and seventy years, and ninety-two per cent. of all these showed evidences of healed tuberculosis of the lungs. I will admit that these thousand individuals represented the industrial classes, which are more susceptible to the development of the disease than are the upper classes. Nevertheless, if this ratio holds good, we must conclude that immunity to tuberculosis does exist in a greater or less degree. Resistance to tuberculosis is due entirely to the cellular system, which gives the leucocytes the chemical units required to produce an enzyme when stimulated by the presence of tuberculosis antigen in the form of toxins or endotoxins. These units are acquired by the body cells during their lifetime through the entrance of small numbers of tubercle bacilli which are readily destroyed, thus making it possible for the leucocytes, with the assistance of these enzymes, to engulf, digest, or break up the molecules of which the tubercle bacillus is composed, and so eliminate it as a disturber of the peaceful colonies of cells making up the animal's body.

How can such an enzyme be produced? Air, sunshine, sanitation, good food, and rest keep the cells and leucocytes in good trim and the cells will destroy the few tubercle bacilli that may enter, thereby preparing themselves with substances capable of overcoming a large number of these organisms. The person who does contract tuberculosis is, to begin with, not up to par. You must, therefore, give him the diet, sanitary conditions; etc., that the first individual had, in order that he may resist the infection. If his cellular system is much below par, he will succumb before a sufficient amount of bacteria are killed to produce the primary elements essential for the formation of antibodies. If the entering tubercle bacilli are numerous and virulent, your dietetics and sanitation and fresh air will be of no avail; because the cells are so overwhelmed by the tuberculous toxins that they must utilize all their energy in throwing off the toxins and maintaining their own life, and have none left for the production of antibodies. The tubercle bacilli are then the victors, because the overwhelming amount of toxins prevents the moleculation of the atoms present, to form, with the antigen, the antibodies.

The famous physician, Galen, gave a dictum as far back as 130 A. D.: "No one can be saved, unless nature conquers the disease; and no one dies, unless nature succumbs." Radical as that statement was at the time, it is only lately that it has been modified on a scientific basis by Sir A. Wright, who gave the following dictum: "No one recovers from a chronic or acute bacterial disease unless it be by the production of protective substances in his organism; no one acquires protection against disease except, again, by the production of protective substances; and finally, no one lives in the presence of infection and repels that infection, except by the aid of protective substances in his blood." The elaboration of this theory as applied particularly to

tuberculosis constitutes an entirely new phase in the treatment and cure of the same.

If we recognize tuberculosis as a bacteremia, the local anatomical lesion becomes of secondary, and the toxemia of primary importance. If the cellular system is able to produce sufficient protective substances in time, the local lesion will take care of itself; and since these protective substances, known as antibodies, can be produced in the individual only in the presence of infection, the amount of toxins thrown into the circulation at one time plays an important rôle in the prevention and cure of the disease. If the amount is small and is thrown into the circulation at infrequent intervals, the chances for immunity or recovery are good. On the other hand, if the amount of toxins is large and enters the circulation at frequent intervals, the cells become so overwhelmed that they cannot produce enough antibodies to neutralize the toxins, because they are not able to kill enough tubercle bacilli to make a sufficient number of receptors to form antibodies. In such cases, the results are fatal.

It is, therefore, clear that the principle in the prevention and cure of tuberculosis is the elaboration of tuberculosis antibodies by the infected individual. His entire protection lies in their quick and active production. If he succeeds, he is saved; if he fails, he is doomed. Up to the present time, no one has succeeded in producing tuberculosis antibodies outside the infected individual. I have, however, succeeded in producing a serum in an animal body—not by means of the tubercle bacillus, but of the *Bacillus X* (1). This serum gives the complement fixation test positive with living tubercle bacilli, and also with Craig and Miller's tuberculous antigen. If the theory of the curative action of specific antibodies is correct, then my serum ought to be capable of preventing, as well as of curing, tuberculosis in the pretuberculous state, as well as in incipient and moderately advanced cases.

#### REFERENCE.

1. STALLER: Report of Experimental Work on the Production of an Antituberculous Serum, *New York Medical Journal*, December 22 and 29, 1917.

1310 SOUTH FIFTH STREET.

#### EXPERIENCE WITH A CLASS IN MALNUTRITION.

*Work of the Malnutrition Clinic, Bowling Green Neighborhood Association, New York City.*

By JOHN L. KANTOR, M. D.,  
New York.

The recent growing general interest in the subject of malnutrition among school children has suggested the publication of the present brief account of the work done from June through December, 1917, at the Bowling Green Health Centre, 45 West street, New York City.

#### MATERIAL, FACILITIES, METHODS.

As pointed out in various reports dealing with the activities of this association, the Bowling Green district represents a poor residential neighborhood located in the southwest part of Manhattan Island, almost completely isolated from the better residential districts by the interposition of the large finan-



cial and warehouse sections of New York. Although this isolation has undoubtedly in the past been responsible for the neglect and relative backwardness from which the population has suffered, its very compactness and what may be called "natural" boundaries make it so much easier to handle from the medical and sociological point of view.

The larger portion of the population comprises those of Slav, Syrian, Irish and Greek extraction. The children attend either the one public school or the parochial school of the district, and in these schools general medical inspections have been made by the municipal authorities, and on the basis of these findings children suspected of being undernourished have been referred to our clinic. Before the opening of the association's building, the clinic was held at the public school, while one class was conducted at the parochial school.

At present the classes are held in the malnutrition room in the association building, twice weekly. The examinations are conducted by the physician in charge and an assistant. A small portable scale is used for the weighings. New subjects are constantly being added to the class on recommendation of the association nurses, social workers, school nurses, and other agencies. The procedure for an individual child is as follows:

TABLE I.  
CLASSIFICATION OF CASES ADMITTED TO CLINIC.  
Number. Percentage.

Class III	111	53
Class IV	69	33
Class IIIa	31	14
Total	211	100

Cases incompletely studied	151
Total cases with available records	352

Each case is provided with a standard sheet on which the original and all subsequent findings are recorded. The child is weighed and comparison is made between the weight as found and the *theoretical weight for his age*. Similar comparison is made for the height. If the data are found normal the child is not admitted to the class but the record is filed for future reference. Should the child be found underweight, he is put in the appropriate class of the Dunfermline scale.

*The Dunfermline scale.*—According to this method of marking nutrition, prepared by the Carnegie Trust at Dunfermline, Scotland, every child can be put into one of four classes:

Class I. Children in superior physical condition under the best environment. Weight normal or slightly above average.

Class II. Children in passable condition under ordinary environment. Weight normal.

Class III. Children below weight, requiring observation.

Class IV. Children below weight (I have selected an arbitrary limit of more than fifteen per cent. under weight) requiring special observation.

Naturally, the malnutrition clinic deals primarily with classes III and IV.

*Corrective measures.*—At the original examination the outstanding physical defects are noted. Children suffering from their teeth are treated at the association's dental clinic under the same roof. Those with diseased tonsils or adenoids are re-

ferred, pending the enlargement of our own facilities in this direction, to appropriate institutions for treatment. The same applies to cases of ocular troubles. Those suffering from cardiac and other general diseases are referred to the association's children's clinic. Cases with spinal curvatures are sent to the class of corrective exercises.

Constant and repeated individual and class instruction is given as to proper dietary habits and

TABLE II.

	No. in group.	ANALYSIS OF WEIGHTS.		
		No. who showed relative gain.	No. who showed relative loss.	Relatively stationary.
Boys	39	30 or 77%	8 or 20.0%	1 or 2%
Girls	29	23 or 79%	6 or 20.5%	1 or 2%
Total	68	53 or 78%	14 or 20.5%	1 or 1%

	No. who showed actual gain and amount gained.	Theoretical or expected gain for this number for period of observation.
Boys	36 gained 107.00 lbs.	36 should gain 55 lbs.
Girls	24 gained 82.75 lbs.	24 should gain 61 lbs.
Total	60 gained 189.75 lbs.	60 should gain 116 lbs.

The boys, therefore, gained 1.9 times their expected weight increase. The girls, therefore, gained 1.4 times their expected weight increase. The entire group gained 1.6 times their expected weight increase.

hygienic measures in general. Between clinics, nurses and social workers are engaged in visiting the homes of the children and giving advice and relief where possible. During the summer, selected cases are sent to the country for a stay of about two weeks. This is accomplished through cooperation with the various agencies now available for such relief. Children favored in this way almost invariably gain in weight. It should be mentioned

TABLE III.\*  
WEIGHT AND HEIGHT CHART.

Age	Boys		Girls	
	Pounds	Inches	Pounds	Inches
Birth	7.55	20.6	7.16	20.5
6 months	16.0	25.4	15.5	25.0
1 year	21.0	29.0	20.5	28.7
18 months	24.0	30.0	23.5	29.7
2 years	26.4	32.5	26.8	32.5
2½ years	29.0	...	28.5	...
3 years	31.0	35.0	30.3	35.0
3½ years	33.0	...	32.3	...
4 years	35.0	38.0	34.2	38.0
4½ years	37.0	...	36.1	...
5 years	39.0	...	37.9	...
5½ years	41.0	41.7	39.8	41.4
6 years	43.1	...	41.6	...
6½ years	45.2	43.9	43.4	43.3
7 years	47.4	...	45.6	...
7½ years	49.5	46.0	47.7	45.7
8 years	52.0	...	51.0	...
8½ years	54.5	48.8	52.5	47.7
9 years	57.0	...	55.0	...
9½ years	59.0	50.0	57.4	49.7
10 years	62.5	...	60.2	...
10½ years	65.4	51.9	62.9	51.7
11 years	68.0	...	66.2	...
11½ years	70.7	53.6	69.5	53.8
12 years	73.8	...	74.1	...
12½ years	76.9	55.4	78.7	56.1
13 years	80.8	...	83.7	...
13½ years	84.8	57.5	88.7	58.5
14 years	90.0	...	93.5	...
14½ years	95.2	60.0	98.3	60.4
15 years	101.2	...	103.5	...
15½ years	107.4	62.9	106.7	61.6
16 years	114.1	...	109.5	...
16½ years	121.0	64.9	112.3	62.3

\*Used at the Bowling Green Malnutrition Clinic. Compiled from the work of Burk, Holt, and Boas, by Mr. Frank A. Manny.

that special supervision can now be secured for cardiac cases insuring against overexertion.

Although no plan of ideal feeding has yet been attempted, each child is given a glass of milk—sometimes cocoa in winter—and a few crackers at each session. This has the additional value of insuring regular attendance. No medication in the nature of artificial foods or fatteners has been ad-

ministered. It seems well, therefore, to point out that so far, our results have been obtained, in a sense, with the kinds and amounts of food at the disposal of the malnourished children themselves. Accordingly, there is reason to look for greater gains just as soon as some continuous plan of controlled feeding is adopted.

*Working out of the problem. Results obtained.*—A total of 352 children have been enrolled at the malnutrition clinic. Of these 141 have been set aside as of normal weight or as having been observed for too short a period to permit of inclusion in a comparative study. This leaves a group of 211 serving as a conservative basis for this report. Of this number 111, or fifty-three per cent., belong to Class III, sixty-nine or thirty-three per cent. to Class IV, and thirty-one or fourteen per cent. to a special group which I have designated class IIIa. This group is of sufficient interest to warrant a few words of explanation:

It was observed early in the progress of the work that some of the obviously undernourished children referred to the clinic, when weighed, were found to equal, and in some cases to exceed, the expected weight for their age. The solution of the difficulty was apparent when the height was taken. Such subjects were found to be too tall for their age, and their actual weight was invariably found to be less than the expected weight for their height. In other words, these children were, in reality, instances of asymmetrical development, as opposed to children who are both under weight and under height for their age, and who may be spoken of as instances of symmetrically retarded development. I think that recognition of these asymmetrically developed (Class IIIa) children is of real importance because they seem to be candidates for diseases or conditions associated with ptosis of the internal organs. Is it not possible that measures taken in early life would yield far better results than when attempted later in the career?

*Analysis of data.*—Of the 211 cases above mentioned as serving for the basis of this report, sixty-eight were observed for periods of more than a month: some for as long as six months. Detailed statistics are presented in the accompanying tables. It may be pointed out that seventy-eight per cent. of the children regularly attending have gained more than their expected increase in weight during their respective periods of observation. The boys did somewhat better than the girls, having gained 1.9 times their expected weight increase, whereas the girls gained but 1.4 times their expected weight increase. Both together gained 1.6 times the normal amount. Fourteen per cent. of the children showed a relative loss, *i. e.*, failed to gain weight at a rate equal to the theoretical weight gain for their respective ages.

*General conclusions.*—Child malnutrition is not merely a poverty problem, or a food problem, or even a medical problem. It is a problem involving adjustment between the individual and the environment in the broadest sense, and can be solved only by bringing to bear on any one case all the resources of the best medical, educational and sociological teaching. If well cultivated this field bids

fair to offer the richest practical rewards to hygiene and preventive medicine.

44 WEST NINETY-SIXTH STREET.

## Abstracts and Reviews.

### HOW AMERICA IS HELPING FRANCE WITH HER TUBERCULOSIS PROBLEM.\*

By JAMES ALEXANDER MILLER, A. M., M. D.,

New York,

Associate Director of the Commission for the Prevention of Tuberculosis in France.

The Commission for the Prevention of Tuberculosis in France was sent in July, 1917, under the auspices of the International Health Board of the Rockefeller Foundation, with Dr. Livingston Farrand, formerly executive secretary of the National Association for the Prevention of Tuberculosis, as its director. In February, 1917, Dr. Herman M. Biggs was requested by the International Health Board to make a personal study of the situation and the sending of the permanent commission was a direct result of Doctor Biggs's report and recommendation. The results of the studies made by the commission thus far tend to corroborate Doctor Biggs's estimate of nearly 500,000 cases of tuberculosis in France, though the classification is somewhat modified. Doctor Biggs's classification is as follows:

Discharged from army.....	150,000
Still remaining in the army.....	45,000
Prisoners of war in Germany.....	20,000
Civilian refugees and repatriates.....	85,000
Among the remaining civilian population.....	110,000
Tuberculosis listed under false diagnoses, such as bronchitis, etc.....	30,000
Total .....	440,000

It is the opinion of several of the best of the French clinicians that a very large percentage of the patients diagnosed as tuberculous in the army did not have this disease, at least, in active form. That predisposed cases do well rather than otherwise under army régime was the expression of opinion of French physicians in military service. Very few tuberculous prisoners of war in Germany have been returned to France. That a goodly number of cases of tuberculosis are covered under such terms as chronic bronchitis is most probable. The prejudice in France against public acknowledgment of tuberculosis in a family is even greater than in this country. In Paris, where the mortality is highest, more than fifty-two per cent. of the deaths reported from tuberculosis occur in hospitals where the greatest accuracy in diagnosis and record is to be expected. Regarding tuberculosis among the remaining civilian population an analysis shows that while the death rate from tuberculosis in France is high, it has been no higher during the war than previously; also that the increase in the death rate above the average in France is due almost exclusively to the very high figures which obtain in large cities. Tuberculosis remains, as before the war, a

\* Abstract of paper read before the College of Physicians of Philadelphia, May 1, 1918.

disease especially of the civilian poor in large cities. The food problem has by no means reached the point of actual want in France, excepting in the exceptional cases, although the question is a difficult one. Alcoholism plays a large part and all French sanitarians hope for some control of the sale of distilled liquors as a result of the war.

Second in importance to the tuberculosis problem in France is that of infant mortality and of depopulation. We have found it desirable to link up the two campaigns through cooperation with the American Red Cross. This has been done by carrying on the publicity propaganda as one united effort and by conducting clinics for children in all tuberculosis dispensaries which we have established. The birth rate in France is well below the death rate. The infant mortality rate, however, is distinctly below that of Germany. Our commission entered into a working agreement with the American Red Cross which has exhibited as splendid an example of co-operation as could possibly exist between two similar bodies. Our working basis was that the general outline of the tuberculosis campaign and the policies involved should be directed by the commission, which would have direct charge of the establishing of dispensaries, the training of nurses, and the educational propaganda; the Red Cross assuming the institutional care, home relief, and housing. There was, as a matter of fact, interchange of work and personnel with complete harmony. We assumed the entire responsibility for community tuberculosis work in an arrondissement of about 250,000 inhabitants. Three tuberculosis dispensaries have been established here and a fourth is under way. The visiting nurses are doing tuberculosis work and infant welfare work simultaneously.

The housing problem in France is one of the most difficult to solve. The overcrowding and general lack of hygiene in the tenement districts exceeds almost anything with which we are familiar in our large cities. Mr. Homer Folks, of the Red Cross, contracted with the owners of half finished apartment buildings for the Red Cross to finish the buildings and to apply the necessary expense toward the rental upon a three year basis. This has made space available for several thousand people, some of which has been used for our tuberculous families. In order to make our demonstration more complete we developed a rural section of France along the lines followed in the arrondissement mentioned. Hospital supervision has been provided and plans are under way for the erection of a sanatorium. The same methods have been employed as in Paris, including the establishment of children's dispensaries, training of visiting nurses, and provision for home relief. In addition to these two intensive organizations we have cooperated with existing French dispensaries. In our various dispensaries we have over 1,500 new patients in attendance and 1,350 families were under supervision April 1, 1918.

Until a few years ago the nursing of the sick in France was entirely in the hands of the nuns, but since the separation of Church and State schools for nurses have been developed. We have established a scheme of cooperation with three of the best schools in Paris and a fourth in Lyons. While the theoretic-

cal training and the practical work given to nurses in these institutions were splendid, there appeared to be a lack in training for social work. We have achieved a common basis for the curriculum and have secured courses in the principles of social work. As all physicians of military age in France have been mobilized, only the elderly men and women physicians remain. It has been our policy to cooperate with them in every possible way. One important result has been a most interesting and valuable interchange of knowledge and methods between the physicians of France and America. Members of the Faculty of Medicine in Paris and in Lyons have suggested that we offer a course in diagnosis to the students of their medical schools. This undoubtedly will later be done.

Probably the most interesting and successful feature of our commission has been the educational propaganda developed under the direction of Professor S. M. Gunn in cooperation with Mr. Pratt, of the Children's Bureau of the American Red Cross. The plan consists in having several educational automobile units, comprising moving picture machines, a traveling exhibit, a mass of printed literature and posters, and lectures on tuberculosis and infant welfare, all heralded in advance and kept before the public by a well organized press campaign. Three of these units have begun work and twelve are planned. The success achieved is already astonishingly great and the enthusiasm has not only done much to extend the health propaganda but has aroused a tremendous admiration for America among the French people. No more stirring experience can be had than watching the effect of this American effort among the French people. The very satisfactory beginning of the campaigns in France against tuberculosis and infant mortality is due mainly to the cordial spirit of cooperation manifested by the French themselves, who feed the encouragement and assistance that America has brought to them to tide them over this present period of terrible strain and stress. That America has been able to have a part in the beginning of this great movement will do much to strengthen the ties of affection binding these two great republics, and to those of us who have been privileged to share in the work, it will always remain one of the great and deep experiences of our lives.

**The Indefatigable Cabanès.**—Recently the Academy of Sciences at Paris was presented with a new volume by Doctor Cabanès, entitled *Chirurgiens et blessés à travers l'histoire, des origines de la Croix Rouge*. The author devotes the first chapters to the care of war wounded in the time of the Pharaohs, in India, and the Greek and Roman armies. He notes the progress made through the reign of Louis XIII, Louis XIV, and Louis XV during the revolutionary wars, down to those of the First and Second Empires, showing how much we owe to the work of the philanthropist, Dunant. The International Copyright laws will bring a copy to our own medical library at Washington, D. C., if any wish to see a volume whose author's name promises good reading.



# Medicine and Surgery in the Army and Navy

## EXAMINATION OF RECRUITS FOR TUBERCULOSIS.\*

*A Plan for the Special Examinations of Conscripts at the Place of Mobilization with Particular Reference to Tuberculosis.*

By RALPH C. MATSON, M. D.,

Portland, Ore.,

Major, M. R. C., United States Army, Tuberculosis Specialist,  
Ninety-first Division, President, Tuberculosis Examining  
Board, Camp Lewis, American Lake, Washington.

(Concluded from page 203.)

At the end of each month an efficiency chart is prepared of the board's work upon which are indicated curves, representing the number of cases each examiner has examined, the percentages of histories written, the percentage of correct diagnoses, the number of cases of tuberculosis recognized, the number of cases of tuberculosis missed, and the number of tuberculosis cases occurring in the camp within three months after having been passed by the examiner. The curve indicating the character of the work done by each examiner is of a different color, one for each examiner, and is known to him only. The chart is posted in the room of the president of the board. Each examiner can see at a glance how his work compares with the others. This stimulates better individual work, the most efficient being the curve indicating the largest number of examinations, largest number of cases diagnosed, the fewest missed, and the fewest breaking down with tuberculosis after having been passed.

By special order of this camp, no officer or man is discharged on account of tuberculosis without examination and report of the division tuberculosis specialist. The president of the board is the division tuberculosis specialist, and sees every case of tuberculosis diagnosed in the camp. Thus by referring to the blank reference card he is able to trace the case back to the examiner and determine whether the man was accepted on recommendation of the examiner, who found no evidence of tuberculosis, either from the family history, past history, present history, or the result of physical examination, and thus assumes the responsibility, or whether on account of the presence of some of the indications stated above the man was referred to the x ray department, and thus brought to the attention of the president of the board through his assistant, who then assumes the responsibility. The blank reference card enables the president of the board to secure and give information requested by the Camp commander, division surgeon or mustering officer, regarding the results of the special physical examination of any conscript and his disposition. This is especially valuable, for the reason that countless communications are received from anxious mothers regarding the physical conditions of their sons. The blank reference card shows the action of all boards at once and whether the man was historied by the tuberculosis examining board, thus falling into groups 1, 2, 3, 4, 5, 6 or 7, and therefore x rayed. The form 1 gives the

history, results of examination, physical and x ray, the diagnosis of the examiner and the röntgenologist, and the examiner's recommendation to the president of the board, also the results of the re-examination, and the final disposition by the president of the tuberculosis examining board. All this information is especially valuable in cases accepted where tuberculosis was alleged, as means of escaping military service. This scheme is the outcome of the examination of over 40,000 first draft men and has proved satisfactory in the examination of over 32,000 second draft men, as well as an additional 2,000 absentee first draft, all of which have been carried out at Camp Lewis, American Lake, Washington. The scheme is efficient. Almost every case is decided the same day. The percentage of rejects has not been unusually high, and of the last 32,000 men, many of whom have been in camp three months under intensive training, there have been only two breakdowns, one a case accepted with what was thought to be an insignificant healed lesion; the other a man of splendid physique, who gave a negative history, and the examiner found his lungs negative, so the man was accepted on the examiner's recommendation. But three weeks later he was referred back because of cough and expectoration, fatigue and loss of weight. Reexaminations revealed a chronic, active, fibrocaceous tuberculosis. The man, through patriotic motives, had purposely misled the examiner regarding his past history, which, if truthfully given, even with the examiner's negative findings, would have brought the man under the x ray, where this particular case would no doubt have been recognized and brought to the attention of the president of the board.

The scheme provides intensive training for medical officers in the diagnosis of tuberculosis. They are taught the limitations of the x ray, as well as the physical examination; at the same time their value and the importance of making a diagnosis on the evidence gathered, not only from physical examination and x ray, but evidence gathered from a tactfully gotten history interpreted with judgment. These officers, who return to their organization, are certain to stimulate a sane interest in tuberculosis, to have a well balanced judgment regarding its diagnosis, and to exercise their knowledge to the end that tuberculosis arising in their organizations will be recognized and brought to the attention of the division tuberculosis specialist or consultant at the base hospital at a time when something can be done for the unfortunate man.

The scheme calls for only minor alterations of the barracks building, and provides a plan whereby an enormous number of men can be effectively handled without confusion, even when dealing with a cosmopolitan mass comprising many races and tongues.

The neuropsychiatric board is composed of three officers and two clerks. The board examines both mentally and neurologically cases referred to it. The sources of cases are:

1. Special tuberculosis examining board. All cases whose conduct, actions, or conversation, in-

\* Published by permission of Board of Publication, Office of Surgeon General.

dicate any nervous disease, psychosis, or previous psychosis, mental deficiency, or inebriety are referred by the individual member making the tuberculosis examination to this board.

2. Mustering office. All cases in whom no neuropsychiatric defect was observed by the tuberculosis examining board, but who later present such defects, while undergoing examination during muster, and have not been examined previously by the neuropsychiatric board are referred.

3. Command. This board acts only in an advisory capacity in these cases, recommending transfer to the base hospital for observation or examination by the divisional psychiatrist.

4. Other special examining boards, as orthopedic and cardiovascular. All cases of mental deficiency are referred to the psychological board for a report as to intellectual level and their recommendation is made a part of the findings in the case.

The rules governing are those in general laid down by the *Manual of Instructions for Medical Advisory Boards* and published by order of the Secretary of War, February 14, 1918. All reports of examinations are made on forms as prescribed and cardiovascular. All cases of mental deficiency blank card are stamped, indicating the board's recommendation to the mustering officer. These papers are returned to the man who passes on downstairs entering room 4. The cardiovascular board is composed of four officers and four clerks. Only referred cases are examined, these cases being referred immediately by the tuberculosis examining board or by the mustering officer.

Type of cases referred:

I. By the tuberculosis examining board:

1. Registrants who claim heart disease, nephritis, syphilis or rheumatism.

2. Registrants in whom the local or medical advisory board detected cardiac disorders.

3. Registrants in whom the tuberculosis board detected cardiac lesions not noted previously.

II. By the mustering board:

1. All cases not previously passed on by the cardiovascular board, and who show evidence of cardiac disease.

Methods of examination:

Instructions as per *Manual of Instructions for Medical Advisory Boards*, part 12, February 14, 1918.

All men showing murmurs or enlargement are placed under the fluoroscopic screen. A laboratory is equipped for uranalysis in the case of hypertension, suspected nephritis or diabetes.

Cases showing irregularities of the pulse have a polygraphic tracing made when time permits.

In addition to the cardiovascular work, the board has undertaken a study of endemic goitre. Each registrant is carefully examined for the presence of an enlarged thyroid and recorded accordingly on the form attached. It has long been known that endemic goitre existed in the Pacific Northwest, but a comprehensive study of the distribution has not been made. The survey undertaken includes registrants from Washington, Oregon, Idaho, Montana, Wyoming, Utah, Nevada, and California. Following the preliminary study, further work is planned

to determine what type of cases are liable to break down under the stress of military service.

Records of the examinations are recorded on Cardiovascular Record Form B-1, Medical Department, U. S. Army, and weekly reports on Forms B-2 and B-3, Medical Department, U. S. Army. Form 88 and blank are stamped indicating the board's recommendation to the mustering officer. These papers are handed to the man who passes them on to the exit clerks.

Thanks are hereby acknowledged to Captain W. J. Kerr, M. R. C., president of the cardiovascular board; Captain Arthur P. Calhoun, M. R. C., president of the neuropsychiatric board; Captain John Carling, M. R. C., president of the orthopedic board, for notes regarding the procedure of their respective boards.

#### TUBERCULOSIS EXAMINING BOARD, CAMP LEWIS. CIRCULAR A.

*Suggestions regarding procedure of chest examinations.*—The examination is to include 1, inspection, 2, palpation, 3, auscultation, 4, percussion. Inspection and palpation are usually combined.

As the soldier approaches you and takes his position in front of you observe his general physical condition, muscular development, habitus, and attitude. Three types of habitus are recognized: 1, asthenic; 2, normal, and 3, hypersthenic. 1. The asthenic has a costal arch of less than 90°; ribs pursue an oblique direction. The chest may be pyriform; shoulders may be broad; arms long and swinging. The asthenic usually has more or less scoliosis. The heart is pendulous and occupies a central position. There is general ptosis of all organs. These individuals are frequently the sufferers of a latent tuberculosis. 2. The normal habitus requires no description. 3. The hypersthenic has a costal arch of more than 90°. The ribs pursue a horizontal course. Frequently they are sufferers from asthma and emphysema. The attitude is either active or passive; active when a soldierly appearance is presented; passive when the individual seeks every opportunity to arrest or support himself. Instead of standing at attention in front of you, he stands on one leg. If a table or chair is handy, he will support himself. Muscles are generally relaxed.

Having noted these conditions as the soldier approaches you, now observe the facies, noting particularly the absence of pallor and flush (general flush of face in acute respiratory affections associated with fever). The flush is local, being confined to the cheeks in chronic tuberculosis, associated with fever. Observe the nose for obstructed nasal breathing, such as polypoid growths. Observe nares, the direction of septum, etc. The mouth and throat can also be quickly examined. Note condition of the skin, presence of operative scars, those of tuberculous adenitis being usually multiple and over the site of superficial glands. Simple adenitis scars usually occupy the submaxillary regions and are single. Look for scars of sinuses as a result of broken down tuberculous glands. These scars usually show evidence of a healed cutaneous scrofula. Small hard nodules scattered throughout the neck occur in infections, but the adenitis of lues is characteristic. General adenopathy oftentimes accompanies vaccination. Observe the condition of the skin and adipose tissues, not only of neck, but chest and upper extremities. A rapid disappearance of fat leaves a loose skin, the shoulders droop and appear narrowed. Observe and palpate the apex beat. Note its location and character, whether diffused or circumscribed, heaving, etc. In drop heart the apex beat may be just back of the costal margin, but a diffuse pulsation will be seen just at the right of the costal margin. After having inspected and palpated the front of the chest, direct the conscript to turn about, then repeat the same procedure on the back. Note the position of the trapezius muscle, whether atrophied or in spasm. Note the position of the scapulae and whether the angles project. Direct conscript to draw shoulder blades together. Observe direction of the line of folded skin between the scapulae (valuable in detecting slight



degrees of scoliosis). Direct a deep breath. Note whether apex rises or not. In an old chronic tuberculosis of the apex or upper lobe, no excursion is noted on the affected side. A narrow girdle on the opposite side may be due to scoliosis or contracture of the upper quadrant of the chest due to chronic tuberculosis. Observe the position of the trachea, which may be retracted to the affected side in tuberculosis. Observe the breathing, watching the costal margins for retarded or restricted respiratory movements; at the same time place the fingers in the intercostal spaces. Note the presence or absence of bulging, narrowing or retraction. The ribs should separate freely during inspiration, allowing the finger tips to pass between the ribs. Observe the presence or absence of old emphysema scars. Now percuss back of chest, determining first the mobility of the lung border at the height of inspiration and end of expiration. This is rather important to note. Next percuss from base to apex, first on one side and then on the other; then alternate back and forth for comparison. Mark any dull or impaired area. Percuss the isthmus of the shoulder girdle. Now test out the vocal fremitus, preferably with an Erlenmeyer flask 200 c. c. capacity, which is much more sensitive than using the hand. It will be more convenient to auscultate the back of the chest before percussing in front. First direct conscript to breathe properly. If the respiration is a little hurried, thirty per minute, it brings air into the air cells better and saves time. The respiration must be uniform and quiet. If there is any obstruction to free nasal breathing, direct conscript to say "ha" and hold the mouth in that position. The inspiration should approximate thirty per minute, but you will have to illustrate this. Auscultate from base to apex, first on one side, then on the other; then compare identical spots on both sides. In going over the first time, note the type of breathing. The purest vesicular is usually heard over base. Pure bronchial breathing is heard normally on the back of the neck, below the occiput, and in front over the trachea. If any question arises regarding the type of breathing in the suprascapular region, it is easy to compare with bronchial heard over the back of the neck or trachea and vesicular heard over bases. After having determined the type of breathing, both inspiration and expiration, test out whispered resonance; direct conscript to take just sufficient air to whisper one, two, three. This gives you a short, sharp, quick inspiration, during which you will note again its type and the presence or absence of râles. During the expiration you will note abnormal prolongation, and the presence or absence of pectoriloquy or egophony should be noted. At times râles are more distinctly heard when the conscript forces all air out of the lungs, coughs once, and breathes in at once (expiratory cough). Note the type of râles if any are heard. If difficulty is encountered in determining the type of breathing, it will be found valuable to listen only to inspirations on first round, removing the stethoscope at the end of expiration. On the second round, listen only to the expiration, removing the stethoscope just before inspiration. After having finished the back, direct conscript to turn, percuss and auscultate the front of the chest in the same manner as the back. Percuss lung excursion on both sides in front. Observe the ribs for bulging or flattening due to scoliosis. If the bulging is due to an acute angulation, there will be a corresponding flattening on the opposite side with compensatory changes in front of the chest, with checkerboard dullness. Now place the palms of the hands on the sides over the lower lobes and direct a deep breath to be taken. Note whether the expansion is equal on each side. There may be a limitation of motion or the excursion may be fairly good but retarded. Now place one hand in front in the mammary region, the palm of the other hand below the spine of the scapula. Note whether expansion over the upper lobes is limited or retarded, as from base to apex, first on one side, then on the other; compare alternately identical spots on both sides. Auscultating in front it will be more convenient to begin at the apices. Since you have already determined the type of breathing normal for the individual, auscultate down to the base, first on one side, then on the other, comparing identical spots. The procedure of auscultating in front is exactly the same as that practised behind; first determining the type of breathing, presence or absence of râles; and if present, the kind, whether occurring on inspiration, expiration, or both, or only after cough, or cleared on coughing. Next auscultate the whispered voice.

Finally, determine the border of the heart and auscultate all valves.

TUBERCULOSIS EXAMINING BOARD, CAMP LEWIS.  
CIRCULAR B.

*Information Concerning Methods of History Taking in Examination of Conscripts for Tuberculosis.*—These suggestions are placed before you in order to assist you in eliciting information which will be of value in estimating the true worth of the person's statement regarding his condition. It must be borne in mind that conscripts who are trying to evade military service will lie, and those anxious to serve will deny. It is important, therefore, that the questions should be so put that the conscript will not recognize the character or value of the information he imparts.

It is important to know whether the conscript has been working steadily or not; and if not, if his inactivity was due to ill health. Inquiry should be made into the health of living members of his immediate family, and the statement that the father, mother, or any other member of the family has tuberculosis, pneumonia, chronic bronchitis, or is "run down," or is in any other condition of ill health which might be attributable to tuberculosis, should not be accepted without interrogation which will tend to reveal the true nature of their illness. If any of the immediate members of the family have tuberculosis, find out how long they have had it and if the patient was exposed, *i. e.*, lived in the same house. If any member of the family died from tuberculosis, find out the date, length of illness, and if the conscript lived in the same house. If the cause of death is given as chronic bronchitis, typhoid fever, asthma, or any condition which might be confounded with tuberculosis, inquire carefully into the nature of this illness in order to satisfy yourself that the patient's statement is correct. This information should be noted by the examiner under remarks.

Do not accept the conscript's statement regarding the nature of a severe illness without satisfying yourself regarding its true nature. Inquire particularly into his previous health, mode of onset (slow or sudden), duration, and whether not complete recovery took place. This is important in trying to differentiate between typhoid fever and tuberculosis.

In the so called typhotuberculosis of Landouzy, it may be very difficult to decide. Many persons who have had really a tuberculous infection claim that they have had a slow fever or walking typhoid. The diagnosis in those cases is usually based upon the fact that the man was run down and had a low fever extending over a period of time. It is important in determining the existence of a previous typhoid infection to know whether there were other cases in the family, and whether or not it was epidemic in the community. The onset of typhoid is, of course much more rapid than that of tuberculosis. When the patient states that he has been ill, or not feeling well for a long time, even from three months to a year before he was stricken, and when few of the classical symptoms of typhoid fever were present, one must always be suspicious. Determine as nearly as possible the height of the fever, its duration, whether or not he was delirious. The typhoid patient is delirious if he runs a high fever for any length of time. The tuberculosis patient is never delirious unless he has meningeal involvement or is moribund, no matter how long the fever lasts. In typhoid fever the convalescence is rapid, oftentimes characterized by a ravenous appetite and rapid gain in weight. In tuberculosis the convalescence is much slower, and patient may state that he has never regained his lost weight. After typhoid fever, the patient is liable to lose his hair. This rarely occurs in tuberculosis. Nose bleeds and headaches also are not common in tuberculosis. In both diseases there is cough and expectoration.

Convince yourself that the pneumonia, so called, was really pneumonia and not a bad cold or la grippe. Satisfy yourself by careful interrogation as to whether or not the so called pleurisy was really pleurisy. If a man has ever had pleurisy he will not forget the stitch in the side and the severe lancinating pain which follows coughing or deep inspiration. This pain usually lasts a few days and subsides as an exudate is formed, or if the case is one of dry pleurisy, as adhesions are formed. Many men think they have had pleurisy when upon careful inquiry we learn that what they thought was pleurisy was an indefinite pain in the chest which lasted a few seconds and recurred at very



indefinite intervals of days or weeks. If you examine the side you will also in many cases convince yourself as to whether or not a pleurisy existed. If the case was a severe one, the intercostal spaces will be narrowed; there will be a limitation of motion on the unaffected side, and the lung borders will be fixed. When the statement of the patient is confirmed by the examination in one particular, we then can give more credence to his statements relating to other conditions.

In pneumonia, be careful to inquire regarding bleeding. In pneumonia the expectoration is tinged with blood, so-called prune juice expectoration, during the stage of red hepatization. In caseous pneumonia or the acute caseous forms of tuberculosis, the onset may be very similar to pneumonia, but the bleeding, if it occurs, comes with the breaking down of the caseous area, which is, as a rule, after the patient has been ill some weeks, and the bleeding is bright red and frothy. The sputum may be only streaked, or there may be a severe hemorrhage, during which time he will expectorate anywhere from one half a cup to a pint or two of blood. Hemorrhages are, as a rule, multiple and continue over a period of days, after which time the sputum remains colored; first red, then dark brown, as the active bleeding subsides and the clotted blood is expectorated. Inquire into the termination of this so-called pneumonia. If by crisis or lysis, the termination may be continued a week or so, but in tuberculosis the condition remains unchanged until the caseous areas break down. Then we note a fall of fever and an increase of expectoration. As a result of the fall of fever the patient improves; his appetite returns, and he may gain in weight, but he continues to cough and expectorate, run a low fever, and the convalescence is protracted. In tuberculosis with a cavity of any considerable size the patient usually sleeps on the affected side, otherwise he coughs and spits all night. If both sides are excavated, he sleeps on his back. In the morning he cleans out his cavities by coughing and expectorating, after which he may not raise any more during the entire day.

Do not accept the patient's statement that he takes cold easily, or that colds last long, without assuring yourself of the correctness of his statement. We consider that a man takes cold easily if, upon the slightest provocation, he contracts a cold. If he takes cold easily, he will therefore have frequent colds. The question whether or not his cold lasts long also varies considerably, depending upon the conception as to what constitutes lasting long is to the different individuals. As a rule, we do not consider a cold having lasted long unless it persists for more than a month. The average case of bronchitis lasts for three or four weeks, and anything therefore over a month can be considered lasting long. The question whether or not blood was ever coughed or spat up is important. You should convince yourself that the blood was actually coughed and spat from the lungs. Many persons spit streaked sputum, but it oftentimes comes from the gums or the nasopharyngeal region. The blood spitting of tuberculosis is either a distinct hemorrhage, usually preceded by the expectoration of streaked sputum for two or three days, or a hemorrhage never occurs, but the sputum will be tinged with bright red blood for several days or a week, and in some cases longer.

In acute bronchitis one often coughs and expectorates streaked sputum. This is due to the rupture of small blood vessels in an intensely congested mucous membrane. This rupture is due to persistent coughing. You should, therefore, inquire carefully as to whether or not the coughing preceding the bleeding was severe. This information is to be noted under remarks. In recording in the present history the period of time during which he claims to have coughed, such information should be recorded in weeks, months, or years. The same refers to spitting. There are times when it is even necessary to request the patient to show you how he raises sputum, so you can observe whether he raises it from his lungs, or if he hawks and spits from the throat, or draws it back through the posterior nares.

Loss of weight should be accounted for. Loss of weight in tuberculosis is due to loss of appetite, but loss of weight often occurs in normal healthy individuals, as a result of a change of occupation, etc., and it is to be expected that many conscripts will have lost enormously in weight as a result of change of occupation from a sedentary to one

associated with the expenditure of much physical energy. At some time prior to the time the man was conscripted he may also have lost considerably in weight, but if he is healthy, this is nearly always dependent upon a change of occupation from one wherein little energy is expended to one wherein the amount expended is great.

#### TUBERCULOSIS EXAMINING BOARD, CAMP LEWIS.

##### CIRCULAR "C."

#### Nomenclature for Recording Lung Findings to Be Used by the Tuberculosis Examining Board.

##### I. *Fremits*:

- A. Normal—Over infiltrations and consolidations due to pneumonia, tuberculosis, etc.
- B. Increased—Above fluid, due to compression of lung tissue and over cavities with thick wall.
- C. Decreased—(a) Pleural cavity full of fluid or air. (b) Thickened pleura.
- D. Absent—Stenosis or obstruction of large bronchus through tumor, etc.

##### II. *Percussion*:

- A. Normal.
- B. Impaired—Chest deformity, scoliosis, infiltrations as pneumonia, tuberculosis, atelectasis, lung abscess, hemorrhagic infarct, gangrene, tumor, cyst, etc.
- C. Dull—Consolidations due to above causes of greater extent.
- D. Flat—Fluid at least 400 c. c. or thickened pleura.
- E. Tympanic—Cavity, emphysema, above fluid (due to diminished lung tension) pneumothorax provided tension is not too high. Sometimes when a whole lobe is consolidated due to pneumonia, or tuberculosis.

##### III. *Auscultation, Breathing*:

- A. Vesicular—Normal.
- B. Broncho-vesicular—Infiltrations (old tuberculous process, if no râles probably healed).
- C. Bronchial—Consolidations, cavities, deviated trachea, sometimes with effusions in pleural cavity.
- D. Cavernous or amphoric—Large cavities.

The following terms are used to amplify the meaning of the above types of breathing:

- E. Undeterminable—See below.
- F. Weak—Thickened pleura, early tuberculosis, atelectasis, emphysema, shallow breathing, rigid thorax, calcification costal cartilages, lung fibrosis, etc. In tuberculosis softening when bronchi are full of secretion.
- G. Absent—Thickened pleura, fluid, obstruction of bronchus. Massive old caseation with profuse secretion plugging the bronchi.
- H. Rough—See below.
- I. Sharpened—Due to swelling of bronchial m. m., heard in bronchitis. Occasionally acute tuberculosis. With short inspiration—pleuritic adhesions.
- J. Prolonged expiration—Bronchitis, asthma, over left apex in tuberculosis, over right apex normally.
- H, I, and J are used only to amplify the meaning of breathing vesicular.

- K. Râles, (a)—Crepitant; heard along normal lung borders and sometimes over apex in shallow breathers on first inspiration. Occur in alveoli on inspiration in atelectasis, disappear on coughing. Essentially the râle of acute inflammatory processes. Also heard in caseous pneumonia, lobar pneumonia, bronchopneumonia, lung edema, hemorrhagic infarct, persist in tuberculosis.

- (b) Subcrepitant (larger and louder)—Occur in infundibula, heard on inspiration and expiration same as preceding, also in adherent lung. Also the râle of acute inflammation.

- (c) Crackling (still larger and louder)—Occur in finest bronchioles, sound like burning salt on stove, heard in edema, congestion, bronchitis, and frequently in chronic fibrocaseous tuberculosis.

- (d) Sibilant—Still louder high pitched—Bronchitis (characteristic) emphysema, asthma, etc.

- (e) Sonorous (loudest low pitched)—Same as preceding.

- (f) Resonating (small, medium, large), typical indeterminate râles of Bushnell. The râle of subacute, acute, and chronic inflammatory processes—Usually found associated with bronchovesicular or bronchial breathing and due to the same causes. If in smooth wall cavity, may take on metallic resonating qualities.

- (g) Nonresonating, bubbling (small, medium). Atypical indeterminate râles of Bushnell—Acute, subacute, and chronic lung process without infiltration or consolidation.
- (h) Friction rub—Pleural, pericardial.

##### IV. *Vocal: Resonance*:

- (a) Normal—1. Bronchophony, infiltration.
- (b) Increased—2. Pectoriloquy, consolidation or cavity; egophony, large cavity.

NOTE.—If dyspnea is noted, state whether inspiratory (cardiac) or expiratory (asthma).

In case of abnormal findings record results obtained by I, II, III, IV, indicating location (with relation of lobes of lung) and character of lesion.

Write a diagnosis in case of abnormal physical findings and give reason man is sent for x ray examination.

Fatigue of tuberculosis usually comes on in the afternoon. The fatigue of tuberculosis must not be confused with the fatigue of hard work. If the man complains of

fatigue, although the character of his work is not changed, it is suspicious of tuberculosis. With the same amount of work to do, the normal, healthy individual feels refreshed after a few moments' rest, but with tuberculosis the fatigue will be present the next day. It is to be expected that many conscripts will complain of fatigue, which will be due to their drilling, but if the conscript has tuberculosis, the fatigue will persist in spite of his rest. The neurasthenic usually has his fatigue in the morning and feels better after he gets up and stirs around. The tuberculous patient feels good in the morning if he has not been subjected to any physical strain the preceding day, but he gets tired when he sits around a bit.

In reference to sweating at night: In tuberculosis the patient goes to bed and after falling asleep awakens, finding himself wet with sweat, or his clothes may be damp. Sweating occurs, especially on the inner surface of the legs and on the chest. These are really sleeping sweats, as they occur only with sleep. Many conscripts will undoubtedly claim they have had night sweats, but on careful inquiry you will find out that their sweating occurred as soon as they went to bed, while they were still awake, or that they awoke the next morning and found their sleeping garments damp with perspiration. Sweats of this character frequently occur in a person who has been under physical or mental strain, and it is impossible to say whether or not he had a real night sweat, if he did not awaken.

Frequent or repeated attacks of cold are oftentimes due to obstructed nasal breathing. You can easily satisfy yourself regarding this cause. On the other hand, they may have a tuberculosis base, in which case they represent one of the modes of onset of tuberculosis. Inquiry regarding the presence or absence of pain is of questionable value. Pain is purely subjective phenomena, and what is intense pain in one individual passes unnoticed in another. As a rule, all pain in tuberculosis is due to pleurisy, as there are no sensory nerves in the lungs. The pleura is very sensitive, and pleurisy occurs principally in two forms. Acute pleurisy is characterized by a severe lancinating pain in the side, more especially along the costal arch, aggravated by coughing and deep breathing. Examination of the side reveals a spasm of the costal muscles, fixation, etc. The chronic pleurisy pain is less aching in character and usually occurs over the site of the infection, therefore, in the breast under the shoulder blades, in the axillary region, and at times is even referred to the shoulder. These pains may last a few days, a week or two, after which they disappear. Pain in the vicinity of the sternum, where in the examination reveals tuberculosis of the hilus glands, may produce reflex pains in the chest, but as a rule, the examination of this class of cases will be negative. Pain, of course, occurs in acute bronchitis due to coughing. Pain in the region of the sternum is also seen in phthisiophobia. These persons, as a rule, are fearful of tuberculosis. Their exposure has been, or is, imaginary, and they present themselves complaining of pain, and the pain is usually in the region of the sternum. The real consumptive seldom, if ever, has pain in the region of the sternum. The pain of aneurysm, tumors, or cardiac disease is, of course, recognized and requires no discussion.

The man's statement regarding the presence or absence of fever is of no value. The neurotic complains of fever based principally upon the fact that he feels flushed in the afternoon. This is also seen in the man who fears tuberculosis. Many patients with advanced tuberculosis or severe acute tuberculosis, deny absolutely the existence of fever, and the thermometer may record 102° or higher.

**Reward Well Earned.**—No one would ever dispute the claim of Dr. César Samson, of Hazebrouck, Belgium, to the coveted cross of the Légion d'honneur. It was recorded in the official journals that at the time of mobilization he was left alone to serve some 12,000 people and that, day and night, he toiled among them, and when the refugees came established a free dispensary, an amateur hospital for those wounded by bombs, besides acting as obstetrician not only for his own district, but for the canton of Armentières and the Belgian towns, Ypres and Poperinghe.

## MEDICAL NEWS FROM WASHINGTON.

*Special Medical Training in American Universities.—Appointment Urged of Brigadier General Ireland as Surgeon General.*

WASHINGTON, D. C., August 5, 1918.

There is, perhaps, no more popular officer among the medical personnel of the army than Brigadier General Merritte W. Ireland, Medical Corps, National Army (colonel, Medical Corps, regular army), and the prospect of his being appointed Surgeon General of the Army, to succeed Major General William C. Gorgas in October is meeting with the hearty approval of medical officers, both regular and temporary, and particularly those that have been serving under him in France.

General Ireland, as chief surgeon on the staff of General Pershing, has succeeded in bringing the medical service of the American forces in France to a very high state of efficiency, as evidenced by the official reports reaching the War Department and the statements of medical officers recently returned from France.

Appointment of General Ireland as Surgeon General would give the service the benefit of his knowledge of conditions abroad, where he has been on duty for a considerable period, and his experience while on duty in the Office of the Surgeon General several years ago also would be of value to him in the exercise of the duties of Surgeon General.

General Pershing is enthusiastically supporting General Ireland for the place, and it is understood that officials of the American Red Cross also have urged his appointment.

Although the matter has been discussed, it is not believed that there is any chance of the President's going outside of the Medical Corps of the regular army in appointing a successor to General Gorgas. For one thing, it would be in violation of the present statutes, and, therefore, special legislation would have to be enacted before an outsider could be appointed.

\* \* \* \* \*

The Medical Department of the Army, through the National Research Council, shortly will issue an appeal to American colleges and universities urging them to alter their curriculum so that third and fourth year students may receive special training that will enable them to qualify as officers and for other work in the Medical Department. Dr. Richard M. Pearce, of the National Research Council, and the division of laboratories of the Office of the Surgeon General of the Army are cooperating in the matter.

Students taking various scientific courses are particularly desired. The course specified by the Medical Department should appeal to men who are specializing in biology, zoology, plant pathology, and in industrial and agricultural bacteriology.

The plan already has been tested in two colleges with success. From one such institution, every man taking the modified course was admitted directly into the army and went to one of the training schools, where some of them later will qualify for commissions in the Sanitary Corps. Others have qualified for positions with field or mobile laboratory units and as assistants at base and evacuation hospitals.



# Editorial Notes and Comments

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NEW YORK, SATURDAY, AUGUST 10, 1918

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### SOME EARLY PAGES IN TRAUMA AND DISEASE.

Studies of the human body a few centuries ago were groping, imperfect of results, scarcely gaining a foothold of appreciation or interest, much less of approval, in any but the narrowest circles. It is a far cry from such stealthy investigation to the boldness and candor of medical activity which seeks to support its knowledge and practice from all that can be known from human anatomy and from the very depths which the earth itself may have to reveal.

Paleontology has set men thinking and investigating along several new lines, and medical pathology is roused to its share of interest in what paleontology may have to reveal. The pathological anatomy of ancient man presents a stimulating field for speculation supported by investigation. Still further back in those millions of years with which paleontology is making us at least slightly familiar, diseases and disease agents were operative upon animal forms, which have also become the objects of study. Roy L. Moody [Pathological Lesions among Extinct Animals:

A Study of the Evidences of Disease Millions of Years Ago] gives a summary of such study. There is knowledge, he tells us, of the existence of diseases upon the earth for 25,000,000 years anyway. The evidence of traumatism in such an extremely remote age or even in periods only a little more recent brings a new sense of the common struggle for existence and the obstacles in its pathway, which have varied so little even up to the present time.

A typical simple fracture healed with callus is that of a primitive reptile from the Permian of Texas, probably 20,000,000 years old. The callus contains such familiar features as osteosclerosis and osteohypertrophy. There are no necrotic sinuses, which would suggest infection, in the wound. Such a sinus, however, is found on the posterior end of the right ilium of a dinosaur, whose skeleton may be seen in the United States National Museum at Washington. Another dinosaur skeleton reveals an exostosis on the visceral surface of the scapula, sufficient to have caused considerable laceration of the pleura. The lesion may have been caused by chronic irritation or pulmonary infection and resembles lesions frequently found in human bones.

Another necrotic sinus in a mosasaur suggests an extensive suppurative process and leads the writer to speak of the evidences of bacterial infection scattered throughout paleopathological remains. Knowledge of bacterial forms as disease producing agents does not occur until the coal period, millions of years later than their known occurrence as life forms. But in the later period can be found traces of the pathological effect of the organisms. The partial invasion of the canaliculi of bone, destruction of the lacunæ, and even the complete destruction of the bone are found. Among the many arthritides found among fossil remains are mentioned particularly a hemangioma and an osteoma. In one case the osteoma has grown out from a vertebra and then overlapped the adjacent vertebra, forming a weak ankylosis. In another the two vertebrae are united into a solid, true ankylosis. Such complete ankylosis is commonly found, as well as fractures, caries, absorptive processes similar to pyorrhæa alveolaris, necroses, osteoperiostitis, and other diseased conditions. These occur among mammal remains and human bones of the early periods show the same result of traumatic causes. There is no basis, so far at least, for accepting tuberculosis or syphilis among the causes

of these early bone lesions, though they have sometimes been suggested. There is no real evidence of syphilis earlier than 500,000 years ago. Probably some extinct disease has been the source of many of the lesions.

This science of paleopathology may be expected to throw light upon the nature of disease, and particularly perhaps upon parasitism as the cause of disease. It serves also in striking manner to establish the close and solid continuity in living conditions and the adjustment of life to them throughout the world's history. This is of increasing importance to thought, whether concerned with life in its physical manifestations or its psychical progress.

#### THE ROLE OF MILK PRODUCTS IN MILK BORNE DISEASES.

Too little emphasis is still placed upon the fact that the danger of the spread of disease by infected milk includes the milk products, butter, cream, cheese, ice cream, etc., as well as the milk from which they are made. Probably the danger from the latter is even greater, because so much more attention is paid to the milk than to its products. Most milk legislation is, if anything, rather vague when it concerns the milk products.

When once milk is infected neither it nor its products are affected by anything but pasteurization or sterilization. Low temperature or even freezing has little effect upon the contained pathogenic organisms. This is particularly true of the typhoid and diphtheria bacilli, which are the highest exponents of milk borne infection. There can be no doubt that these organisms can cause their respective diseases when present in milk products unless properly treated. Only safe milk, produced by whatever method, can make safe milk products. The freezing process that is part of the manufacture of ice cream does not affect the virulence of the typhoid or diphtheria bacillus, particularly the latter.

The investigation by the Public Health Service of an epidemic of diphtheria in Newport, R. I. (Public Health Reports, Reprint No. 430) demonstrated that the outbreak was probably caused by infected ice cream. Milk borne epidemics are usually characterized: 1, by their explosive character (their sudden rise and rapid decline); 2, by the fact that they can usually be traced to one or more sources of milk supply, and, 3, by the fact that mostly women and children are affected, because they are the largest consumers of milk. But it is often very difficult to trace an epidemic

to its source, because among the poor no one dealer is consistently patronized.

In this epidemic in Newport, traced to ice cream, it was found that most of the cases were in adults rather than in children, contrary to what would be expected. This epidemic occurred during the hottest part of the summer when the consumption of ice cream was at its height, and it was found that only six per cent. of the ice cream sold was to children under ten years of age. This fact amply explained the apparent peculiarity of a higher incidence of infection in adults. In the same city the epidemic among the military forces was present, but to a much smaller extent. The fact that the discipline and leave regulations caused a comparatively slight contact with the civilian sources of infection explains this condition. The few military cases are thought to have been from the same source as those of the civilians, but because ice cream was served but once a week to the military forces the chances of infection were lessened.

#### THE DIAGNOSIS OF ACUTE PULMONARY EDEMA.

The diagnosis of acute pulmonary edema is of utmost importance from the fact that the process is particularly serious, but may be easily overcome by free blood letting. This treatment, to be of any use, must be resorted to at once, so that an early diagnosis is essential.

The importance of an exact diagnosis is quite as great for the future as for the present of the patient. A subject who recovers from one attack remains exposed to a recurrence, and, what is of still more import, an acute pulmonary edema is frequently the signal of an aortitis or a nephritis, which has been overlooked until the development of the pulmonary process.

For these reasons it is well to keep in mind the syndromes of the pulmonary manifestation in order that a differential diagnosis may be made. In the type of acute pulmonary edema with a bronchoplegic onset, the pale face may lead one to suspect a syncope, but auscultation of the heart shows that the organ is functionally active. The process must not be mistaken for an asthmatic paroxysm, an error which may well be made when the medical man is called suddenly in the night to the bedside of a patient seized with an attack of suffocation. Acute pulmonary edema has the uncomfortable habit of occurring in the night.

A mistaken diagnosis is, however, easily avoided. If the case is one of acute pulmonary edema,



the respiration will be extremely accelerated—sixty to one hundred per minute. The stethoscope detects fine scattered râles over the lung, while the expectoration is frothy and albuminous from the onset of the attack. Occasionally it is salmon colored. Nothing like this occurs in asthma.

Rheumatism and typhoid fever may give rise to acute pulmonary edema, but these pathological processes may also, by the intermediary of a phlebitis, give rise to an embolus, which, from its sudden onset and violent dyspnea, may more than likely give rise to a diagnostic error. But in embolus there are no pulmonary râles, sonority is normal and never exaggerated, and if, later, traces of congestion and edema are detected, the latter are localized to a circumscribed pulmonary area in the neighborhood of the embolized artery.

The condition must also be diagnosed from asystolia. When the venous pulmonary circulation is slowed, as in advanced cardiac cases, there is stasis in the pulmonary capillaries and therefore hyperemia and serosanguineous exudation. But there will be edema of the lower limbs, hepatic congestion, sometimes ascites or pleurisy. In infrequent cases when the edema occurs alone, when there is only pulmonary asystolia, the edema will be found localized, especially at the bases, and will require considerable time to invade the pulmonary territory. There is no albuminous expectoration, the râles are more marked, and percussion is normal because there is no acute emphysema.

Very frequently acute pulmonary edema is a symptomatic expression of Bright's disease and the diversity of the types of respiratory uremia are well known. Therefore, an essential factor is to be able to differentiate acute pulmonary edema from these accidents. If the case be one of the purely dyspneic type a mistake should be impossible; stethoscopic signs are absent and the process does not undergo the same acute evolution as in acute pulmonary edema. As to angina pectoris, the thoracic resonance remains normal, and when the subject regains his breath a vesicular murmur is heard over the entire pulmonary area.

A serous inundation of the alveoli means orthopnea, and in some cases the differential diagnosis will be a delicate matter. A careful post-mortem diagnosis of acute pulmonary edema should always be carried out. A subject is seized in the night with violent dyspnea. A physician is called who gives a hypodermic of morphine. The patient dies a few minutes later. The medical man is accused of causing the patient's death. A medicolegal affair ensues and it at once becomes

evident what responsibility is incurred by the medical examiner if he does not attribute the lesions found to their true cause.

### IN THE FAMILY.

"The skeleton in the cupboard" is having rather a bad time, first because in these days of apartments and flats no cupboards can be spared, secondly, families are now less afraid of him, and, aided by health lecturers, psychologists, and "popular science," dispensed in mild doses in the Sunday papers, they rather enjoy dragging him out and discussing that particular form of crime or disease which led to a tombless life. They even take melancholy pride in the number of members of the family who have followed in his footsteps, these not being able to avoid it, because "it is in the family," a sentiment which recalls the old game of "My Aunt Margaret is dead. What did she die of? Shaking her head as I do." The player would shake and continue shaking while telling her neighbor, who would pass on question and answer until all the party were shaking, the announcement being repeated with variations as to symptoms until all the children were in a pseudochoreic condition.

These "imitation" games often appear as stern reality when, as in the case of an epileptic being in the family, the brothers and sisters approaching to or at puberty will often develop an inclination to pseudo attacks of faintness and fall to the ground, or will unconsciously fix an imitation into a habit when there is a case of marked chorea among them.

But, notwithstanding all the calm alleviating light which has been thrown on heredity, it is still an obsession with many that they themselves or some member of the family must be heritor of the ancestral crime or disease, and this belief, recited constantly when young or delicate people are around, has accelerated the departure from this world of many a nervous or frail person. No use fighting: it is "in our family."

Their fears seem justified when the doctor consulted makes a "case history" and asks if there are any familial diseases, or of what their near relations died. "Ah, he, too, thinks I have inherited consumption" (insanity, gout, cancer, etc.), and they forthwith resign themselves to semiinvalidism and often selfishly lose any sort of reluctance with regard to constantly draining the sympathy and purse of the family. We recall an Irish family who jokingly said but firmly believed that "all our family go to the bad (physically or morally) when they are forty," and if, toward this age, adverse fortune or ill

health came, they simply made no effort to fight but resigned themselves to the seemingly unavoidable, with the natural consequence that through dissipation and recklessness, some did surely die, and the relations were melancholy but triumphant. This species of mind argues from minorities, and it is, happily, forced to take some comfort from the knowledge that thousands of boys, coddled and screened because they were delicate, even their doctor advising against anything strenuous, have become fine muscular young giants during the hardships of war. At any rate, more wholesome views are taken today of familial disease and frailty. To have a relation "put away" or one operated on for cancer is no longer spoken of in awed whispers as something disgraceful, but as a disease to be fought against, so it is to be hoped that in time the grisly hand of Death will be loosened from the robe of the living and a determined, rational, cheerful fight be kept up against the skeleton in the cupboard.

#### HALF MENDED MEN.

Before convalescent homes were so common, Sir Frederick Treves, pleading for more of them, said that to return a weak man to his home where the whole surgical equipment consisted of the family sponge, a hairpin, a popular ointment and some septic rags, was simply to undo the good gained in the hospital. He would carry the sick even one stage further than that attained in the usual convalescent home. This might be called the Bettering House, though Benjamin Rush had used that as the best name for hospitals. So many soldiers, owing to lack of accommodation, have been sent home practically well from the lay point of view, but still needing careful supervision, and, owing to the local hospitals with their out patient department being also full of the wounded, do not get the aftercare they need. The War Office, seeing the reasonableness of such a presentation, has agreed to keep the men longer in hospital or convalescent home so that they may be really fit to face the scantiness of home resources, and arrangement has been made for the admission (if necessary) of the discharged hospital patient into some 333 hospitals throughout the kingdom, government bearing the expense. It might be added, as a gentle hint to the rich in America, that hundreds of the wealthier class in Britain have received convalescents as guests, giving them good food, drives, quiet, and returning them much faster to their regiments than if they had remained in a hospital. The gratitude of the men is enormous. One young shrapnelled officer said to us, "Fancy the joy of stopping in bed to breakfast and having a hot bath every day after two years in those filthy trenches." Twice wounded, he has gone back to France. There will be thousands in America needing the aftercare so courteously and rightly given to their English brothers in arms.

#### THE SURGEON AS A SCULPTOR.

In view of the large proportion of wounds received in the head, it is not surprising to learn that many cases of facial mutilation result. The result of such wounds is most depressing and some are said to have committed suicide rather than live with a face disfigured by wounds. During his recent visit to the United States Sir Arbuthnot Lane, the distinguished English surgeon, told of the remarkable results which have been achieved in the restoration of the contour of disfigured faces. A noted French sculptor studies photographs of the face of a patient as it appeared before the wound was received, and constructs a model in plaster as near like the original as possible. With this model before him, he builds up the injured face transplanting bits of cartilage and bone from the patient's ribs or legs, holds them in place with paraffin or some plastic material and brings over the wounded area a flap of skin lifted from the forehead, cheek or neck and by this means builds up a new face, not only agreeable to look at, but with a resemblance to former appearance. One hospital in London has been devoted to these operations, and the results of the skill gained by the dozen English surgeons employed there has been freely offered to all American soldiers who may stand in need of such aid, the only expense entailed being the maintenance of the patient during the rather protracted process. To this end, the American authorities have been invited to provide barracks near the London hospital in question, an invitation which will, no doubt, be gratefully accepted.

#### NOTIFICATION OF COMMUNICABLE DISEASES IMPORTANT.

In view of the danger of the transmission of communicable diseases through recruits joining the forces, it is particularly important that all physicians and boards of health should promptly report all cases of communicable diseases which come under their notice. Where the patient is himself a drafted man, the physician should make immediate report to the local health authorities, who should in turn notify the senior medical officer of the camp which the selected man is about to join, by telephone or telegraph if necessary, and a duplicate notification should be sent to the State health authorities. In the absence of a local board the physicians should communicate with the State Board of Health, whose duty it then becomes to notify the military authorities. The proper observance of this precaution will do much toward reducing the incidence of communicable diseases in the National Camps.

#### News Items.

**Surgeon General Gorgas Praises Army Dentists.**—At the annual meeting of the National Dental Association, held in Chicago on Tuesday, August 6th, Surgeon General William C. Gorgas, U. S. Army, said that the work of the army dentists was of double value. They had helped to keep the general health of the army up to a high standard, as bad teeth were a prolific cause of disease, and were also doing a wonderful work in reconstructing the faces of soldiers who have received shrapnel wounds.

**Cholera in Petrograd.**—According to cable despatches from Amsterdam, there are more than 20,000 cases of cholera in Petrograd, and up to Saturday, August 3, 1,100 deaths had occurred. It is said that the authorities are unable to handle the situation and the disease is spreading rapidly.

**Certificates in First Aid Nursing Awarded.**—The Police Department has awarded certificates of graduation in first aid nursing to thirty women and to eight members of the police reserves who enlisted as members of the emergency unit. Dr. Daniel Donovan, acting chief police surgeon, presided at the meeting.

**Six New Hospitals at Vancouver Barracks.**—Announcement is made that six additional hospital buildings will be erected at Vancouver Barracks, Oregon, at an estimated cost of \$74,000. Three of these will be for contagious diseases. The work of construction will be started at once and will be carried on under the supervision of the Construction Division of the Army.

**The Health of the Navy.**—Latest reports show a death rate in the navy and marine corps from sickness of 2.4 per thousand per annum, which is less than that of peace time. Deaths from all causes reached the rate of 3.7 per thousand per annum. Admissions to the sick list were 46.2 per thousand per annum for all causes—sickness and injuries. There were four cases of cerebrospinal fever reported, widely scattered, no two being at any one station, three cases of scarlet fever, three of diphtheria, and seventeen of pneumonia. Despite the prevalence of diphtheria in many of the Eastern cities, it has gained no foothold at any naval training camp.

**Another Hospital Ship Torpedoed.**—The British ambulance transport *Warilda* was torpedoed in the English Channel, early Saturday morning, August 3d, and 123 persons are missing from the 800 who were on board. The hospital ship was on her way to a British port bringing nearly 600 sick and wounded soldiers from France. There were eighty-nine women nurses on board, many of whom were drowned. The explosion wrecked a ward room in which were scores of wounded men, killing many. There were seven Americans on board, one of whom is missing. The other six are being cared for in an English hospital. The majority of those accounted missing were killed by the first explosion. It is said that this was the first trip the *Warilda* had made without wounded German soldiers on board.

**Lectures on First Aid.**—The Municipal Civil Service Commission has arranged a course of ten lectures on first aid, for municipal employees and the general public. These lectures will be given on Wednesdays at 12:30 p. m., in the Municipal Building, and repeated on the Fridays following at the headquarters of the Health Department. The first lecture in the course was given on August 7th and 9th, by Dr. Daniel J. Donovan, police surgeon, on First Aid From the Police Standpoint. Other lectures in the course are:

August 14th and 16th, First Aid From the Bellevue Standpoint, by Dr. John W. Brannan, president of Bellevue and Allied Hospitals.

August 21st and 23d, First Aid From the Fire Department Standpoint, by Dr. Francis M. Banta, medical officer, Fire Department.

August 28th and 30th, First Aid in the Home, by Dr. Harriet W. Hale.

September 4th and 6th, First Aid in Nursing, by Miss Elizabeth Gregg, superintendent of nurses, Department of Health.

September 11th and 13th, First Aid From the Fire Prevention Engineer's Standpoint, by James O'Connell, inspector, Bureau of Fire Prevention.

September 18th and 20th, First Aid in Resuscitation, by Charles E. Raynor, commodore, U. S. Volunteer Life Saving Service.

September 25th and 27th, First Aid for the Infant, by Dr. Jacob Sobel, chief, Division of Baby Welfare, Department of Health.

October 2d and 4th, First Aid for the Child, by Dr. C. Ward Crampton, director of physical training, Department of Education.

October 9th and 11th, First Aid in Industrial Hygiene, by Chester C. Rausch, assistant director, American Museum of Safety.

Mr. Leonhard Felix Fuld, assistant chief examiner, will be glad to give further information regarding these lectures.

**An American Navy Base Hospital Abroad.**—A navy base hospital unit, organized by Dr. Ray Smith, of Los Angeles, and recruited principally from that city, has reached England ready for action with the American naval forces now operating in European waters. The unit has a personnel and equipment for a total capacity of five hundred beds, and is under command of Medical Director Charles M. de Valin, United States Navy.

**Revision of Dental Supply Tables.**—The War Department has appointed a board consisting of Colonel Edwin P. Wolfe, Medical Corps; Lieutenant Colonel John R. Ames, Dental Corps; Lieutenant Colonel John H. Schapp, Dental Corps; Major James P. Harper, Dental Reserve Corps; and First Lieutenant Peter C. Krupp, Dental Reserve Corps, to make a study of the dental supply tables, and submit such recommendations for their revision as may seem necessary.

**The Yale Laboratory School.**—Lieutenant Colonel Charles F. Craig, Medical Corps, U. S. Army, has been placed in charge of the school for bacteriologists and chemists to be conducted at Yale University for the duration of the war. About one hundred officers and two hundred enlisted men are to be trained in this school to supply the mobile laboratory in the field in France, as well as stationary laboratories, and technicians for base hospitals both at home and abroad. Yale has given the use of its buildings for the work.

**Disease Casualties Among American Troops.**—The Surgeon General of the Army, under date of July 19, 1918, has issued a statement showing the disease conditions among troops in the United States for the six months' period ending June 28, 1918. The annual admission rate per 1,000 (disease only) is shown to be: All troops, 1,380.3; divisional camps, 1,261.1; cantonments, 1,558.6; departmental and other troops, 1,248.0. Average noneffective rate per 1,000 on days of reports: All troops, 44.83; divisional camps, 41.62; cantonments, 53.91; departmental and other troops, 39.37. Annual death rate per 1,000 (disease only): All troops, 8.03; divisional camps, 6.27; cantonments, 9.94; departmental and other troops, 7.30.

**Personal.**—Colonel Henry Page, Medical Corps, U. S. Army, has been assigned to command Base Hospital No. 541, at Charlotte, N. C., and Major Edward A. Coates, Jr., Medical Corps, U. S. Army, has been assigned to command the base hospital at Camp Wadsworth, Spartanburg, S. C.

Dr. Timothy D. Lehan, for fifteen years a coroner's physician, has been appointed by Police Commissioner Enright police surgeon for the Thirteenth and Fourteenth Districts of the Police Department.

Major Edward Wallace Lee, of New York, Medical Reserve Corps, U. S. Army, who is on active duty in Porto Rico, is reported to be ill with typhoid fever.

**Rehabilitation Hospitals Abroad for Disabled American Soldiers.**—The American authorities have decided to provide hospital care and treatment and training in England, France, or Italy for every wounded American soldier whose disabilities are of such a character that there is even a remote likelihood of his being in reasonable time restored to active service on the firing line or retrained so that he may take one of the innumerable positions behind the lines, where many disabled men could be employed, thereby releasing for the front line many physically fit men who are now occupying these clerical or other positions. Only the man who probably can give no further military service or for whom a long course of treatment is in store will be sent to America.

**The American Board for Ophthalmic Examinations.**—At a recent meeting of this board, held in New London, Conn., it was decided that the next examinations will be held at the New York Eye and Ear Infirmary, New York, Friday, October 25th. Dr. William H. Wilder, Chicago, was elected secretary of the board, which is composed of representatives of the American Ophthalmological Society, the Section in Ophthalmology of the American Medical Association, and the Academy of Ophthalmology and Otolaryngology. By arrangement with the American College of Surgeons the board has become the ophthalmic credentials committee of the college, and conducts the examinations of the ophthalmic candidates for fellowship in the college.

Further information may be had upon request from the American College of Surgeons, 25 East Washington Street, Chicago.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SOME NOTES ON DRUGS AND TREATMENT.

#### *A Review of Recent Progress in Therapeutics.*

BY MARK SADLER, M. D.,  
Montreux, Switzerland.

### III.

#### THE TREATMENT OF HEMOPHILIA.

Before sera came into use many treatments were employed to combat hemophilia, and not one hemostatic ever gave the slightest result. Let me briefly review those methods which have been to some extent successful before considering serotherapy, which at present is the foundation of all treatment, and, first, a few words on the prophylactic treatment of the diathesis. In the first place, when the physician has been forewarned of the condition, a thing which does not usually happen, it is generally admitted that the disease in question constitutes by its presence a contraindication to all surgical operative work unless it be one of emergency. But the amount and gravity of the hemorrhage in hemophilia is in no relation to the importance of the operation, and the most serious hemophilic accidents have usually occurred upon the occasion of some slight and insignificant trauma. The removal of a tooth, the incision of an abscess, or the operation for perionychia, have been the source of more severe hemorrhage than that resulting from a laparotomy. For this reason de Bovis, in speaking of severe hemophilic metrorrhagia which resisted all treatment, advised hysterectomy, while Fordyce, one of the first writers on the subject, pointed out that these subjects are in less danger from section of a large blood vessel than from a superficial wound. An interesting problem of prophylaxis has been raised by de Bovis, in hemophilia in women. He believes that in authentic cases of hemophilic families, marriage is to be discouraged, and this in both sexes. It is a question whether one can prevent the transmission of the diathesis to the descendants if the mother be treated during her pregnancy, and an essay has been made in this direction by Mende in a woman who had lost four babies from multiple hemorrhages. She was delivered at term of her fifth child, who was healthy and was vaccinated, but died ten weeks later. A case recorded by Brook was more fortunate. A woman had lost two children and was treated during the third pregnancy; she was delivered at term of a healthy child who survived. Kehrer advises induced abortion in all hemophilic women, but de Bovis considers that when this is done the uterus bleeds more and longer than after a normal labor at term.

As to the treatments, they can be conveniently divided under three headings. *Physical means:* heat; compression; elevation of the limb; gauze packing. *Means which act on the vessel walls (vasoconstrictors):* adrenalin; antipyrin; ergotin; the acids. *Substances modifying the coagulability*

*of the blood:* perchloride of iron; peroxid of hydrogen; gelatin; salts of lime; extracts of organs and tissues; artificial sera (salts and minerals); animal sera.

The action of physical agents is always local. Heat has been used by Hayem, because towards 55° C. coagulation takes place more rapidly. It is indicated, and may give a relative result in cases of severe metrorrhagia, in the form of very hot injections. One may also obtain a partial success by cauterization of the uterine cavity with superheated steam, as was applied in one case by Pineus and Stokel.

Mediate, or direct measure, is not very efficacious. However, it has given one well known success to Goubeyran. It must be energetic in order to be effective, but its action ceases almost always as it is removed. The application of circular compressive bands placed at the root of a limb is of little use.

Gauze packing of the nasal fossæ has often been useful in rebellious epistaxis of hemophilia. Dry gauze may be used or soaked in some coagulating solution (antipyrin, gelatin, etc.). It should be removed not later than the second day in order to avoid infection. When removed the bleeding will, in all probability, recur.

*Drugs acting on the vascular walls.*—All these have been essayed and their action is very unreliable. Acid solutions were in great estimation years ago, but their efficacy is doubtful and they have been generally given up.

Ergotine has a much more manifest constrictive action and is unquestioned. Its effects, in this respect, on the muscular fibres of the walls of the arteries are well known. Whether given by mouth or hypodermically, in hemophilia, it offers the great objection that it does not influence the blood itself, this being the pathological element, so that its use has become very restricted.

Antipyrin is also a good hemostatic, but it has the same therapeutic defects in hemophilia as ergotine. It can be used as an adjuvant in gauze packing in the form of a five per cent. solution. Given by mouth it is useless.

Stypticin, locally or internally, is uncertain in its effects.

Adrenalin possesses a very intense vasoconstrictive action, whether applied locally or given hypodermically. This effect is accompanied by very marked anemia resulting from the hypertension produced. The drug has been often used in local applications with some success, but Sahli, of Berne, frankly condemns it, because he is fearful that secondary hemorrhage may occur after its action ceases. Sahli's fears are, perhaps, exaggerated, and it must be admitted that it is a precious medicament in local hemophilic hemorrhages of the gums, nasal fossæ, superficial wounds, etc.

*Substances acting on the coagulability of the blood.*—Their employment is more logical in hemophilia be-

cause these drugs apply better to the pathogenic factor.

Peroxide of iron, used locally for years, has lost much of its favor. By contact with the blood it coagulates the albumin following a complex chemical combination. It produces a rather hard, dark crust at the point of hemorrhage, which acts like a tampon. Unfortunately, its action in hemophilia is most uncertain, and the same applies to peroxide of hydrogen, its action being also purely local. It can be tried in hemophilic capillary hemorrhage, but if not successful time should not be lost in resorting to some other means.

Gelatin possesses a very sure hemostatic action, and although this has been denied by some writers, it is a fact that, when injected intravenously, it hastens the coagulability of the blood. It therefore has its utility, and a certain number of successful results have been recorded from its use.

In local applications it is used in the form of gauze soaked in a one per cent. to two per cent. solution and applied with slight pressure over the area of bleeding. Sahli advocates this method, and finds that the loss of blood is often permanently stopped. Given by mouth or rectum preferably, it has been successful in a case of hemophilic hemorrhage of the intestine, nose, and mouth. Per rectum, its absorption is a complex process, as it is certainly transformed into a series of albuminoid compounds whose hemostatic power is not well understood.

Subcutaneously, in the form of a one per cent. to five per cent. gelatin serum given in doses of from twenty to 250 c. c., its action has been much discussed. The fear of tetanic inoculation is groundless if care be taken to sterilize the serum for a sufficient length of time. However, in hemophilia, large hypodermic injections are to be avoided, as they might be the starting point of other hemorrhages.

The influences of the salts of lime, particularly calcium chloride, is made evident from the fact that it accelerates coagulation *in vitro*. The application of this salt in a one per cent. solution on a bleeding point controls the loss of blood, and Wright has shown that this happy influence is likewise manifest when calcium chloride is taken internally at the dose of from four to six grams daily, and in hemophilic hemorrhage the loss of blood has been controlled by this drug when other means have utterly failed. Many surgeons advise its use as a prophylactic, but the results obtained have not been at all constant.

Calcium chloride may also present an inverse action. If its exhibition be prolonged, the coagulability, in the first place increased, rapidly diminishes. More recently, Boggs, Wright, and Parauore have been led to conclude that calcium lactate possesses the same properties as the chloride, and that it is better tolerated. All the statements of Wright have been confirmed by Chantmesse, Wolfgang and Hallemain, but recently Addis, repeating the experiments of Wright, came to entirely different results. Saissi repeated the same experiments, and his conclusions are that, while admitting the unquestionable action of the salts of lime on coagulation *in vitro*; it would seem premature to say that the various salts of calcium have a sure coagulative

action when exhibited therapeutically. It is interesting to place this opinion beside that of Weil, who has found that in true hemophilia, hereditary or familial, calcium chloride has little action.

(To be continued.)

**Treatment of Recent Gunshot Wounds by Brilliant Green.**—R. Massie (*Lancet*, May 4, 1918) employed 1-1,000 brilliant green in normal saline solution, 1-500 in normal saline, or 1-500 in half per cent. chlorotone, preference being given to the latter on account of its analgetic effect. All of the wounds were severe with extensive damage to the tissues, but all were received for treatment in periods of two to eight hours after their infliction. The application of the stronger solutions cleaned up the wounds more rapidly than that of the weaker and there were no toxic effects observed. The application of the brilliant green was followed by staining of all damaged tissues to a much greater extent than of the healthy ones and thus aided materially in determining just how much tissue should be excised. All tissue which held the dye after the application of the 1-500 solution was cut away, with the exception of the skin, which was more readily stained. The application of the drug produced exuberant and very vascular granulations; it was painless; it did not interfere with the growth of epithelium; rapidly removed edema and inflammation; and exerted a favorable antiseptic action. The drug did not atone for the incomplete or faulty primary excision of damaged tissue, but its use aided in the secondary removal of such tissue by surgical methods.

**Technic of Infected Wound Closure.**—Fraser B. Gurd (*Lancet*, May 25, 1918) has perfected a technic for the treatment and closure of infected wounds as exemplified by compound gunshot fractures in home hospitals. In cases with acute suppurative cellulitis with sloughing, the wound is excised and cleansed, the inflamed area is incised and the Carrel-Dakin treatment instituted. The dressings are changed daily, or less often as the need indicates, and the early changes are best done under an anesthetic to permit of incision of pockets and removal of dead tissue. When the necrotic tissues have separated or been removed and suppuration has been reduced, the treatment is changed. Then the surface of the wound and surrounding skin are cleaned with soap and water, bathed with alcohol, dried, and an excess of Morison's Bipp is applied to the whole wound surface and worked into all pockets. Gauze, wrung out of liquid petrolatum and containing in its centre some Bipp, is placed in contact with the tissues everywhere. This dressing is changed from once in five to once in fifteen days. When the wound is granulating well and discharging little, and the surrounding zone of edema and hyperemia has disappeared, approximation of the skin edges is begun. Deep mattress sutures of heavy silk, smeared with Bipp are inserted and tied over rubber tubing or buttons to protect the skin. These are placed from two to four centimetres from the edge of the wound and drawn tightly enough to make continuous traction on the tissues. They cross the wound over a paraffined



gauze pack, and the wound is dressed with alcohol or Dakin's solution. This dressing is changed at six to twelve day intervals, and each time new sutures are inserted to further close the wound. The skin edges are undercut as they approach one another to prevent invagination of the scar. At each dressing also the bone ends are carefully examined and the Bipp pack brought into close contact with them. Loose or white parts of the bone are removed and after six weeks all ends not covered with healthy granulations are taken away. The opening in the soft parts should be kept larger than the affected bone area until this stage is reached. When the bone is covered with healthy, velvety granulations, the scar tissue in the soft parts is cut away and the wound is closed tightly with silk mattress sutures after thorough application of Bipp to its whole surface. Where sinuses alone remain after compound fractures, these should be treated by passive hyperemia, beginning with periods of five minutes of gentle pressure, and increasing until two half hour periods in one day are not followed by fever above 99.4° F. Then, if the sinus does not close, it should be excised en masse, including as much of the scar tissue as possible, while still permitting closure of the wound edges. The resulting wound is treated by Morison's technic and closed, using mattress sutures in layers. The application of these methods has shortened the duration of treatment in cases of this type, is economical of dressings and the surgeons' and nurses' time, spares the patient much pain, permits continued immobilization, and gives excellent functional results.

**Acriflavine and Proflavine.**—Robert B. Carslaw and William Templeton (*Lancet*, May 4, 1918) draw their conclusions, with reference to the actions of both of these agents upon badly infected wounds, from their own extensive experience at the front. The drugs are not disinfectant and do not render infected wounds bacteriologically sterile, but they are antiseptic in action. Bacteriological studies of the wounds are of little aid in judging their progress. It is suggested that the rapid disappearance of inflammation and suppuration, and their absence from wounds properly cleansed surgically, are due to neutralization of the toxins by the drugs. When either of these agents is used in solutions no stronger than 1-1,000 there is no evidence whatever of damage to the tissues and there is no necrosis of the exposed tissues. Neither of the drugs impairs the activity of the leucocytes in the wounds. Reparative changes are somewhat delayed by the application of the drugs, but in the early stages there is no reduction in epithelial proliferation and healthy granulations are produced beneath the membrane which forms. The essentials for their use are: adequate preliminary surgical treatment; the continuous supply of the antiseptic to all parts of the wound; and the use of dilute solutions. The dressings are usually best applied in the form of gauze, packed into every crevice of the wound and frequently wet with the solution. The dressings do not have to be changed often and usually come away easily. There is very little sloughing and very slight tendency to secondary hemorrhage, and dry gauze wrung out of 1-2,000 acriflavine solution is a good hemostatic.

**Abortive Treatment of Furunculosis.**—R. Burnier (*Presse médicale*, May 2, 1918) recommends the root of the burdock, *Arctium lappa*, for this purpose. It must be collected in the spring, while the leaves of the plant are growing; otherwise, it is not therapeutically active. Its properties can be preserved by subjecting it to "stabilization" by the procedure of Perrot-Goris, which destroys the oxidases and thus prevents deterioration of the dried root. While empirical, the therapeutic action is very evident in furunculosis, no matter how long the condition has been present. Generally, within twenty-four to forty-eight hours after ingestion of the drug the pain passes off and the inflammation is allayed, and on the third or fourth day the core and pus surrounding it are spontaneously evacuated. Where there are several furuncles, those farthest advanced show this transformation; the more recent ones shrivel and have usually disappeared by the time the others open. The treatment was employed with success in several cases. A typical case was that of a man of twenty-eight years who had been having for three weeks a series of furuncles on the neck, cheeks, and eyelids—the latter with marked edema. After ingestion of nine pills of the drug each day for three days, the furuncles opened and dried up, and no more appeared. The local treatment consists merely of applying dry gauze to prevent friction by the clothing. The amount of the drug administered three times each day in pills made from a soft extract is 0.6 gram. The treatment is continued until the lesions have completely healed, *i. e.*, for about five or six days. The author adds that the drug is devoid of effect in folliculitis or other superficial staphylococcal affections of the skin; in such cases, tin and tin salts, as recently recommended by Frouin and Grégoire, should constitute the internal treatment.

**Prophylactic Use of Quinine.**—C. H. Treadgold (*British Medical Journal*, May 11, 1918) examined the blood of 540 men from units stationed in Macedonia and found malarial plasmodia in over thirty per cent., and altered leucocyte pictures suggestive of malaria in over sixty per cent. Parasites were found in the smears from over eight per cent. of men who gave no history of fever and the suggestive blood picture was present in more than thirty per cent. of this group. Most of the men examined had been taking quinine regularly, some even having been taking it at the time of the examination. The question arose as to what protection the prophylactic use of quinine really provided, and Treadgold sought to answer it by reference to the literature and by his own observations. He points out that the conditions upon which the usefulness of quinine, both as a prophylactic and a curative agent, depends have never been thoroughly investigated along scientific lines. Very little of the available literature is of any real value because it does not represent work carried out in a scientific manner with controls. From the facts which he was able to gather, he concludes that small, prophylactic doses of quinine, not too long continued, are of established value to the natives of malarial districts, both with and without the observance of effective antimosquito measures. The drug may be given



with advantage to immigrants into malarial regions during brief journeys when antimosquito protection is not good; as an occasional dose after an unusually fatiguing day; and to nervous persons in an occasional dose as an additional precaution to efficient mosquito prevention. In general terms, however, attempted quinine prophylaxis of malaria for immigrants into malarial districts gives very poor results and is little more than a "pious fraud, which has been perpetuated from one generation to the next" in the absence of scientific study of the problem. Not only is it of very little value, but also the continued use of quinine often affects the course of malaria unfavorably, so that the disadvantages outweigh the advantages.

**Treatment of Ureteral Calculus.**—H. McC. Johnson (*Texas Medical Journal*, May, 1918) thinks that most calculi pass spontaneously. If not, intravesical procedures will help a good many. The mere passage of a ureter catheter to the calculus or beyond it will sometimes so alter the position or relationship that the stone may easily slip into the bladder. Injection of liquid petrolatum through the catheter is a well established method. When near the ureteral mouth the opening may be incised with scissors through the operating cystoscope and the stone grasped and extracted. Where the stone is large or impacted in a pocket it should be removed from the ureter by the extraperitoneal method. If located within the lower inch of the ureter the prevesical median incision is preferable and if the calculus is near the kidney pelvis the usual lumbar incision for kidney operation should be made.

**Abortion and Its Treatment.**—Abraham J. Rongy (*New York State Journal of Medicine*, May, 1918) brings out with emphasis the fact that there has been little or no advance in the methods of the treatment of abortion in many years, due largely to a failure to consider the fundamental physiological facts concerned. Proper treatment should begin with the methods of prevention of abortion, which include the proper development of the child, the prenatal care of the woman, and many other factors. Where abortion, complete or incomplete, has actually taken place, the plan of treatment should be very different from that usually advocated. In simple, uncomplicated, incomplete abortions curettage should never be undertaken unless there be severe, excessive bleeding. Then the retained matter can be removed by means of a blunt curette or placental forceps, preferably without general anesthesia. A hot normal saline irrigation of the uterus should follow, and the uterus should not be packed. In the majority of cases, however, it will not be necessary to curette even for marked hemorrhage, but this can be controlled by the administration of pituitary. Where the products of conception have not yet been actually expelled from the uterus, pituitary should be given first to contract the uterus, prevent hemorrhage, push down the contents, and minimize the danger of perforating the uterine wall when they are removed. Where there are signs of inflammatory reaction the uterus should not be curetted. Half a mil of pituitrin should be given hypodermically every four hours for two or three days following any intrauterine manipulations.

**Circulation of Arsenic in the Cerebrospinal Fluid.**—John B. Rieger and Harry C. Solomon (*Journal A. M. A.*, July 6, 1918) determined the presence of arsenic in the spinal fluid in 123 cases, the fluids being collected at varying intervals from five minutes to twenty-three hours after intravenous injection of 0.3 to 0.6 grams of arsphenamine. Thirty-eight of the fluids showed appreciable amounts of arsenic, the largest amount having been 0.6 milligram of arsenous oxide per mil, and the average, 0.18 milligram. The shortest interval after injection at which it was found was half an hour; the longest, two hours. It was found that with successive injections of arsphenamine the fluids showed progressively smaller amounts of arsenic in the same time interval. It was also noticed that the patients who showed the larger amounts of arsenic were the ones making the more rapid improvement. From these observations the suggestion was made that repeated intravenous injections of divided doses of arsphenamine at intervals of one or two hours might prove more effective in keeping up a high concentration of the drug in the blood stream for longer periods, and thus possibly also allow the passage of a greater amount into the perivascular spaces of the central nervous system.

**Chloramines in Surgery and Hygiene.**—M. Guillot and M. Daufresne (*Paris médical*, May 4, 1918) assert that the chloramines possess more practically available antiseptic power than other antiseptics. They present all the advantages of sodium hypochlorite, which they set free, besides being much less irritating to the skin and acting for a longer period. They are inferior to the hypochlorites only in the greater length of time required to dissolve necrotic tissues. Chloramine-T is but slightly toxic, rabbits tolerating one gram per kilogram by subcutaneous injection. As a bactericidal agent it is four times as powerful, in equivalent molecular concentrations, as sodium hypochlorite. In infected wounds a two per cent. solution may be used by intermittent irrigation every two hours; clean wounds are thus rapidly sterilized, but wounds with dead tissues, much more slowly. As a collyrium a two to four per cent. solution may be used; in urethritis, copious irrigations with a 0.5 per cent. solution; in mouth infections, washings and gargling with a one per cent. solution, and for the disinfection of germ carriers, spraying of the nose with a 0.5 per cent. solution. A five per cent. chloramine gauze, applied dry, is serviceable. The best procedure, both for convenience and continuity of action, is the use in wounds of a paste—free of liquid fats and chlorinophile organic matter—containing 8.5 per cent. of sodium stearate and 1.5 per cent. of chloramine-T. Such a paste exerts a detergent action in wounds covered with dead tissue, sterilizes the wound surface thus cleansed, causes little or no pain, and does not retard healing. It need be applied but once daily, after careful cleansing of the wound with cotton pledgets dipped in tepid sterile water. An important measure is to cleanse the skin, surrounding the wound with pure, neutral sodium stearate, applied with cotton moistened in tepid sterile water. The surface is then carefully dried and the chloramine paste applied throughout. War

wounds can thus be sterilized and closed as quickly as with sodium hypochlorite. A useful sterilizing action, after free excision of diseased tissues, was also obtained in bone and lymphatic tuberculous lesions. Dichloramine-T is likewise a powerful antiseptic, but its advantages over chloramine-T do not compensate for the instability of its oily solutions. In sterilizing the nasopharynx or buccal pharynx, however, it will no doubt prove of great value. Halazone, a third chloramine product, was prepared by Dakin especially for the sterilization of small quantities of water for drinking purposes. One or two tablets of halazone added to a litre of water sterilize it rapidly, no matter how badly contaminated it may have been. It neither corrodes metallic receptacles nor imparts an unpleasant taste to the water.

#### Diet in Diabetes with Dyspeptic Symptoms.—

Nigay (*Journal de médecine de Paris*, May, 1918) notes that while the accompanying dyspeptic conditions may be of various types, certain general recommendations may be made. To the original diabetic interdictions of diet the following should be added: shell fish, fats and fish with greasy flesh, goose and duck, game, rich sauces, sorrel, condiments, and strong cheese. Vegetables should be boiled, and buttered just before serving. Injunctions to eat slowly and masticate well are often in order, as many diabetics become dyspeptic through heavy and hurried eating. Often such patients are constipated; bran muffins will then be helpful. The quantity of fluid taken should be reduced, and fluids ingested only half an hour before or three hours after meals. For mayonnaise sauce, highly valued for the uncomplicated diabetic, one may substitute where there is dyspepsia a sauce made as follows: melt slowly 100 grams of butter and then mix in the yolk of an egg; beat until a creamlike mass is formed; add a little lemon juice and salt to taste.

**Senile Rheumatism.**—Malford W. Thewlis (*Medical Review of Reviews*, June, 1918) believes that nephritis plays the most important rôle in the production of senile rheumatism. When this cause is present, he gives, if the patient is robust, Seidlitz mixture, magnesium citrate, or some similar saline each morning before breakfast; if the patient is frail, a compound cathartic pill at bedtime. The following diet list is given: *Breakfast*—apples, baked, raw, or stewed; grapes; berries in season; cantaloupe; eggs, soft boiled, shirred, scrambled, poached; broiled chicken; broiled honeycomb tripe; fish (mackerel, salmon, perch, eel, pickerel, white fish, trout, haddock, halibut, shad); baked potato; stale or toasted bread with plenty of butter; cup of tea, or glass of milk. *Dinner*—raw oysters or little neck clams; soups (preferably purées), pea, bean, tomato, potato, asparagus, celery; chops, beefsteak not more than once a week, roasts (beef, lamb, veal, chicken, tongue); fish (broiled or baked in cream); vegetables (potato, spinach, lettuce, stewed celery, cauliflower, beets, squash, green peas, tomatoes, asparagus, string beans); dessert (apple tapioca, sago, blanc mange); one glass of milk or a cup of tea or cocoa. *Supper*—eggs; lamb stew with vegetables; baked potato; bread, stale or toasted, with plenty of butter; stewed fruit; one glass of milk;

stale bread or crackers and milk, with blueberries or baked sweet apples.

Vary the diet from day to day. Do not eat fish and meat, meat and eggs, or fish and eggs at the same meal. Meat or fish should not be given oftener than once a day. Three or four glasses of milk should be taken daily, either with or between meals.

In the chronic form of the diseases, if the patient is robust, cabinet baths once or twice a week are very beneficial, more so than Turkish baths. Salicylates are harmful and irritating to the kidneys; aspirin or acetylsalicylic acid is a depressant, causes perspiration and constipation, and is not required in many cases. Heroin will usually relieve the pain in acute cases. Diathermic treatments have given excellent results. Heat is applied to cases which have a tendency to deformity by the application of superheated air at 130°, 180°, or 200° C., and the results are sometimes remarkable. Sodium succinate, ten grains every three hours, is of great value in many cases of senile rheumatism. The results of eliminative treatment in rheumatism caused by nephritis are often remarkable, and if the treatment is instituted early enough, many old persons are saved from great suffering. Other causes mentioned are tuberculosis, diabetes, plumbism, obesity, gout, carcinoma, and focal infections of staphylococci, streptococci, and pneumococci. Senile rheumatism improves on exercise, while senile arthrosclerosis is made worse by movements. Rheumatic fever is rare in the aged, though chronic rheumatism may have acute exacerbations and appear like rheumatic fever. Tuberculous arthritis is quite common in the aged, and usually is primary. Uremia may cause local symptoms and direct its whole force upon one part.

**Tyramine in Circulatory Failure.**—A. W. Hewlett and W. E. Kay (*Journal A. M. A.*, June 15, 1918) showed in an earlier paper that the subcutaneous injection of doses of sixty to eighty milligrams of tyramine produced a rise in the systolic blood pressure of normal man up to levels between 150 and 200 millimetres of mercury. This rise begins within five minutes, reaches its maximum in ten minutes, and subsides to normal in fifteen to thirty minutes. With the rise in the systolic pressure there is very little change in the diastolic, so that the volume pulse becomes larger. This action should make the drug very valuable in cases of circulatory failure in the acute infections or during or after operations accompanied with marked fall in the blood pressure. The drug was therefore tried in a number of cases in both groups. In the cases suffering from circulatory failure due to infections, repeated injections of tyramine caused a relatively slight and transient rise in the blood pressure and increase in the pulse volume. In no case did permanent improvement occur. In the case of the injections of the drug for the circulatory failure during or after operations the effects were also transitory and much less marked than in the normal person, but striking improvement in the general condition occurred in some of the patients, in three the benefits being apparently responsible for the saving of the lives of the patients.



# Miscellany from Home and Foreign Journals

**Signs of Death in Military Practice.**—Satre (*Presse médicale*, May 9, 1918) states that Icard's fluorescein injection and the acid reaction of the splenic pulp, the procedure of Ambard and Brisse-morel, have both given satisfactory results in sanitary formations at the front and afford certain information of actual death. Other procedures, of a physical order, have also given good results. The first is Icard's forcipressure method, based on the permanence or evanescence of the ischemia of the tissues induced by compression. Another is Loraïn's old procedure of exposing the forearm, calf, or thigh to a flame; if the blister which forms is filled with air and bursts with a cracking noise leaving the dermis dry, the man is dead, whereas if the blister contains fluid, death is but apparent. Among the ocular signs, hypotonic shrinkage of the eyeball is not characteristic. More reliable and constant is the sign of Lecha Marzo; this consists in placing beneath the lids a strip of neutral litmus paper, which turns red in a few minutes if the subject is dead and blue if he is living. Other ophthalmic reactions comprise, rubefaction of the eyeball by ether instillation, the actual cautery, scraping the conjunctiva, application of copper sulphate, subconjunctival saline instillations and injections, and the dionin reaction.

**War Edema.**—F. S. Park (*Journal A. M. A.*, June 15, 1918) was a prisoner of war for thirteen months in Germany and had the medical care of allied prisoners in one of the large camps. There he was able to observe the condition known as war edema (Kriegsoedem), although he did not have the facilities for instrumental or chemical studies and could not collect precise statistics. He says the condition begins with slight edema of the feet and legs which disappears after lying down. Later the edema becomes massive, involves the legs, thighs, and genitalia; there is some puffiness beneath the eyes; at times the abdominal wall becomes edematous; and the patients often complain of general weakness and pains in the legs. There is marked apathy, and muscular wasting and pallor are extreme. There is slight enlargement of the heart; the action is feeble, but regular and slow and the blood pressure is apparently low. Hydropericardium is not common and seldom marked, but hydrothorax is both common and extreme and ascites is frequent. The urine is scanty at first but later excessive. The uncomplicated cases improve slowly with rest in bed and an increase in diet. Digitalis and theobromine sodium salicylate are without value. Dermatitis of the legs is common, and cellulitis develops in some cases. Bronchitis is a common complication and most of the deaths are due to bronchitis and edema of the lungs. The commonest and most troublesome complaint is colitis with mucus and blood, and often proved fatal. The postmortem findings are striking and show a total absence of fat in the positions in which it normally persists even in the face of emaciation, that is, about the kidneys and heart and in the omentum and mesentery. In the place of the fat

the tissues are found swollen with fluid. The heart is pale and flabby and the serous cavities contain clear fluid. The lungs usually show bronchopneumonia and the kidneys and liver are very pale. The conclusion is reached that the condition is the result of prolonged underfeeding, especially the absence of fat from the dietary.

**Prognosis in War Nephritis.**—Rodolph G. Abercrombie (*British Medical Journal*, May 4, 1918) investigated, with the aid of the Medical Research Committee, the subsequent histories of 171 unselected cases of war nephritis which had been under his care in France. The after histories were traced for periods varying from twenty-one to thirty-two months. As the result of the first period of home treatment of these cases thirty-two were invalidated as permanently unfit as a result of nephritis, 131 were discharged to some form of duty, five died, and two were discharged for other reasons. Of the 131 discharged to some form of duty, twenty-two either relapsed or developed chronic renal symptoms and the remaining 109 showed no further evidences of the disease. In terms of percentages the results for the whole series were: died, 3.5 per cent.; invalidated for nephritis, 31.5 per cent., recovered and returned to some duty, 63.7 per cent. Of the 109 returned to duty and remaining free from the disease, seventy-nine went back to the first line and thirty to garrison duty or home service. Age was found to have a decided influence on the prognosis, those men under twenty-six and those over forty years of age who developed the disease gave poorer prognoses than those between these ages. Certain other prognostic points of value could be made out from the investigation; namely, that a prolongation of the initial stage of the disease was unfavorable; cases with severe uremic symptoms during the initial stage were slightly less favorable than those without such symptoms; convulsions were less unfavorable than other severe uremic symptoms; and definite ascites was decidedly unfavorable. There seemed to be a definite consecutive relation between war nephritis and tuberculosis in a number of the cases. Finally, it was found that the longer the cases could be kept in France during the initial stage of the disease, the better was the ultimate prognosis.

**Prognosis in Fracture of the Thigh in Military Service.**—Couteaud (*Bulletin de l'Académie de médecine*, May 7, 1918) points out that the former view as to the extreme gravity of fracture of the femur by firearms no longer holds good. Of 250 cases cared for at Cherbourg since the beginning of the war, 215 were compound and led to thirty-one fatalities. Two patients had both femurs broken. Of the 182 who recovered, twenty per cent. showed complete restoration of the functions of the thigh, fifty per cent. recovered with slight shortening and sufficient joint mobility, eleven per cent. more had a more or less useful limb, and seventeen per cent. were definitely mutilated and crippled. Of the thirty-one fatal cases, twenty-seven occurred in the first six months of the war. Some of those dis-



charged from the service with a shortening of eight centimetres and slight stiffness at the knee were able to walk easily without a cane by means of an orthopedic boot. The men wounded by bullets recovered easily as in civil practice, with the aid of Tillaux's simple apparatus. Among those injured by artillery projectiles, on the other hand, infection and gas gangrene dominated the picture. Yet of fifteen men brought in with putrid emphysema—a condition favored by attempts of the wounded to flee from danger, using their injured limb—six recovered. When the section of the amputated bone is yellow, the prognosis is bad; likewise when the mahogany color of the tissues extends above the groin. All forms of septicemia were observed. Phlebitis proved a dangerous complication—less, perhaps, that of the visible veins of the extremity than the occult phlebitis of small vessels. Many patients died suddenly after slight exertion. At least four died of hemorrhage. The femoral artery was injured in three cases; the deep femoral, in three; muscular arteries and the anastomotic magna, in eight; and the femoral vein, in two. Tetanus occurred in five instances, hastening death in three. The sciatic nerve was injured in nine cases. An equine posture often counteracted the shortening of the limb. Causalgia was noted in four instances.

#### Examination of the Feces in Chronic Enteritis.

—R. Goiffon (*Presse médicale*, May 2, 1918) asserts that coprologic analysis is indispensable as a diagnostic procedure in all diseases of the alimentary canal, especially in soldiers, in whose cases there is no time for the delay permissible in civil practice in experimenting with various diets and other measures. In involvement of the small intestine, usually occurring as the acute stage in diarrheic cases, the diagnostic indications afforded by the stools are more precise than those derived from the rather vague clinical symptoms. Two varieties of stools are met with in these cases, viz., one in which the contents of the ileum are but slightly altered, though malodorous and containing starch and vegetable cells (cases arising chiefly through motor deficiency) and a second, more severe and with greater irritation of the mucous membrane, in which the stools are fluid and show many yellowish brown, mucous flakes, teeming with bacteria, with food residue and frequently absence of amylase. In especial involvement of the cecum and ascending colon, fecal analysis is of great service in the detection of intracecal putrefaction. Whether formed or diarrheic, the stools in these cases show a diminution of the amount of volatile acids and of the amylase. When diarrheic, they are usually very dark and alkaline, of a putrid odor, glistening, and viscid, with much starch and cellulose. Diarrhea from excessive carbohydrate fermentation yields yellow, frothy, strongly acid stools, and is treated with chalk and reduction of carbohydrate intake. In the very common mucous colitis, with pasty, piled up, yellow-brown stools, a frequent sequel of acute diarrhea in soldiers and of dysentery, a carbohydrate diet and a mineral water rich in sulphates are effectual. Irritation of the descending colon and sigmoid is often manifested in constipation interrupted occasionally by

diarrhea, the stools then exhibiting scybala mixed with more fluid material and mucus. In some deceptive instances, there occurs what the author terms homogeneous false diarrhea; the symptoms and stools are apparently those of mucous colitis, but the stools show an almost complete absence of digestible cellulose, starch, and iodophilic bacterial flora; the treatment is that of constipation. Many obstinate cases of enterocolitis proved to be due to intestinal parasites, especially amebae and lambliae. Diarrhea of gastric origin shows raw connective tissue and yields to hydrochloric acid.

**Blue Pigment in Blood Serum.**—G. Patein (*Bulletin de l'Académie de médecine*, April 23, 1918), in the course of studies on tests for bile pigments in human blood serum, found a blue pigment not yet described. It can be demonstrated by diluting 100 mils of serum to one litre with water, adding acetic acid drop by drop until the fluid is slightly but clearly acid to litmus, allowing the precipitate formed to settle, and after a few hours separating it by centrifugation. A bluish gray material is often formed under these conditions which seems unevenly distributed in the sediment and is soluble only in 0.6 per cent. sodium chloride solution. The blue solution thus obtained is decolorized by acidification, even with acetic acid, as well as by trichloroacetic acid and by sodium carbonate. It is partly precipitated by lead subacetate. The blue material gives none of the reactions of indigotin and is not a copper compound but contains traces of iron. It can be obtained from serums containing neither indoxyl nor bile pigments. It is precipitated as a blue body by alcohol, and evidently consists of a blue pigment combined with a globulin, just as hemoglobin consists of hematin combined with globin. Often the blue compound was present only in traces. It was found most abundantly and frequently in serums of cases of eclampsia.

**Antigen-Antibody Balance in Lobar Pneumonia.**—Francis G. Blake (*Archives of Internal Medicine*, June, 1918) points out that natural recovery from pneumonia is attended by the development of certain humoral antibodies which appear shortly before or at the time of crisis. The relations of the antigen-antibody balance to the severity and outcome of a given case, as well as its prognostic value, were studied in detail in nineteen patients. A definite relation between the excretion of soluble pneumococcus antigen in the urine and the development of precipitins in the blood was found in these cases. Agglutinin formation in the blood bore, however, no definite relation to antigen excretion, and the curve of concentration of precipitins did not parallel that of the agglutinins. Pneumococci disappeared from the blood prior to or coincidently with the appearance of agglutinins. Cases developing an excess of precipitins and agglutinins invariably recovered shortly after or coincidently with the appearance of these antibodies, while cases showing a progressive increase in the excess of antigen—living pneumococci in the blood—without the development of demonstrable antibodies were invariably fatal. Daily estimation of the concentration of soluble antigen excreted in the urine and of the number of pneumococci per mil of blood proved of great prog-

nostic value. The former procedure was carried out by the precipitin method. A sample of urine collected shortly before the daily bleeding was rendered clear by filtration; 0.5 mil of a one in ten dilution of the homologous type of antipneumococcus serum was then added to 0.5 mil of increasing dilutions of the urine in a series of small tubes and incubated for one hour at 37° C., when final readings were made. In calculating the amount of soluble antigen in the urine, the final calculation was made on the basis of a constant daily excretion of 1,000 mils of urine. In estimating the number of pneumococci per mil of blood, blood was collected by venipuncture, eight to ten mils inoculated into a flask of plain broth, and measured amounts—from one to five mils—poured into agar plates, the colonies being later counted.

**Luetin Reaction in Syphilis.**—Alessandro Chiuffi (*Giornale Italiano delle Malattie Veneree e della Pelle*, May 26, 1918) from an extensive study of Noguchi's luetin test concludes as follows: The reaction is not constant in lues; it is more frequently seen in late than in recent cases; while the Wassermann reaction tends to become negative under mercurial treatment the luetin reaction remains unchanged. The nonspecific nature of the test is shown by the fact that it may be observed in nonsyphilitic persons who have lupus, leprosy, and other skin diseases; further the reaction may be produced in luetics by other toxic bacterial substances, such as gonococcus vaccine.

**Hemiplegia Due to a Localized Focus of Tuberculous Meningitis.**—T. Legry (*Bulletin de l'Académie de médecine*, May 21, 1918) notes that in tuberculous meningitis in adults the lesions are apt to involve circumscribed portions of the cortex, the symptoms correspondingly resembling those of focal changes. He reports the case of a woman of thirty-one years admitted to a hospital after having for two months experienced lassitude and for a week, at intervals, tingling, beginning in the distal portions of the left hand and foot and extending to the entire left half of the body. Examination showed an exaggerated knee jerk and a positive Babinski on the left, with diminished sensation and motor power on that side, the leg dragging during locomotion. Movements of the left arm were also limited. The temperature was normal. A diagnosis of specific hemiplegia was made and biniodide injections instituted. In the succeeding days the motor power diminished further, but there was no vomiting, neck rigidity, nor Kernig sign. Ten days after admission the temperature rose to 39° C. and paresis of the right leg appeared. Lumbar puncture revealed marked hypertension, pronounced lymphocytosis, and tubercle bacilli. The meningitic syndrome became complete only four days later, and after a like period the patient succumbed. The autopsy showed a few small tuberculous lesions in the lung apices. On the upper border of the right cerebral hemisphere was found a thick, granulomatous area slightly smaller than a silver half dollar. A few grayish patches representing incipient tuberculous granulations were noticed in other portions of the pia mater.

**Conditions Simulating Disease which May Be Produced by Teething.**—James Burnet (*British Journal of Children's Diseases*, January–March, 1918) records three cases and states that teething can give rise to serious symptoms besides being a definite exciting cause of such conditions as diarrhea, eczema, bronchial catarrh, convulsions, screaming fits and strabismus. Facial palsy and chorea may be caused by dentition. When infants present obscure symptoms the following should be investigated: urine, rectum, throat and mouth.

**The Intravenous Use of Red Mercuric Iodide.**—L. W. Rowe (*Journal of Laboratory and Clinical Medicine*, April, 1918) found red mercuric iodide combined with an equal amount of potassium iodide was comparatively safe to use intravenously in guineapigs, dogs, and rabbits, if reasonable care is exercised in the manner of injection and the size of the dose. Its efficiency as a germicide (five times that of bichloride) combined with the fact that it is very little, if any, more toxic than mercuric chloride, ought to make it of therapeutic value after it has been tested further.

**Association of True Pruritis Ani with Pyorrhœa Alveolaris.**—E. J. Clemons (*Medical Record*, June 1, 1918) declares that true pruritis ani is caused by streptococci, and that the usual focus of infection is a pyorrhœal condition in the mouth. In such cases there are two distinct procedures to be carried out: first, removal of focal atri in the mouth, and second, drainage of the rectal mucosa to rid the tissues of the infection causing the pruritis. The pyorrhœal atri are best removed by extracting the teeth, while the rectal mucosa is drained by removing the lateral anal cutaneous tissue under local anesthesia, and then drawing down the adjacent rectal mucosa and suturing it to the fascia between the external and internal sphincters.

**Traumatic Aneurysm in a Syphilitic.**—F. Ramond and L. Postina (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 21, 1918) report the case of a man aged twenty-eight, in active service at the front for three years, who was violently thrown to the ground by a shell explosion, landing on his chest. Dyspnea, thoracic angor, and dilatation of the heart soon followed, with Corrigan pulse, frequent dizziness, and hepatic enlargement. Compensation was lost in spite of rest and appropriate remedies, and the patient succumbed about four months after the injury. A strongly positive Bordet-Wassermann reaction had been obtained. The autopsy showed three small aneurysmal dilatations of the arch of the aorta, the largest of the size of a large walnut. The lining of the vessel bore a number of large, raised patches of arteritis. The sigmoid leaflets seemed normal, but the circumference of the aortic ring measured nine centimetres instead of the normal six to seven. The patches in the aorta proved syphilitic microscopically, and the giving way of the aortic ring was accounted for by a discrete arteriolitis of similar type in the tissues at this point. The authors believe the violent increase of pressure due to the bursting shell, together with the effects of fright, caused a violent peripheral vasoconstriction which overtaxed the resisting power of the diseased aorta.



# Proceedings of National and Local Societies

## MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

*Stated Meeting Held Monday, February 25, 1918.*

The President, Dr. HOWARD C. TAYLOR, in the Chair.

**Reconstruction and Human Conservation.**—Major HARRY E. MOCK, Washington, D. C. (by invitation), outlined the plan of the Surgeon General's Office for the reconstruction and rehabilitation of the disabled soldiers of the United States Army. In their scope, all the details of the plan included that provision for coordination necessary to make them efficient. Congress had passed a very good war risk, or disability insurance act which enabled the authorities to carry out a very broad programme; it provided that in case of permanent disabilities, the injured should follow such course or courses of rehabilitation, reeducation and vocational training as the United States provided; he might be retained in military or naval service with pay until the course was completed. Such training was therefore obligatory and would in consequence be valuable to a great many more soldiers and sailors than if it were voluntary.

Physical reconstruction of the wounded meant the adoption of the very best medical and surgical procedures possible in order to obtain the greatest functional restoration. Rehabilitation included mental and physical training that restored the individual to a useful place in society, as well as further supervision until a firm grip on life was secured, in all its economic factors. Ambition and the desire for this training would be stimulated in these men and the idea inculcated of grasping every opportunity to make good by their own efforts. Great assistance in this direction would be given by the bill which gave more or less control over the disabled soldier to enable the completion of his rehabilitation.

Thus far the work in the Surgeon General's Office had been along the lines of studying and preparing for this great plan, arranging for the establishment of hospitals in every one of the draft districts of the country and planning for curative shops and prevocational training. The programme would fit in with programmes of existing civil organizations whose purposes were the same, *i. e.*, inducting war cripples into civilian life. At present it was a military problem and as such belonged to the Medical Department of the Army. Closely allied to it was the same problem in the navy and in industry. Later on it became purely a civilian programme and entered the field of many federal, state, local and private civilian organizations whose duties it would be to complete the rehabilitation. It was only a step from this scheme to one more far reaching that would include proper medical and surgical supervision, reconstruction, rehabilitation, and federal, health and accident insurance for all workers, together with prevention of disease and accidents.

A résumé of the plan indicated the scope of the work. The disabled soldiers on their return to

this country would first be received at a large central hospital where a board of medical and vocational experts would pass on each individual. From here distribution would be made to general hospitals, special hospitals, hospitals with special vocational schools, direct home, or to incurable hospitals. The problem would remain a truly military matter until complete functional restoration occurred. In connection with each hospital physical units would be established consisting of gymnasiums, hydrotherapy, and massage rooms, and mechanical appliances. In addition each hospital would have curative shops where the men could indulge in light work; their purpose would be to give mechanotherapy when needed, for their psychological effect, for productivity and beginning vocational training, and at all times a practical trend toward employment. Prevocational training schools would be operated in connection with each hospital with the following purposes: for curative therapy, to teach new trades where indicated, special schools for the blind, deaf, orthopedic, and tuberculosis cases and for agricultural pursuits. Some of this vocational training would be given in established schools such as state universities, where short courses could be given or regular courses adapted to special needs.

Many of these rehabilitated men would seek federal and state governmental work, others would be placed directly in some industry, but during the training period they would be retained in federal pay and supervision. Many successful cripples would act as teachers to others. An adequate placing system would be arranged by utilizing the National Employment Bureau aided by the various state employment agencies. A system of reporting would be arranged so that the central office would know at all times what work the disabled were doing, could prevent change of work to hazardous occupations, and could prevent any soldier from deteriorating into an idler or object of charity by cooperation with the war risk board.

Careful study was being made of the present and future economic conditions so that certain occupations would not be overcrowded, that sufficient men be trained to fill positions in new industries which would be an outgrowth of the war, that labor conditions would not interfere with placing the men, that occupational hazards be avoided and that legal obstructions to the prevention of employment of the men in industries be changed.

From the time he entered the army and especially from the time he was disabled, through his period of reconstruction and rehabilitation, the man must be thoroughly imbued with the idea that he could again become a useful member of society. It was as important as teaching him a new occupation to return him to society enthusiastically ambitious to make good. His family must be taught to cooperate and public opinion must be moulded to approve the plan. Everything that could possibly be done for the disabled soldier was



his due and his reconstruction and rehabilitation was the greatest humanitarian movement developed in this war.

**Social Aftercare for Disabled Soldiers.**—Mr. CURTIS E. LAKEMAN, of the Department of Civilian Relief, American Red Cross, Washington, D. C., regarded the ideal national programme of reconstruction outlined by the previous speaker as peculiarly appropriate to the army of a democracy. It was fitting that the new military organization of the American people should bear in mind its countless relations to the social welfare of the country at large. But civilian agencies were called upon to participate in the work and among them the American Red Cross had a definite part to play. Its plans for the care of the disabled men returning from war did not duplicate the functions of the Government. Its field, with one exception, lay wholly in the social supervision of these men during their readjustment to civil life. The exception referred to was the experiment station in the vocational training and employment of cripples established at 311 Fourth avenue, New York under the capable direction of Mr. Douglas C. McMurtrie who would later on explain what was being done there. This single instance of institutional work, which exemplified the function of the Red Cross as an official auxiliary of the army and navy, had been approved by the Surgeon General and the Secretary of War.

The Red Cross had a public purpose if any organization ever had. It represented a tremendous outpouring of public emotion which had been directed into channels of effective cooperation with the Government. This spirit of the Red Cross was manifesting itself abroad and at home in its effort to supply aid and comfort to soldiers and sailors and to sustain the morale of the fighting forces by caring for the women and children at home. The men returning incapacitated for further service would be cared for as individual soldiers and sailors in the military hospitals of the army and navy. But after they were discharged from further treatment and training in Government institutions, when they resumed their places in the community, then they came within the appropriate field of Red Cross interest and aftercare, which could properly assist them temporarily and during their period of readjustment to industry and normal life, in this way continuing and completing the service previously given to their families.

Some of the activities of the Red Cross were well known to the public. It was not so widely known, however, that since August, 1916, the American Red Cross had developed a system of service to the dependents of enlisted men which reached into every city and town in the country. The war risk insurance law of October 6, 1917, saw to it that the family income did not stop, but more than money was needed. A family in trouble needed many services which money could not buy and which the Government could not undertake to render effectively as could a friendly neighbor, and what agency could more fittingly organize the patriotic neighborly spirit of each community and direct it through skilled workers so that the right thing

would be done at the right time and in the right way for the soldier's family? The Red Cross called this work home service. It meant the preservation of American ideals of health, education, housing, and working conditions; it meant relief in emergencies and it meant the provision of regular allowances to persons who had no legal claim on the Government because of unspecified relationship, but hitherto dependent on a soldier or a sailor; and it meant the giving of practical, everyday information in small matters of deep interest to friends and relatives of soldiers and sailors. Four thousand families were being helped in this way by the home service section in Manhattan and the Bronx.

Another opportunity of home service was the care of a disabled man during his return to civil life at the point where the Government programme left him. Every such soldier came back from France permanently incapacitated for further military service, recovered as far as possible from physical disability and newly trained in a vocation enabling him to go to work, where the Government controlled employment service had found a place for him. His problems and difficulties were now the interest of the Red Cross, and there were many of them. He needed constant personal encouragement; he needed help in finding congenial work in congenial surroundings; he needed assistance in meeting and overcoming obstacles. A condition of permanent stability in the reunited family must be maintained. Social aftercare began with the doctor in the military and orthopedic hospitals and it ended in the hands of the Red Cross and other workers in the man's home town. From beginning to end the process was continuous in the effort to restore selfconfidence, self-reliance and ambition.

When everything possible had been done to assist the man and his family in overcoming material and psychological handicaps, something remained to be done with employers. They could be encouraged to provide proper opportunities for handicapped men, and urged to exercise forbearance in their dealings with them.

With crippled soldiers themselves, with employers, and finally with the public at large, the first duty of the Red Cross and all other agencies truly interested in the rehabilitation of disabled soldiers was to create the most wholesome public sentiment which should encourage every effort at selfsupport, for the man returning disabled from the front deserved everything that could be done for him.

**Vocational Reeducation of War Cripples.**—Mr. DOUGLAS C. MCMURTRIE, Director of the Red Cross Institute for Crippled and Disabled Men, New York, had a number of pictures thrown on the screen showing crippled soldiers working at various trades and industries in England, France, and Canada. He commented on the fact that it had remained for the present war to bring about a change in the idea that financial compensation sufficed to discharge all obligation for disablement while in the performance of duty, which had previously contented industrial employers. The pictures showed many devices and practical means for enabling those without their full complement of limbs to get along

just as well as they had previously with them. In one picture, a man with only one arm and leg was seen easily and rapidly operating a typewriter by changing the key shift and carriage reverse through a strap on a pulley with his foot.

Some of these men were even better off than before their disablement. One who had been an expert stone mason after training as a mechanical draftsman and interpreting plans of construction put his practical knowledge to use. This had raised him several grades in his own line of work, and this was one of the objects of the general plan of the Red Cross for the rehabilitation of these persons. All possible forms of labor and their application to local conditions had been taken into consideration; these differed in different countries. Abroad cobbling was a trade by which many of these men made a very good living, opening little shops of their own anywhere about the country. This trade was also considered a very good one in Canada, as was willow work also. Another picture was shown of a French ex-soldier with both legs amputated at the hip, industrially and happily occupied as an expert leather worker and saddler. A picture of a tailor shop showed all sorts of work being done by cripples; all the expert processes of tailoring were accomplished by the aid of suitable devices. Very frequently the teacher was himself a cripple and his pupils as a rule learned more rapidly and satisfactorily, as was natural. In Canada it had been found that the teacher must have been wounded overseas himself to gain any attention from or influence over his pupils. The reconstruction work being done in Canada was wonderful; in Winnipeg there was a large training school with facilities for training 200 to 300 men where certain branches of carpentering and cabinet work were taught.

In making provision for useful appliances, the possibility of providing artificial arms which looked like arms and were at the same time efficient had so far been found impossible, so in most of these workshops the men were provided with two sets, working appliances for the man's trade and more esthetic arms or legs to wear after his working hours were over. The manufacture of artificial limbs was one of the most suitable trades for cripples. They could always find employment and they took a particular interest in this kind of work. The shops were used for training cripples and for providing hospitals with artificial limbs. The life of a limb was not long and these men could also be trained in expert repairing for which there would be a demand. The next picture showed an electrical substation with crippled attendants doing electrical maintenance and repairing, one a trained motor mechanic. In the next, submarine fittings were being expertly made for the Government. In other than war times some of these men might have had considerable difficulty in finding employment as they were badly crippled. Coppersmithing was a trade in which there was a lack of skilled workers and the graduate cripples were taken care of as fast as they were trained. Welding was another good trade; ordinary operators got very high wages and experts got a good deal more. Blacksmithing was another very good trade.

Well instructed men always fitted into a local

labor market, but there were other essential considerations besides merely teaching the man how to make a living. One of these led to the effort to keep men who had been farmers on the farm and to this end they received special vocational training in farm specialization and the benefit of every resource that ingenuity could devise to enable them to substitute skill for strength.

It had been from the first the intention of the Federal Government to reeducate the war cripples, but the work had not yet gotten under way. It had seemed desirable that the Red Cross should try out the idea and so the Red Cross Institute for Crippled and Disabled Men had been opened, largely through the contribution of a few individuals, among them being Jeremiah Milbank. This school was located in the old College of Physicians and Surgeons' building at Fourth avenue and Twenty-eight street, and work would be started at once so that a comprehensive technic could be developed and ready for immediate application when these brave boys who had gone out to meet the adversities of war came back with their work nobly done, but leaving behind them a priceless part of themselves. That this loss should be made up to them doubly, trebly, that they should be to all respects as nearly as possible bodily as they were before and in addition equipped with technical training through which they could take and keep a place among their equals, was the firm resolve of the founders of the school. At present they were taking care of the cripples of industry and were anxious to get in touch with any case which could be helped by reeducation. Industrial classes in various trades were now being started and in a short time the institution would be in full swing. After the war life would go on as every one knew, but that it should be worth while must not be overlooked; those who had served their country in the forefront of battle and looked aghast at their prospects for the future, would find those prospects miraculously glowing with promise for lives of self respect, the power to earn a decent living and happiness, which comes to every man who can stand on his own feet, even if they be artificial.

#### ASSOCIATION OF AMERICAN PHYSICIANS.

*Thirty-third Annual Meeting, Held in Atlantic City,  
N. J., May 7 and 8, 1918.*

The President, Dr. F. H. WILLIAMS, of Boston, in the  
Chair.

*(Continued from page 1055, vol. cvii.)*

**Immunity in Cancer.**—Dr. F. C. WOOD, in his paper, said there was no branch of medical investigation which had suffered so much from lack of accurate thinking and correct nomenclature as the cancer problem. These facts had caused a great deal of work which should not have been done had the exact conditions been appreciated. Connected with the idea of immunity in cancer were four different phenomena: spontaneous disappearance of primary tumors in human beings, sometimes following no interference, sometimes following infection, sometimes after partial removal by operation. This had been considered due to immunity. There was, how-



ever, no evidence that this was immunity. Disappearance of primary tumor often coincided with growth of metastases. The so called organ immunity was not real, because if tumors were implanted in the spleen they would grow there as well as elsewhere. The fact that metastases did not take place in the spleen was because of vascular conditions. Disappearance of tumors in animals was not disappearance of a primary tumor and was very infrequent. The failure to implant a tumor in an animal and its resistance to a second implantation had been considered immunity, but in these cases a second tumor might appear and grow. These errors had arisen from transferring the nomenclature of bacteriology to the question of tumors. Cellular extracts, filtrates, etc., had been prepared and colloidal material and lecithins used to produce immunity. None of these preparations influenced the growth of an already established tumor. The tumor could not be considered separable from the host, but was identical with the host's normal structures. The idea of stimulation of the body against the tumor had been held, and autoagglutinins had been produced. These were different, however, from cytolytic antibodies. Lymphocytosis had not been found to have any influence upon the growth of tumors and it had to be stated that the problem of immunizing the body against a tumor had still to be worked out.

**Studies of Chronic Myocarditis.**—Dr. H. A. CHRISTIAN, of Boston, gave this presentation. In the recent studies of the heart by means of the electrocardiograph, there had been a tendency to emphasize the importance of the valve lesion rather than myocardial function. Most cases of myocardial insufficiency were called mitral insufficiency. The thickened valve was not differentiated from that with the orifices enlarged. The pathologist would term such cases myocarditis as had demonstrable lesions at autopsy, whereas the physician used the word to mean myocardial insufficiency. Cabot some years ago had found that only twenty-two per cent. of the diagnosis of chronic myocarditis, made during life, were found correct at autopsy. The speaker said his experience was different, and he thought fewer mistakes were made in this diagnosis than in others. The pathologist and the physician, however, were talking of different things, and the terms did not correlate. The autopsy would not show any sign of the interstitial type of myocarditis. Mitral insufficiency was a rare lesion when considered as autopsy material. In analysing the cases he had found that there was a great frequency above forty-one years. In 407 cases 112 gave a history of rheumatism; thirty-five had a positive Wassermann; 110 were chronic users of alcohol; 178 had high blood pressure; one half the cases had chronic nephritis. Overeating was difficult to estimate as a cause, but 188 persons were over weight. In conclusion it could be said that the condition was a very common one; the change was primarily in the heart muscle. The cause could not be determined. At autopsy a large percentage showed no changes in the coronary valves and no enlargement.

Dr. E. LIBMAN said he disagreed on the question of terminology. He did not like to use the word myocarditis interchangeably with the term myocar-

dial insufficiency. One should try to find a cause for the myocardial insufficiency; with a history of rheumatism there might be a true myocardial lesion, but with syphilis the disease would be arterial. Anemia, bleeding fibromata, thyroid disease, all might be the underlying cause of myocardial insufficiency. In myocarditis there were definite electrographic changes shown.

Dr. S. S. COHEN said that he wished to remark upon the nomenclature. Da Costa used to call these cases dilated heart. Where there was actual myocarditis, he called it fibroid heart. Doctor Cohen said he preferred to speak of "myopathies" and not commit himself as to whether there was definite myocarditis or not.

Dr. H. S. PLUMMER, of Rochester, Minn., said that hyperthyroidism was a very common cause of myocardial insufficiency. It had been recognized that one third of the cases were due to adenomata of the thyroid. These probably originated in fetal rests. They were different from the condition of Graves's disease. The adenomatous tissue developed post nately and was erratic in development, so that all degrees of thyroidism were obtained, without regard to the thyroid demands of the tissues. These patients ran a metabolism thirty to fifty per cent. above normal, and this would drop to normal with the removal of the adenoma. Blood pressure in these cases was due to increased minute volume flow through the right heart.

Dr. S. J. MELTZER asked what Doctor Christian thought about nicotine. Did he consider that was among the causative factors?

Dr. H. A. CHRISTIAN in conclusion said that he did not care what the condition was called as long as the doctors defined their terms. There were as many objections to the terms offered on the floor as to the word myocarditis. They went from the frying pan into the fire. In the cases studied, the chief lesion was cardiac. All were advanced cases. Most of the patients were dead. They were not cases of anemia, or of thyroid disease. The cases did not occur in a goitre belt and there was no evidence of thyroid hyperactivity. Most of them had normal electrocardiograms. Nicotine could not have played an essential part, as there were as many women as men among the patients. Therapy gave only temporary effect; they all reacted well to digitalis. Some patients lost twenty to sixty pounds on admission and stayed fairly comfortable.

**The Tension of the Gases in the Affluent and Effluent Blood of the Lungs.**—Dr. R. G. PEARCE, of Cleveland, stated that the method of determination of tension of gases was the most rational and direct method for testing the functional capacity of the heart and lungs. It had been used for determining amount of improvement in the lungs after gas attacks. The amount of the work of the lungs with that of metabolism was correlated. In passing through the lungs the blood lost a percentage of oxygen and by increase of metabolism there was also increase of oxygen consumption. In this way some blood must return to the lungs with less oxygen and more carbon dioxide than usual. Thus the determination of the carbon dioxide tension as the blood enters and leaves the lungs would give a very good indication of the ability of the circulation to cope with

the needs of the body's metabolism. In order to find this, the percentage of the carbon dioxide in the alveolar air at a certain level of metabolism was determined. With moderate exercise it was found that there was parallelism between the oxygen metabolism of the effluent and the affluent blood. With superventilation or hyperpnea there was marked decrease in carbon dioxide tension.

Dr. C. F. HOOVER, of Saffordville, Kan., said he had seen a man who was working at the Panama Canal seized with a sudden attack of air hunger when climbing a small slope. The paroxysm came without warning. In experiments with this patient later it was found that raising the body from the floor by straightening the arms would at once cause a marked attack. The radial pulse disappeared, the other pulse remaining normal. There was a brachial rigidity but the blood pressure on the leg was not affected. In that man there was superventilation beyond the demands of the gaseous metabolism.

**The Respiratory Significance of Moisture in the Air Spaces of the Lungs.**—Dr. C. F. HOOVER, of Saffordville, Kan., said that in the study of gassed men in France it was seen that large quantities of foam issued from the nose and mouth, while there was cyanosis and air hunger. There was a disparity between these two symptoms. In ordinary cases cyanosis would appear before air hunger. Introduction of oxygen, while it relieved cyanosis, did not alleviate the air hunger. The men would not tolerate the oxygen mask over the face. They felt more comfortable breathing atmospheric air. The reason of this was that the respiratory spaces were all full of foam. In some bronchioles there was  $\text{CO}_2$ — and in some the oxygen was minus. Thus giving oxygen might not get rid of the  $\text{CO}_2$ . This was similar to pneumonia where the consolidated lung was contributing unrespired blood. Unless the  $\text{CO}_2$  was removed giving the oxygen caused no effect. When the  $\text{CO}_2$  pressure in the blood was removed, oxygen could be given with relief of symptoms.

Dr. S. J. MELTZER said he had read an article on a method of giving oxygen in pneumonia; personally he had used a different system. By means of a depressor on the tongue the excessive amount of carbondioxid was driven out mechanically through the nose. The mask method was not a comfortable one. It merely absorbed the quantity of carbon dioxide which the patient spontaneously released.

Dr. C. F. HOOVER said that when a man had consolidation of the right lower lobe in pneumonia and no other sign of involvement and oxygen was given and the cyanosis removed, it was a very difficult problem to say why one had got rid of the cyanosis. Cyanosis was due to unexpired blood in the aortic stream and that would not be touched by giving of oxygen. The problem was, why did the cyanosis disappear and not the air hunger, and this was only to be explained on the basis of unexpired blood.

**The Practical Value of Diphtheria Toxin Antitoxin Injections in Immunization.**—Dr. WILLIAM H. PARK, of New York, in a paper on this subject, said that evidence was accumulating each year as to how long the immunity would last after toxin

antitoxin injections, also evidence as to the harmlessness of the procedure, two features which constituted the value of the immunization. Young infants under six months of age were protected by immunity inherited from the mothers. After this age the inherited immunity rapidly decreased, and, at two years children were least protected, and consequently the greatest number of deaths occurred at that age. At ten years of age the mortality was one thirtieth less than in the second year. In regard to the harmlessness of the injection, careful study had shown that earlier procedures were lacking in sufficient care. The meat in which the diphtheria bacillus was planted was allowed to ferment. Lately a whole broth was made, heated, and no fermentation took place. Some 10,000 cases of immunization had been done and no death had occurred. Four cases of collapse had happened, in that number. Within the last six months there had been no untoward results. Twenty per cent. of children had shown a slight rise of temperature. From one to three units could be given with perfect safety. In regard to the duration of immunity it would seem as if artificial immunity in eighty per cent. of cases would be as permanent as natural immunity. It had not dropped off more than two per cent. in two years. If it should be lost the child could be immunized again with equal effectiveness. The immunity at birth was found in eighty per cent. of children. It dropped to sixty per cent. in the second year. Nonimmune mothers had nonimmune children. Immune mothers always had immune children.

Dr. A. F. HESS, of New York, said that at the Hebrew Asylum the children given a positive Schick test were immunized by toxin antitoxin injection. There had been no cases of diphtheria in the institution in the last two years. At first all cases giving a positive Schick test were immunized, but babies were found to be immune at first and then lose their immunity; thus it would seem best to immunize all individuals during the first six months of life in order to render the institution free of diphtheria.

#### **Transplantation of Tuberculous Lymph Nodes.**

—Dr. C. T. RYDER, of Colorado Springs, read this paper, in which a new experimental method was outlined. It was the transplantation of infected tissue of diseased animals into healthy tissues of normal animals. Tuberculous lymph nodes were used. Guinea pigs were infected with small doses of virulent human bacilli and when the lymph nodes became markedly enlarged they were transplanted under the abdominal skin of healthy animals. When these animals' inguinal nodes became enlarged they were transplanted into a third series of animals, and so on. The skin was found to heal in two weeks, the gland remaining in place without inflammation, the first week it acted as a free foreign body and if the node sloughed out the host escaped infection. The second week adhesions took place and blood-vessels from the host's tissue began to penetrate the implanted node. In three to five weeks the host's inguinal nodes enlarged and ulceration took place and within two to four weeks there was generalized tuberculosis. The tuberculin reaction remained



negative. If a second node were implanted the ulcer would open, discharge, and heal, but the first ulcer never healed. With other tissue, such as spleen and liver, the results were essentially the same. The complete experiment would of course be the transplantation of the entire tuberculous organ, but as yet the technic had not been mastered.

**The Etiology and Pathology of Rocky Mountain Spotted Fever.**—Dr. S. B. WOLBACH, of Boston, read a paper on this disease, saying it was characterized by diffuse hemorrhages and necroses of the skin, fingers, toes, and genitalia. It was transmitted by the tick (*Dermocentor anisoma*), was prevalent in Oregon, Idaho, Wyoming, California and was spreading eastward to Montana. It was a disease of the peripheral bloodvessels, caused by a parasite, in the form of minute bipolar bodies. The reaction of the body was by proliferation of large and multinuclear phagocytic cells. The organism was found distributed in the smooth muscle fibres. The disease could be duplicated with great accuracy in susceptible animals. Microscopical studies showed that the organism was paired, lanceolate and surrounded by a halo. In infected animals the tissues became flooded with the germ. At present the organism had not been successfully cultivated. It had very little resistance to heat and drying. In its selection of tissues it was extremely specific.

Dr. WILLIAM H. PARK, of New York, asked if the doctor had been unable to get any cultivation.

Dr. S. B. WOLBACH answered that he had tried spirochete media and protozoa media, but, comparing it with other organisms, it was found to survive less in defibrinated blood and citrated blood than did spirochetes or trypanosomes.

(To be continued.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Nouvelle methode de vaccination antityphoidique.* Le Lipovaccin T A B. Par E. LE MOIGNIC, médecin de 1 classe de la Marine, et A. SÉZARY, ancien chef de clinique à la Faculté de Médecine de Paris. Paris: J. B. Ballière et Fils, 1918. Pp. 76.

LeMoignic and Sézary briefly review the several disadvantages of the use of aqueous vaccines, including their poor keeping qualities, their toxicity, and the need for the administration of several doses in order to produce an adequate degree of immunity. The authors then point out that the suspension of the organisms in oil is largely free from all of these disadvantages. Their work was done with the triple vaccine for typhoid and the paratyphoids, in which they showed that the administration of a single dose, containing per mil 2,600 million *B. typhosus* and 2,275 million of each of the paratyphoid bacilli, failed to give more than the slightest local or general reactions in the vast majority of patients. Such a dose, given at a single injection, also produced a degree of immunity equal to that from the conventional doses of the ordinary triple vaccines. The development of the agglutinins was found to be remarkably constant. The same contraindications hold for the prophylactic use of the lipovaccine as for the ordinary preparation. The preparation of this vaccine is given in detail; and while it is more difficult than that of the aqueous vaccine, it still is relatively simple. One of

the further advantages is held to be the fact that the organisms in the lipovaccine are not subjected to so many influences which tend to alter their properties as is customary in the case of the watery preparations. The lipovaccines should not be used clinically until they are at least a month old, during which time the organisms become somewhat clumped, which physical change, combined with the delay in absorption caused by the oily menstruum, serves to reduce their rate of entrance into the body, to prolong their action, and to reduce their toxicity. The use of an oily menstruum is also recommended by the authors for other vaccines. This work is not altogether new in America, for recently we have been receiving favorable reports upon lipovaccines. The small volume deserves consideration by those interested in the subject of the preparation of vaccines of low toxicity.

*Oral Sepsis in Its Relationship to Systemic Disease.* By WILLIAM W. DUKE, M. D., Ph. B., Professor of Experimental Medicine in the University of Kansas, School of Medicine; Professor in the Department of Medicine in Western Dental College; Visiting Physician to Christian Church Hospital, etc. With One Hundred and Seventy Illustrations. St. Louis: C. V. Mosby Company, 1918. Pp. 124.

There is nothing new under the sun. This book opens with a verbatim report by Dr. Benjamin Rush, over a century ago, of a case of rheumatism which he became convinced was due to apical infection of a seemingly sound tooth. The disease was cured by the extraction of the tooth, and Doctor Rush in the same lecture quotes other physicians here and abroad as having published similar observations. The present work does not deal with x ray technic or apparatus, or with the making of dental radiographs. It explains very well the bacteriology of dental infection and the way in which this produces systemic or remote secondary lesions and symptoms. It is illustrated by excellent radiographs, which with their diagnostic notes give a correct idea of the dental infections revealed by the x ray in a great variety of diseases. An extensive bibliography adds to the value of the book, which makes an attractive volume.

## Births, Marriages, and Deaths.

### Died.

ALBU.—In Hartford, Conn., on Sunday, July 21st, Dr. Max Albu, aged seventy-two years.

BINGHAM.—In New York, on Wednesday, July 3rd, Dr. E. Bingham.

CREAMER.—In Deal Beach, N. J., on Sunday, July 28th. Dr. Joseph M. Creamer, of New York, aged forty-one years.

FJELDE.—In Rolla, N. Dak., on Sunday, July 14th, Dr. Herman O. Fjelde, aged fifty-three years.

GILLEN.—In Brooklyn, N. Y., on Monday, July 28th, Dr. William Aloysius Gillen, aged thirty-five years.

GOODALE.—In Arlington, Mass., on Friday, July 26th, Dr. Darwin C. Goodale.

HAMILL.—In Phoenix, Ariz., on Thursday, July 25th, Dr. John E. Hamill, aged fifty-five years.

JACOBS.—In Booneville, Mo., on Wednesday, July 24th, Dr. Gus Jacobs, aged thirty-five years.

LEWIS.—In Chester, Pa., on Sunday, July 28th, Dr. Henry M. Lewis, of New York, aged sixty-nine years.

MATHEWS.—In Richmond, Va., on Thursday, July 25th, Dr. William Philip Mathews, aged fifty years.

MUNSON.—In Brooklyn, N. Y., on Saturday, July 29th, Dr. Forbes J. Munson, aged forty-nine years.

PERSONEN.—In Duluth, Minn., on Wednesday, July 17th, Dr. Axel Personen.

RAPP.—In Ellenville, N. Y., on Tuesday, July 23rd, Dr. John W. Rapp, aged thirty-three years.

ROHRER.—In Lancaster, Pa., on Tuesday, July 30th, Dr. Thaddeus M. Rohrer, aged sixty-four years.

RUNYON.—In Danville, Ill., on Saturday, July 20th, Dr. T. H. Runyon, aged eighty-seven years.

TODD.—In Camp Dodge, Ia., on Thursday, July 4th, Lieutenant-Colonel Frank C. Todd, Medical Reserve Corps, U. S. Army, of Minneapolis, Minn., aged forty-nine years.

# New York Medical Journal

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### Original Communications

#### RIGHTHANDEDNESS IN ITS RELATION TO VISUAL CONDITIONS.

By GEORGE T. STEVENS, M. D., PH. D., F. A. C. S.,  
New York.

One of the factors of the subject chosen would seem to have been settled long before written history began, and, so far as I am informed, quite to the satisfaction of all but a small minority.

Our inquiry, however, is from a standpoint rather different from that from which the subject has been generally viewed, and hence may possess an interest which it would not otherwise have. We are to inquire whether the custom of righthandedness, or as it is more technically called, dextrality, has an influence upon vision, and if so, what is its nature. A custom almost universal and which has prevailed from earliest times, might be assumed to be founded on some fundamental reason which is of a permanent character.

If we inquire relative to the antiquity of the custom, we are unable at present to secure reliable data for a period of greatest antiquity. Could we secure testimony from the man of Piltown, who is supposed by some to have flourished perhaps 150,000 years ago, or from his predecessor, the Heidelberg man, who in fragmentary condition is revisiting the haunts of men after a retirement of perhaps 300,000 years, we might learn more of the antiquity of the custom of dextrality. Unfortunately, these witnesses, owing to circumstances beyond their control, refuse to testify. During their long sleep they have lost their records in this respect, and until we can call upon some of their contemporaries who may have preserved the evidence, we can only speculate in regard to the table manners of three hundred thousand years ago, whether the Heidelberger of that day really held his fork in his left hand while he partook of rabbit *au naturel*.

It is only when we reach comparatively recent times that we have any trustworthy information respecting dextrality. At a period thirty thousand years ago we get our first satisfactory information in this respect, and it may perhaps be truly said that nothing in historic or in prehistoric times is more satisfactorily established than that the people who inhabited the sheltered and sunny riversides of southern Europe thirty thousand years ago, though their clothing was scant and their knees were sprung, strictly observed the etiquette of their time and were emphatically and, so far as we have

learned, almost unanimously righthanded. Although these earlier races of pioneer Europeans disappeared before the advance of stronger races, their successors continued the custom of being righthanded.

While, then, dextrality can not be shown to be of greatest antiquity, it is old enough to be regarded as among the well established customs of the past.

So far as I recall, lefthandedness was not made respectable until comparatively recent times, when about four thousand years ago, a Hebrew tribe came out to meet in battle all of the other Hebrew tribes, and by skilful use of the left hand, and probably of the right also, put to flight the greater array of their opponents, taking possession of the field and of the spoils. Perhaps it is fair to say that the men of this tribe of Benjaminites were not, technically, lefthanded. Men were, in those days, mentally constituted much as they are today. If these tribesmen did not conform to the custom of the time and did not use the right hand almost exclusively, they would naturally be characterized as going to the extreme in the opposite direction. If they were not exclusively righthanded, they must of necessity have been entirely lefthanded. It is probably much nearer the truth to suppose that these tribesmen made equal use of the two hands, a fact that would explain their unusual manual skill, if not their exceptional courage. A lefthanded person has no advantage over a righthanded one, but one who has trained two hands to act with skill has at the same time trained two sides of the brain to greater efficiency than one who has trained but one hand and one half the brain.

I have spoken of the men of thirty thousand years ago as being generally righthanded. Why were they righthanded, and how do we know that they were?

As to the first part of the question, it will be just as well to confess that we do not know. Respecting the second part of the question, we may reply that we know with certainty that the races of people who flourished in different parts of Europe from thirty to fifty thousand years ago were righthanded by their deformities.

Perhaps, returning to the first section of our question, we might with some satisfaction, even if with no additional information, recur to it. Why were these early settlers of Europe righthanded? No doubt the mothers, even like mothers of more modern times, taught them. In spite of some experi-



ments of distinguished scholars, I suspect that no boy or girl falls voluntarily into the habit of using only one half of his or her hands without the aid, direct or indirect, of an instructor. The mother had learned, or at least her tribe had learned, that the left was the vulnerable side and that when the boy became a man and got into a fight, as he was bound to do, it would become necessary to defend the left side with the left hand while the right hand would be in control of the weapon. Thus, from earliest times in the history of men, the right hand has been the weapon hand, the left the defensive one.

Perhaps, too, I should be a little more specific in reply to the second part of the question: How do we know that these pioneer people were righthanded? I have said that we know it by their deformities. When we turn up the cranium of one of these old relatives of ours (they are not necessarily our ancestors) we find, as a rule, that the left side of the cranium, especially at its anterior part, is considerably more capacious than the right, from which we, of course, conclude that the left hemisphere of the cerebrum, especially at its anterior portion, was materially larger than the corresponding portion of the right hemisphere, and we also conclude that this is the result of the use of the right hand to a much greater extent than that of the left.

The fashion which these men of old set prevails as universally now as it did fifty milleniums ago and produces the same deformity. The left hemisphere of the brain continues to outclass its fellow, and the cranium continues as unsymmetrical as it was in the old stone age.

This brings us to the point of interest in our inquiry. In what respect can this deformity of the cranium be related to the function of vision?

Let us recall that the cerebral location for the control of the movements of the arm and hand is near the anterior portion of the hemispheres. Resulting from the more general use of the right hand this part of the left cerebrum at its anterior part is also correspondingly developed. A modification of the position of the orbit naturally results from this unequal development of the two sides of the cranium. The upper arch of the orbit is pushed outward and the axis of the cavity changed from a vertical to an oblique direction.

The globe of the eye is thereby tilted, its vertical meridian leaning outward toward the temple. This leaning of the vertical meridian of the left eye is extremely common, so common that its absence suggests, although it does not prove, lefthandedness. Why it does not prove it we may presently inquire.

This tilting outward of the vertical meridian of the eye does not imply any disease, insufficiency, or disability of any muscle or muscles controlling the movements of the globe. The eye simply maintains its normal relation to the orbit, while the orbit does not maintain its normal relation to the cranium. Of course the anomaly would occur to the right orbit in case of excessive use of the left hand during the period of the most rapid development of the individual. It is simply a question which orbit is forced outward by the unequal development of the cerebral lobes.

Turning our attention to the physical relation of

the left eye to its normal environment in the case of the average person, we are enabled by the help of the instrument known as the clinoscope to determine the relative position of the vertical meridian of each eye to the vertical position of the head. Examinations by this instrument, very soon after its introduction, made it certain that the vertical meridian of the left eye leans, as a rule, outward above and this independently of whether the subject of the examination is well or ill, fatigued or at rest. Such results seemed so improbable at first that it was only after a great many examinations, made with the utmost care to eliminate any possible error, that this anomaly became a fact established beyond question.

On the other hand, while not by any means so general a phenomenon as that just mentioned, it is somewhat frequently the case that the vertical meridian of the right eye has a tendency to lean toward the medial plane, but, nearly always, in a degree less than the other leans out.

These leanings are known as declinations; that in which the vertical meridian leans with its upper end toward the temple as positive, that in which it leans to the medial plane as negative.

Returning to the negative leaning of the right eye, it was found, when a method for establishing a true verticality for the nominally vertical meridian had been adopted, that in a large proportion of cases, the leaning of the right vertical meridian corrected itself as soon as the normal declination of the left was corrected. This indicated that as soon as the involuntary tension is removed from the left eye the right resumes its normal position. This, of course, is not always the case, but indicates when it does occur that its original negative leaning was the result of a synergic response to the unconscious effort to adjust the left eye.

I have spoken as though the positive leaning always occurs in the left eye. Of course, this is not strictly correct. A certain proportion of cases show distinctly and persistently a leaning outward of the meridian of the right eye, and a certain percentage show a leaning out of the vertical meridian of each eye.

Just as a hemorrhage into the anterior portion of the right lobe of the cerebrum may sometimes cause some form of loss or disability of the faculty of speech (although the rule is that aphasia is caused by a lesion of the left hemisphere), so a positive declination may occur in the right eye and for the same reason, namely, that the right lobe of the cerebrum is equal or exceeds in development the left cerebral lobe.

It has been my custom for many years to inquire of persons who show positive declination of the right eye if they are lefthanded. In many cases the reply is in the affirmative, but in others it is in the negative. On closer questioning I sometimes learn that in early life the subject was lefthanded, but that later the habit was broken. In other cases the memory of the subject of the anomaly has not been clear regarding those formative years.

We need give but a moment to the consideration of those cases in which there is a leaning of the vertical meridian of each eye outward. Such cases

are somewhat frequent and indicate an increase in the size of the anterior portion of the cranium out of proportion to the facial parts, possibly the result of a change of habits in early life.

Coming to the influence of these leanings upon vision, we can readily see that a certain confusion must result when the meridians are not in their normal relations. Naturally these relations must change with every change in the direction of the eyes. If, however, they are incorrect when the eyes are directed exactly in the primary position, they are incorrectly related in every other position. Unless these meridians are parallel in the primary position, there can not be such harmony of action of the two eyes as to give simultaneous impressions on exact corresponding points of the two retinae in any position.

According to our accepted views of the physiology of binocular vision, the most perfect visual impressions are absolutely dependent upon such impressions being received on exact corresponding points. Of course, momentarily, we may make certain allowances in apparent violation of this principle, but we can not continue these allowances for a considerable time.

As a result of the absence of symmetry of action of the motor influences upon the two eyes, binocular vision is less perfect than it would be with the ability to form automatically all necessary movements of binocular adjustments. True, we may, by a sort of voluntary effort, induce an approximate adjustment, but it is doubtful if, under any circumstances, an absolutely technical adjustment of the two eyes can be made so as to receive simultaneously corresponding images upon corresponding points of the two retinae under anomalous adjustments of the corresponding meridians.

Of course, the degree of visual confusion from inharmonious adjustments of the two retinae would depend largely upon the degree of the deviation of the meridians from the normal and also upon the physical ability of the subject of the anomaly to make the nearest approximate adjustments. In case of considerable deviation of the meridians, even the approximate adjustments are not continuous. There must of necessity arise a certain want of absolute fixation, even for a short time. It is not difficult to understand that such conditions of imperfect adjustments of the eyes may work greatly to the disadvantage or to the dulling of vision.

It is not my purpose to discuss the many physical disadvantages of declination. I have called attention to these repeatedly. They are many and important. It may not, however, be out of place to refer to the more immediate effects of the efforts at such adjustments as have been mentioned. Objects may appear well defined for a time, perhaps for a considerable time, but the efforts become at length fatiguing and, if the attention is directed to such exercises as reading or writing, the perplexity of the continued efforts result, if not in weariness of the eyes, more probably in an inability to fix in memory the ideas conveyed by the printed page, or in a more or less careless method of expression in case of writing. There results the mental condition which Professor Baldwin calls *fluid attention*. We have only touched upon the influences which may result

from anomalous leanings of the retinal meridians, but when once such a principle is stated, we can readily see that the influence must be varied.

What conclusions should be drawn from these facts?

It would seem that, from the point of view of the ophthalmologist as well as from the general point of view, the custom of being righthanded is one to be discouraged. To avoid the evils of righthandedness it does not follow that one should be lefthanded. That would involve not only all the evils of righthandedness, but would subject the victim of the unconventional habit to much inconvenience in addition.

The aim of the instruction of the child should be to induce the greatest efficiency in both hands while preventing the exclusive use of either. The boy or the girl should be strenuously taught to be what is called ambidextrous, and no effort should be spared to this end. The mother who would make the greatest sacrifices to prevent the deformity of a material difference in the length of the arms or of the legs of her child will deliberately take unending pains to make the two sides of the brain of her offspring emphatically unequal. Attention to physical development in other respects is given with emphasis, but one of the most important details of the physical development of the child is not simply neglected but its laws are actually and intentionally violated in favor of an ancient custom, the necessity for which passed away many generations since.

Although outside the question we are discussing, it is hard to resist the temptation to refer to that which we all know relative to the connection of the mind with the body, or, to be more specific, of the mind with the brain. We have almost unanimously ignored the fact that an unevenly developed brain may strongly tend toward an unevenly developed mind.

40 EAST FORTY-FIRST STREET.

## THE BLOOD AND THE SOUL.

*In Ancient Belief and Their Relation to the Evolution in Medicine of Humoral and Pneumatic Theories.*

BY JONATHAN WRIGHT, M. D.,

Pleasantville, N. Y.

### III.

THE BELIEFS OF BABYLONIAN AND EGYPTIAN CIVILIZATIONS.

A study of the ethnology and archaeology of the ancient cultures on the Nile and in Western Asia convinces the casual reader that it is impossible to reach any conclusion as to whether Egyptian and Mesopotamian civilizations have or have not inoculated the wilder parts and even the western coasts of Africa with theories which may have had their origin on the Nile or the Euphrates. They reached there an efflorescence and a fruition but their universal prevalence among the modern wild races of the dark continent may have always existed and may be the origin of their evolution in the higher civilizations. That this is true of the more definite concepts of the soul and its immortality seems probable. Still more apparent seems the practice of preserving the bodies



of the dead, at least in some of its processes. Yet even though metempsychosis may have reached its greater development in India and Egypt, even though in the latter country embalming reached its greatest perfection, we find the concept of the soul well developed among American tribes and at least in its essential features known to the Australians before the advent of the white man. Von Oefele, while ignoring the proof we have found in primitive medicine for the existence of the latent germs both of a pneumonia and a humoral theory, was the first to point out that they are easily detected in the medical records and the thoughts of the ancient Egyptians and Babylonians. From the exposition given in what has preceded it does not seem probable, that these could have originated so universally and so essentially primitive.

Both in religion and in medicine still closely allied with it, we find much more prominent in the minds of men thoughts only remotely associated with these germs of humoral and pneumatic theories. It must be realized in thus going back into savage life whether of African or of other continents emphasizing, selecting, and isolating certain tendencies of thought which subsequently developed into the importance we assign them in the history of medicine, we are doing violence to the fabric of reality. In reality these were not separate or differentiated strains of thought at all. In fact, from the evidence, it seems nearer the truth to say, that even when the Egyptian and Mesopotamian civilizations emerge from utter obscurity and begin to make records which finally have been transmitted to us and upon which we place our faulty interpretations, other concepts of the etiology and pathology of disease were more prominent—demonology, for instance, and the conception of the demon or spirit—perhaps the soul as gnawing at the patient's vitals.

Black magic had thousands of thought vagaries which at least carried fear and awe, if not entire conviction, to the savage mind. There are few today who have not heard of the rôles played in black magic by certain parts of the body, especially the excrescences of the hair, the teeth and the nails. We find traces enough of these among the Babylonians and the Egyptians even at the height of their civilization. While perhaps not so prominent as among the beliefs and practices of men in a more primitive state of culture, their importance in the life of the old cultures, and their derivation from the earlier stage which we can observe among modern primitive men is striking and assured. It was supposed (49) that the pneumonia pushes these organs to the surface. This was not only a theory of Hippocrates, but of the Egyptians. This mysterious pneumonia drawn in by thoracic dilatation and through the distended nostrils evidently must find a lodging place within the body before it flows back. In the Papyrus Ebers we find this provided for, but the discoverer of the great work declares (50) that Chabas and Le Page Renouf in translating the Book of the Dead had early pointed out the significance of the Egyptians' idea of anatomy, which provided the passages of the head or arteries with outlets which led to all the limbs and viscera of the body. The eructations of gas and the passage of flatus by the rectum were the tokens of internal

disturbance set up by derangements of the life giving principle. Wreszinski, in his translation of the Berlin Papyrus, in which there is a parallel but shorter text, refers (51) to "the vascular system of man," by which we are to understand not our definition, but to the idea of the pores of which our vascular system is part, which for the Egyptians pierced the flesh of all parts and channeled even the nerves and muscles. This the papyrus defines as the system "in which all disease arises."

We are familiar with the fact that until recent centuries the arteries, as their name indicates, were supposed to carry air. It was, therefore, the disturbance of this which the writer of the ancient treatise supposed to be at the root of all the ills flesh is heir to. As ancient as is this belief, found on record in a papyrus more than 3,000 years old, we should follow von Oefele with caution when he asserts (52) that as far back "as Chasty, the fifth king of the first dynasty," according to the inferences to that effect he believes he finds in the Papyrus Ebers and the Papyrus Brugsch, "the air contents of the arteries of the corpse and the blood contents of the veins are recognized—the first step in the pneumatic dogma in medicine." We have seen reason to believe that the idea of the "pneuma" is essentially much earlier and much more fundamental than that among the traceable concepts of primitive man. Von Oefele infers that primitive man in Egypt, seeing that man becomes a mummy through the loss of the pneumonia and of his body fluids, was convinced that the breath is the source of life, and that the Nile giving moisture also produces life. Indeed, this enterprising and resourceful author pushes his positive assertions (53) into regions which really tolerate only surmises in the indications they give of the way the early Egyptian and Assyrian looked on the problem of life. The production of sweet smelling odors by means of incense and the application of perfumery had an intimate connection with the pneumonia theory, and he declares that in the Hippocratic treatise, *de medicis*, reference is made to the young physician who makes use of these on his person. He likens him to the carbolized young physician, who in the days of bacillophobia also carried things to an extreme. He declares religious ideas as to the efficacy of incense and fumigation, indubitably first invented to scare away demons, are affiliated with the theory of the pneumonia as the life giving essence, and its derangements as the causes of disease. The idea of primitive man was, we know, that by the production sometimes of bad smelling fumigation, and less frequently by the production of pleasant odors, evil spirits of disease could be driven out. Among some of the North American Indians, and perhaps elsewhere among savages, the idea seemed to prevail that evil spirits are annoyed by that which seems good to man. Doubtless originally the pneumonia and the ghost of dead ancestors and the soul were all confounded as the agents, by the pernicious activity of which bodily discord arose, yet the Egyptians, at least when they become historical, have lost this confusion and have already differentiated between the pneumonia and the various souls, the Ba and the Ka. One of von Oefele's pet ideas is that the pneumonia

theory comes from Egypt and the blood or humoral theory of disease from Asia Minor, but this seems essentially unfounded.

Various accidents of religious or medical belief may in one place or the other have brought each into prominence, such as the blood rites of early Asiatic creeds and the cult of the soul in Egypt, but these underlying ideas of the nature of life were evidently coeval with the birth of thought itself. It is going to extremes to force a connection as von Oefele does between the superstitions and taboos in regard to revealing or uttering the name of a person because it is "a part of his pneuma." To assert that such things never had any affiliation is, of course, impossible, because it is impossible to follow the ramifications of even the recorded threads in the fabric of primitive thought, but one has to be obsessed with an idea to see a reminder of it in every flower that blooms along the path of the progress of human thought. However, von Oefele shows, as is so often the case in his writings, true insight into ancient psychology when he draws attention to the preponderance of drugs in the pharmacopoeias of Egypt and Babylon many of which have been abandoned as medical knowledge moved westward, whose chief physiological action is a carminative one. Garlic, onions, the resinous exudates of the *Umbelliferae*, and a very formidable list of similar flatus expellers, as he calls them, can be culled from the Egyptian and Assyrian lists of medicinal plants in use by these old civilizations. Von Oefele declares (54) the pneuma is not directly mentioned in the Papyrus Ebers until the latter part, when the remarkable account of the anatomy of the human body is given, but ideas depending on it are often capable of detection. There is a prescription for medication by inhalation in column XV; there is unusual stress laid upon the administration of purgatives, usually made up with abundant carminatives and antacids, and he thinks the priests were afraid to accept the idea without convincing the people it was the word of God hid in a book beneath the feet of a statue,<sup>1</sup> but in a land where the hand of authority crushed all human initiative this might have been said about almost any unusual statement. Whether or not it is possible to trace back the pneuma theory to the first dynasty I cannot pretend to say, so far as it depends on this remarkable idea of anatomy being of such antiquity, but there is every probability that the germ of the idea existed among primitive Egyptians as among other primitive people, and while deprecating the practice of accepting as proof the slight indications this gifted archæologist advances as such, we must not lose sight of the extreme probability that the concept of anatomy of the Papyrus Ebers was due to their acceptance of the pneuma theory rather than any support they found for the latter in anatomical observations in the first place. We have read a report of the Indians of the northwest coast of America blowing in the patient's rectum. A similar idea reads in translation in the Papyrus Ebers (Col. cii). "When the heart is suffering and is beside itself, the breath

through the hollow hand openings of the heb-ker-priest has an effect on it; it penetrates into the large gut, in such fashion that the heart advances and is lost in the sickness." I do not know how to explain the meaning of this, but the mind reverts to the queer therapy we have learned of in the reports of the medicine of primitive man. Still more confused is the rendering of the next sentence, but the expression stands forth of the blowing cure, which "is the breath of the opening of the hollow hand of the priest which the heart permits to enter into its vessels." It is possible that in the early Hindu medicine of the Atharva Veda (55) a charm against diarrhea (I.2. and II-9.) broaches the same idea. "He blows upon the rectum of the patient," for breath and life and soul were much the same also in early India. From Hearne's Travels Bancroft (56) gets his authority for the assertion that among the North American Indians of the northwest coast "for inward complaints the doctors blow zealously into the rectum or adjacent parts."

In this confusion, however, we see the spark of the idea of the air which the vascular system was supposed to contain, which conception transmitted to the Greeks gave rise to the word artery. The theory of the pneuma in Egypt, founded on common observation, must have preceded any knowledge of anatomy in the usual sense of that term. Indeed, it seems to me the very existence of such a conception of anatomy is best explained by an attempt to open a way to all flesh for this life giving element—the pneuma—through the exercise of the imagination applied to anatomical description.

Von Oefele has an ingenious reference to the well known passages in the Papyrus Ebers about the breath of life going in the right ear and the breath of death going in the left ear. Alcmaeon, the early Greek poet philosopher, refers to goats breathing through their ears, and this occasionally appears even in post Renaissance time in European medical literature. Von Oefele says (57): "The serviceable pneuma, as appreciated in its vital attributes, we speak of chemically as the oxygenated air; it is breathed in through the nose, trachea, and arteries (in the Egyptian view), and is carried by them to the organs. In reverse fashion, the useless air, marked by its poisonous properties, containing, as we say chemically, carbonic oxide, is carried out of the body through the ear. In the theory here considered the variation occurs that the ear is the beginning or end of the trachea." The mouth and anus thus have only one opening each, while for the nose, as for the ears, there are two openings—one each for the ingoing and the outgoing current being necessary. As a matter of fact, I know no reason to believe that this in reality was the conception of Egyptian anatomists, but it will serve at least to embody a possible parallel containing a germ of physiological proof to lay alongside of the queer conception of the right and left ears, and their functions as related to the breath of life and death. In a general way, Ebers himself, though disposed to demur (58) at some of von Oefele's translation, is inclined to accept his view that the essentials of the Egyptian thought later appeared in Hippocratic writings.

<sup>1</sup> This is declared to have been the origin of a part at least of the papyrus, and it is stated in it (Col. ciii) that this happened during the reign of the fifth king of the first dynasty—far enough back for antiquity to lend its authority of wonder and awe.



As for the Mesopotamians, in the very earliest of all epics, the Babylonian poem of Gilgamesh, it is apparent that the conception of the soul as a "pneumatic" thing came down to them from more primitive folk. We find (59) Nergal quickly opening up a hole in the earth in order to let out the spirit of Engidus, which rushed forth like a gust of wind. It is possible that the Hebrews brought their pneumatic concepts from Egypt, but it is becoming daily more evident that much of the Old Testament, especially the creation and the deluge stories, are Babylonian. When "the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul" (Gen. 2:7), he became one on a Mesopotamian model, where, with moisture added, they made mighty things out of the dust of the ground—out of the sun dried bricks. This conception of the "breath of life" repeatedly recurs in the early chapters of Genesis, concerned with the creation. "All flesh, wherein is the breath of life" (Gen. 6:17) is to be destroyed by the Flood—admittedly a Mesopotamian catastrophe—in which "all in whose nostrils was the breath of life" (Gen. 7:22) died, while all who "went in unto Noah, into the ark, two and two, of all flesh wherein is the breath of life," were saved. Preuss (60) declares that when they did not breathe through their noses it was a sign according to the Talmud of their forsaken idolatrous cult. Much of evil and of good import was existent among the Hebrews in their omens as to sneezing, which has its counterpart among all peoples, but which is founded on the belief that within exists a windy devil who departs or betrays his presence in the act of sneezing.

Returning to the strikingly frequent reference in Genesis to the "breath of life," this dwelling on a catch phrase is significant enough of the conception of those who in Babylon learned of the story of the Flood and copied it closely in the Hebraic records, but von Oefele, who ascribed an Egyptian origin to the pneumatic theory of the Greeks, rather stretches things when he gets, in Genesis 8:1, a glimpse (61) of the same idea because "God made a wind to pass over the earth," to dry up the water. Aside from the remarkably inefficient way chosen to assuage the waters, one fails, I think, to find plausibility in connecting this with pneumatic theories of life and the soul. He admits that according to the testimony to which I have alluded the Jahwists must have been "conscious adherents of the pneumatic school," in which we have every reason to concur except it would seem more likely to be accurate if one conjectured they were *unconscious* adherents to a belief, yet inarticulate, which subsequently bloomed into pneumatic doctrine. There are references in such scanty accounts as have come down to us from Babylonian medicine of wind acting as an evil agent or spirit in the intestines. In Küchler's (62) translation of a Babylonian medical treatise there are mentioned symptoms referable to disturbances of the gastrointestinal tract, and emphasis is laid on the gaseous eructations. There are other passages which might easily be given a "pneumatic" interpretation.

Carminatives are not as frequent in the pharmacopoeia of Babylon as in that of Egypt, but they are

by no means absent, and, as in Egypt, the onion was frequently used as a drug by Semitic people generally in gastrointestinal disturbances. Küchler conjectures that in one place internal fever is ascribed to the action of the wind. In another "a wind moves around in his rectum," and to them it may have been a demon or a spirit, as it was doubtless in consonance with this idea that pain is referred to as "when one's insides are devouring one," for this we know is an idea of primitive pathology. In the Babylonian account of the creation occurs the story of the killing of Tiamat, the mother of the earth and of the sea, by Bel-Marduk. The passage in the translation furnished by Harper (63) reads as follows:

"To the fight they rushed, advanced to the battle.

Bel spread out his net and inclosed her.

The evil wind, following him, he let loose against her;

And when Tiamat opened her mouth to swallow (the evil wind),

Marduk quickly drove in the evil wind, ere she could shut her lips.

The terrible winds inflated her stomach;

She lost her reason; gasping, still wider she opened her mouth."

It would seem from this that the wind or air is here regarded as of evil influence, and perhaps from this passage we may infer that at the time of the composition of the story the theory of the pneumatists was in full force. One wonders if the passage found among the fragments of verse of Empedocles (64) has not a Mesopotamian origin, in which he attributes the existence of the abdominal cavity, and that of the intestines, to the sudden and rapid passage of water through the body at the moment of its formation, and the external openings of the nose due to a current of air which was established from the interior to the exterior.

Notwithstanding the community of belief and practice on the continent of Africa between the ancient Egyptian civilization and the culture of the wild tribes of the interior, the identification of many of these with similar phenomena among primitive men in other world divisions much invalidates,<sup>2</sup> if it does not annihilate, the assumption that all such things in the wild African cults are but degraded transplants from the Nile. The hypothesis that these things were present with the neolithic Egyptians, just as they were present and are still largely present with central or western African tribes, as representing stages of culture, seems, in view of all the facts, the more attractive theory. There are certain developments of these fundamental beliefs which obtained in ancient Egypt and in other times and other places which do not obtain markedly among modern African savages. The belief in the fertilizing properties of the blood is doubtless due to the "life" it holds, especially human blood. Much in sacrificial ritual is due to this, even human sacrifice, but this is chiefly marked in people who have reached a more or less highly developed agricultural stage. This is not strongly marked in wild Africa. Many other ramifications we have had to avoid, even in the primitive life which we have thus

<sup>2</sup> I cannot discuss here the ardent advocacy of Elliott Smith (*Migrations of Early Culture*, Manchester University Press, 1915) for the view that in very remote times Egyptian culture spread all over the world, even to America.

far discussed. The custom of blood offering to divinities of fertility was only one of the offshoots of the fundamental idea of the blood as the life.

If we are to judge from the Papyrus Ebers, the use of blood in Egyptian prescriptions was well known. That it may have been of Asiatic origin, it is impossible to deny, but the prevalence of the use of blood among the African tribes and their religious ideas in regard to it might also be argued as evidence of an African origin for it. In the LXIII column of the Papyrus Ebers, in the remedies for eye disease occurs the transcription of a formula which is said to have been derived from a Senite out of Byblos, which was a city of Phoenicia, tributary to Assyria at one time. In that particular prescription there is no mention of blood, but in two which almost immediately follow, both for trichiasis, lizards' blood, the blood of bats, of a cow, an ass, a pig, a dog, and a deer are prescribed. It might be claimed, of course, that these receipts are also of Asiatic origin. Elsewhere the use of worm's blood is recommended as a local application to draw a splinter out of the flesh. One or two prescriptions are recommended against the "devouring action of the blood" within the body, which may well be likened to the pathological ideas entertained of demons gnawing at the vitals in the concepts frequently noted in primitive medicine. Another local application is a salve entirely composed of blood drawn from a dove, a goose, a swallow, and an eagle. The polyvalent nature of most of these prescriptions would indicate the blood of each participant as the carrier of some quality with which it was desirable to anoint the patient, so that either the sum total or perhaps one alone, might chance to contain the needed quality of medication—some chance antibody like that blindly sought in our serological therapy, the neohumoral theory of the twentieth century. It has been asserted that the Egyptian authors, to hide the identity of the drugs they used, spoke of them under the name of the excrement and blood of different animals. Whatever the origin of the therapeutic principle, the Papyrus Ebers alone sufficiently exemplifies the idea of the existence of blood or of humoral theories in Egypt. Von Oefele (65) intimates that the Egyptians, in the processes of embalming the dead body found the arteries empty of blood. The Asiatics lacking this practice could not have observed it. From such a surmise perhaps little can be expected in the way of argument, yet, notwithstanding the appearances, in very many places, of evidences of the existence of a humoral pathology among the Egyptians, general acquaintance with such of Mesopotamia and Egyptian medicine as has come down to us through the ages probably justifies his remark, except in so far as it intimates a conscious recognition of the theories, formulated by the Greeks, in the ancient Egyptian practitioners of medicine. "The Asiatic was a haematist and recognized the breathing, but gave to it a secondary importance. The Egyptian was a pneumatist, and recognized the importance of the blood, but in a degree secondary to the significance of the breathing." In the Ebers Papyrus all the excretions of the human body were used in prescriptions for vari-

ous purposes. Bile is also frequently mentioned in connection with the blood, but so is the mucus, fat, and oil of animals. It is quite impossible to detect the clean cut theories and their application in therapy in the way we find them in the later writings of the Greeks and Romans. The writings of Plutarch and Pliny, versed as their authors were in the doctrines of Greek medicine, cannot but be misleading when their remarks are applied to the earlier eras of Egyptian science. The former (66) gives us an insight, but a distorted one, into the thoughts of the Egyptians, stimulated by the phenomena of the recurring fructifying floods of the Nile and exposed in their religious ideas as to Osiris.

It is difficult to understand the rise of these humoral ideas without a consideration of homeopathic magic. It is clearly seen that in the blood and secretions of different animals, or of different parts of the human animal, primitive men and men of the earliest civilizations believed there are certain qualities which can be transmitted to others with them. There is probably no other aspect of the humoral pathology which so fundamentally distinguishes it for us from the theory of the *pneuma* at their origins. Each belonged to a different category of thought, and they have continued to carry different sequences of concept and practice to this day. The *pneuma* itself was the life element, but with the idea that "blood is the life" is always the inherent implication that it carries certain attributes, as fetich objects, for the most part, do. It is not the stone or stick or claw itself. It is the power which resides in it. The blood, but not the *pneuma*, belongs to this fetich order of thought. In a way, perhaps, this distinction connotes some element of differentiation in modern thought, overshadowed as it now is by our scientific complexity of knowledge in biochemistry.

In Assyria, and probably in the cults derived from it, there probably was an affiliation between the blood and the liver and the rites of divination as practised by the priest and augurs. Jastrow (67) says: "The reason why the liver should have been selected as the seat of life is not hard to discover. Blood was naturally, and, indeed, by all peoples, identified with life; and the liver, being a noticeably bloody organ, containing about one sixth of the blood in the human body, and in the case of some animals even more than one sixth, was not unnaturally regarded as the source of the blood, whence it was distributed throughout the body." Since hepatoscopy arose at a comparatively late date in the religious divinatory rites of the Babylonians, and since we have indubitable evidence of the prevalence of the conception of the blood as the life among the most primitive people, there seems little reason to doubt that the idea of divine purpose manifested in the aspects of the liver as interpreted by the priests must have arisen from the necessity of regarding it as the "mother of the blood," the home and the active seat of that divine principle which is the direct gift of the gods. It therefore furnishes a parallel for the rise of the remarkable conception the Egyptians had of the human body as an organism channeled with conduits to lead the *pneuma* to all its parts. This parallel I shall attempt



to develop more in detail elsewhere. Hepatoscopy, then, and the astonishing Egyptian idea of anatomy arose as theoretical deductions from the misinterpreted phenomena of the breath and the blood. Von Oefele (68) declares that throughout antiquity it was supposed dreams are derived from the blood, and possibly this connection with the liver as a blood organ may have given them the prophetic significance which has been ascribed to them by at least some orders of intelligence in every age. It is evidently from its most prolific source in Babylonian civilization that the Talmud (69) draws its belief that the liver is the origin of the blood and the seat of anger and of envy. In view of the fact that the word for gall, which is later associated with the liver as the seat of envy, in the language of the Mishna has the meaning of bitter, and since this is also affiliated with the conception of poison, we may imagine that primarily in the rise of the humoral pathology the etiology of disease was associated in the same way with these ideas, especially in an etiological way with gall as a poison, and with envy as the motive for the use of black magic in causing disease.

There is a possible clue to the existence of a latent humoral doctrine of which little or nothing is formulated in the Talmud, in the saying that the blood, or rather a plethora of it, is the cause of all disease. Dropsy was supposed by Talmudistic writers to be due to a disturbed relationship between the blood and water, the latter entering largely into the theory of Babylonian medicine. It is plethora the Midrash describes as the cause of leprosy. Blood and water are in equal parts in the human body. In sickness, when water is the more abundant, the patient naturally becomes dropsical, but when he has too much blood he becomes leprous. "According to R. Jochanan there are no lepers in Babylon, because men eat mangold there, drink beer, and bathe in the water of the Euphrates."

As we have seen for the pneuma in Genesis, the belief that "the blood is the life" is strongly expressed in Leviticus 17:10 ff. Jirku (70), having drawn attention to this belief of the Hebrews, goes on to say that not only according to Babylonian, but according to Arabian belief, demons nourish themselves on the blood of their victims, and hence he surmises that the blood sacrifice in the Hebraic ritual was for the purpose of satiating the demons which were seeking the life blood of the worshippers. Something of this kind is probably at the bottom of the conception, entertained by many primitive people, that invisible powers are gratified or mollified by the shedding of blood, which usually at first is human blood, that of animals being later substituted, as for the blood of Isaac that of a ram (Genesis 22:13). This seems a phase frequently, if not always, traversed in the evolution of religions.

Von Oefele (71) believes it probable that Egyptian ideas of the pneuma and Asiatic ideas of the blood became associated along routes of intercourse, one of which lay through Sardis, a city of Lydia, which later furnished its doctrines to the old Greek schools of medicine at Cuidos and Cos and Croton. He refers to a London papyrus, No. 137, mention-

ing a Greek physician by the name of Thrasymachos, living before the time of Aristotle in Sardis, contemporary with Hippocrates; he is said to have left behind him the theory of the blood as the "cause of disease." From its metamorphoses diseases arise. These changes result either from an excess of cold or an excess of heat. The results of the metamorphosis is mucus, bile, pus. The blood is a simple body, while mucus, bile, and pus in their own complexity of structure bring forth many varieties of disease capable of differentiation; black bile taking the place of pus would cause the passage to conform to the later humoral pathology. Deixippus, the Coan physician, is said by the papyrus to have taught the same, and he was a pupil of Hippocrates. Thus von Oefele sees a connection which may have existed between Hippocratic and Lydian medicine. Doubtless there were many points of contact; in fact, Babylonian medical thought, like Egyptian medical thought, often flowed unobstructed for generations in the channels of commercial and political communication between the civilizations that were perishing and the one yet to arise, but we are hardly justified in accepting the view that a humoral idea and a pneuma idea arose separately in Asia and in Africa. Frothingham (72) has shown that the Phoenicians, at least, represented the origin of life on a tablet as due not only to moisture, but as inherent in the breath. Presumably von Oefele would see in this an ocular demonstration of the blending of the two ideas.

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## CONGENITAL SYPHILIS AND THE DOCTOR.\*

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When a child is born infected with syphilis, the condition is called congenital syphilis. The doctor who is attending such a child is confronted with a clinical and social problem of grave importance. Not only is the patient to be treated, but the welfare of the community at large must be taken into consideration. The loss of an infant is in itself a deplorable affair, but to allow an unrecognized and consequently an untreated congenital syphilitic to become a burden and a menace to the social body is still worse. The cause of syphilis is the *Spirochæta pallida*. The infant becomes infected through one or both parents. The positive Wassermann reaction confirms the diagnosis, but a negative result does not exclude the existence of syphilis; hence a clinical diagnosis is all important in these cases. It would be a very easy matter to recognize the disease if all the symptoms were present, but unfortunately, they are only too often masked. According to Ernst Moro (1), in the first two or three weeks of life coryza, pemphigus and an enlarged spleen constitute the three cardinal symptoms. The other symptoms are albuminuria, osteochondritis and enlarged liver. But often, most of these symptoms are not very well defined or are absent altogether. It must also be borne in mind that other diseases may produce similar appearances; e. g., coryza may be due to an influenza infection. The spleen may be enlarged and still not be felt below the border of the ribs. And not all eruptions are syphilitic pemphigus. An eruption on the palms and soles in the newborn is considered by Moro an indisputable indication of syphilis.

In syphilis of a later period, Hutchinson's triad, keratitis, deafness, and notched teeth, are positive diagnostic points, and yet there are syphilitic children who fail to exhibit these important symptoms. Other symptoms are the saddle nose, claimed to be the result of the early coryza, syphilitic dactylitis, paronychialetica, alopecia which is frontal in contradistinction to occipital, alopecia of rickets, and a peculiar glossy condition of the cutaneous surface of the solar and palmar regions. Hochsinger (2) insists that mucocutaneous scars around lips and anus are the best proof of congenital syphilis.

Osteochondritis can be seen on the x ray plate very clearly, but it is not always available in private practice. According to Kassowitz (3), about one third of congenital syphilitics die before birth,

and about another third perish during the first six months of life. Syphilitic infants are more prone to develop rickets and have in general a low resistant power.

Very few other diseases cause such a large mortality, and it is the province of the doctor to save as many of the patients as possible. There is a campaign on foot to save one hundred thousand more children in the United States during the next year. The position of the doctor is a very delicate one in these cases of syphilis, as the laity know that they are suspected of being diseased whenever they are asked to submit to a blood test, and the doctor's position may be an unpleasant one if a negative diagnosis is returned. There is, of course, less trouble with an intelligent than with an ignorant family, but the latter class, unfortunately, predominates.

Proper care of the parents will do much to save many children who would otherwise be born infected with syphilis. The shorter the period which has elapsed from the time when the parents contracted syphilis and the time when conception took place, the greater its virulence in the children. This explains the death of the firstborn in rotation and the possibility of an apparently healthy child born subsequently to untreated syphilitic parents, as in time the virulence of the disease weakens.

During the fifteenth century there were severe epidemics of syphilis in Europe which have never been repeated. This is explained by the theory of a certain degree of immunity transmitted by successive generations to their descendants. Whenever the syphilitic virus strikes virgin soil, as for instance, the negro race (which has not yet acquired immunity), it spreads more rapidly and in a more virulent form. But the transmitted immunity cannot last forever, and a time might come when a community could again become susceptible. The early settlers of the United States, by early marriages and a puritanic mode of life, could be cited as an example of freedom from syphilis. Another instance is the orthodox Jew. As a persecuted race the Jews must have been infected with syphilis during the crusades, if Astruc (4) was correct in his almost cynical reference to the fourteenth century: "From the Pope of Rome on this throne to the lowest scullion in Christendom, all were infected with syphilis." But whenever Jews were allowed to exist without violent attacks upon them from their charitable protectors, their leaders inaugurated a very strict morality, paying special attention to sexual cleanliness, which in time led to an almost complete eradication of lues in their midst. Only recently, some Jewish doctors were convinced that it was superfluous to look for syphilis among their Jewish patients; they forgot that times and morals changed. They may have lost their immunity and may furnish a very rich soil for specific infection. It is certainly the doctor's province to warn the people, whether Jew or Puritan, of the impending danger, which increases with each successive generation.

The obstetrician enjoys the greatest opportunity for observing the newborn, but as a rule, he is the least interested in babies, and may overlook the early symptoms of congenital syphilis. These neg-

\*Read before the Brooklyn Pediatric Society, May 22, 1918.



lected cases swell the number of children who afterwards exhibit signs of latent syphilis.

Unless the physician will pay attention to the finest details, syphilis can be easily mistaken for any other disease. Without a careful history, a diagnosis is often impossible. It seems a better policy to inquire how many times the mother was pregnant, and then to find out how many living children she has; the difference, if any, may be due to abortions, premature births, or loss of babies in their early infancy. As a rule, the firstborn are more liable to succumb, since with them there is the shortest interval to the time of the infection in the parents. If there are any stigmata, as a saddle nose, snuffles, pale, waxy skin, failure to properly develop, and in older infants and children, rhagades and a hard and enlarged liver in connection with a suspicious history, a positive diagnosis of congenital syphilis is correct. The greatest difficulty encountered in these cases is with a negative history or in a case of a child from the first pregnancy. In hospital cases a Wassermann test on father, mother, and baby may be of assistance, and as a rule, it is not always difficult to induce the parents to submit to a blood test; but in private practice it is not always practicable.

Whenever the mother appeared healthy looking and still complained that the baby had not gained in weight during the early nursing period, congenital syphilis was often the underlying cause. The mother's system, during the time she was pregnant with a syphilitic fetus, was undergoing a change which affected the milk either in quality, quantity, or in both. As soon as these babies were put on artificial feeding, they improved considerably. Again it must be repeated that the social obligation of the doctor to the community forbids allowing the use of a wet nurse for even a suspected case of congenital syphilis for fear of spreading the disease. Though it is generally agreed that there may be fever in connection with congenital syphilis, it is always added that the fever is never high. It will be illustrated by actual cases, that high fever without a definite cause may be the only symptom of congenital syphilis. The two points just mentioned, 1, the deficient nutritive power of the milk in a healthy looking mother, and 2, high fever in the infant without cause, may lead to a correct diagnosis and restore the child to an almost normal condition by proper treatment. The high temperature may possibly be due to a disturbance of the heat centre. Prolonged headaches in older children may well be looked upon with suspicion.

CASES I AND II.—Wester C., fourteen years old, and Tony C., twelve years old, brothers, complained of pain in the head, not relieved by attention to digestive organs and corrected diet. The Wassermann test was positive. Later on the mother submitted to the same test with positive findings; the father could not be seen. The history in these two cases did not exactly clear up the question whether the infection was congenital or acquired, as there were no other tangible signs to be found.

The following two case reports will serve as an illustration of high specific fever:

CASE III.—B. R., white, female, born in the United States, aged four years. The family history as given by the mother was negative, as was the previous history. Present status: A well nourished child taken ill during the previous night with fever which did not diminish after

mother had administered a cathartic. Temperature 104° F., pulse 120, respirations 28. A possible infection of gripe was suggested and appropriate treatment ordered. The next day the temperature reached 105° F. On the third day, a consultant assured the mother that the gripe would turn, within a day or two, into pneumonia. He pointed out the right upper lobe as the seat of the process. Forty-eight hours after the consultation the patient's father confessed to the doctor that he had been treated for syphilis before marriage and cured. As there were no symptoms of pneumonia, it was decided to give the child a test treatment with mercury. This course met with gratifying results. The child is at present nine years old and seems perfectly well.

CASE IV.—Patient of Dr. B., who wanted a lumbar puncture done on his patient for diagnostic purposes, as he suspected tuberculous meningitis. The fluid was clear and came under high pressure. In discussing the case with the doctor, the following points were obtained: Patient, Italian, four years old, was one of seven living children. Family history, as far as known, was good. The child was sick for a few days and under the physician's care for three days. The doctor found nothing definite on repeated examination, except a fluctuating temperature of 103° F. to 105° F., and an increasing listlessness approaching stupor. With the permission of the attending physician, the mother was closely questioned with regard to the number of pregnancies. Finally the fact was elicited that two pregnancies terminated in spontaneous abortions. The suggestion to treat the child with mercury and iodides for a few days was ventured. The spinal fluid proved to be sterile. While patient was still under treatment, another physician was consulted, who, according to the mother's statement, promptly informed the family that the child would surely die, because he was sick with consumption in the head. On the fourth day of treatment child looked brighter, his temperature fell, and he sat up in bed asking for food. The last time the physician heard of him there was apparently nothing the matter with the child.

CASE V.—S. S., male, white, born in the United States, aged fourteen months. Family history as obtained, negative. Previous history: Firstborn from first pregnancy. Instrumental delivery. Nursed by an apparently healthy mother for the first five months, but did not gain. Has had frequent attacks of cold in head, which produced difficulty in nasal breathing. By the advice of a Manhattan specialist in children's diseases, the mother placed the child on artificial feeding, with good results. First seen on January 12, 1915. Baby was sick with a severe cold, and as the family physician could not restore him to health for three consecutive days, a change in doctors was instituted. On examination, a severe coryza was visible, child looked dull, temperature was 103.5° F., pulse was rapid, respirations were increased in number. It was difficult to count, as child struggled a good deal. Chest was negative, throat congested. A diagnosis of gripe was made. January 13th, same condition held with a temperature of 104° F.; January 14th, temperature 105° F. A nose and throat specialist was called in, who excluded ear trouble, and, as the diphtheria culture from the secretion of the nose was negative, he predicted a retropharyngeal abscess within forty-eight hours. No abscess was formed.

The evident disparity in the ages of the patient's parents (the father looked a man over forty, while the mother appeared still in the early twenties), coupled with the history of deficiency in the quality of the milk during the early nursing period, frequent attacks of coryza and high fever, led to a tentative diagnosis of congenital syphilis. The father was cautiously informed of the suspicion. He confessed that fifteen years ago he was treated for a skin eruption which yielded to specific treatment. The child began to improve after the third inunction with mercury, and before a week was over was well. Since then, whenever this child has a recrudescence of high fever, no other remedy acts except mercury. A second child was born in the same family, and the mother's milk again was of no benefit to the nursing; cow's milk was used. There are so far no visible signs of infection in the child, which is four months old.

All these cases emphasize the importance of a thorough acquaintance with the patient's parents. In one case, the occupation of the father gave a clue

to the real trouble in the infant; the man was a traveling salesman (the occupation, a predisposing cause to specific infection). The difficulty in diagnosis in some cases may sometimes lead to very unpleasant consequences, as will be seen from the last case report.

Case VI.—Allen G., white, male, born in the United States, aged fourteen months. Family and previous history negative. Present history: In September, 1916, during the poliomyelitis epidemic, Allen became ill with a high fever and dull look. The doctor in attendance, a near relative, called in consultation a pediatrician from Manhattan, who suggested the removal of the patient to a general hospital where he could be kept under observation. His advice was followed. At the hospital the child was seen by a professor on nervous diseases in one of the leading universities of Manhattan. His diagnosis after a lumbar puncture had been made was poliomyelitis, and the patient was removed promptly to the Kingston Avenue Hospital. There another lumbar puncture was made, which came back what was then considered positive. A slight right facial paralysis could be noticed if looked for carefully, the intercostal muscles seemed to be stationary during respirations; there were no teeth. Large, dry râles soon developed all over the chest and the temperature was steady at 104° F., with very insignificant remissions. The skin of the blonde little patient was of a waxy pale color and there always remained an impression that the child was either bald headed or was endowed by nature with a very large forehead. For almost three weeks there was no change to be noticed, except that at times there was profuse perspiration. At last it was decided to put the patient on mercury. The success of the treatment was noticed on the fourth day, when all the symptoms began to show an improvement. This child underwent a thorough course of treatment for a few weeks and was discharged from the hospital at the end of seven weeks, in good condition. Since then, the child has not been ill, walks, talks, and has all his teeth, according to the information obtained from the doctor relative of the patient.

When the doctor has made a correct diagnosis and helped his patient to get well, he may consider his task accomplished, but from a sense of duty he must go deeper into the subject and take into consideration the future children which may be born to the syphilitic parents, and he must also have in mind the welfare of the community at large. The parents should be strongly urged to undergo treatment and to refrain from further procreation meanwhile, even if such advice does, to a certain extent, come in conflict with the religious and even civil interpretation of the law. The physician should try to disseminate, in his social circle, as much knowledge on the subject as possible, especially among the younger men. There are very few degenerates who would jeopardize the future generation for the sake of their own temporary sexual gratification. Wide publicity on the subject seems to be the best plan. Nineteen eighteen is intended to be the child saving year, and the pediatric societies should have special committees for the purpose of spreading information on congenital syphilis to the public through the general press, lectures, and other usual means. Above all, one thing is certain, the sooner the press frees itself from false and detrimental prudery and calls things by their own names, the better for our social structure.

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## THE PREVENTIVE TREATMENT OF BONE AND JOINT MALADIES.

BY FREDERICK PRIDHAM,  
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Infections of bones, bone marrow, and joints usually go on to a slow termination, relapse, and have a great tendency to recur time and again. The predisposing origins of the infection are not usually discoverable.

True, the predisposing factors may be some injury or accident, exposure to cold and dampness, excessive or poor food, excesses of effort, work, play, or the emotions; but be these what they may, the fact remains that bacteria or infectious microbes are the real mischief makers after the affection is well under way.

In order to prevent such exposures, no heavy underwear should be worn next to the skin, and the victim should exercise great care to avoid exposure to cold and wet. He should be careful to guard against getting chilled, especially in the summer or autumn months. Woolen or flannel clothing worn next to the skin is unnecessary. Light weight clothing should be worn in summer and in winter, the texture and weight of the clothing, however, adapted to the individual and the character of his occupation. In a business confining persons in heated rooms the entire day they are in no danger of exposure to extreme cold or sudden changes of weather in merely going to and from work. They do not require as heavy flannels as does the laboring man who is more exposed to the inclement weather. Those who have suffered from fever are not fitted to perform heavy manual labor. Laborers, farmers, and servants are more susceptible than those engaged in less fatiguing occupations.

Persons who have had recurring attacks should live, if possible, in a dry, sunlit, warm, equable climate. They should make a practice of taking a cold sponge or tub bath every morning. There should be plenty of daily exercise and good food, without excess. Milk, cream, and fatty substances generally may be used freely. Sweets and pastry should be taken in small quantities only. The diet should consist principally of vegetables and fruit, fresh and cooked. Experience justifies the recommendation to abstain from the use of both alcohol and tobacco.

The hygienic and sanitary surroundings of bone infected subjects should be as perfect as possible and the home located preferably in the country or at the outskirts of the town. The house should be sunny and well ventilated and have a concrete basement to prevent the entry of dirty air.

The local point of infection in many is in the throat, more often in the tonsils. It is well known that bone infections are frequently preceded and accompanied by tonsillitis. It is advisable, therefore, that diseased tonsils be removed. All the teeth should be attended to, and kept clean, and the mouth and nose should be kept in proper condition. X ray pictures of the roots of



the teeth are also advisable. Any stomach disorders should be remedied and constipation guarded against. The heart of a patient subject to bone affections should be carefully examined whether there has been previous endocarditis or not.

Formerly, the main treatment has been to place the body at rest so that the minimum amount of strain would be thrown upon the bones most likely to be affected; to neutralize the toxin or to kill the specific coccus circulating in the body; to reduce fever and relieve the painful arthritis by means of general and local remedies; to guard against cardiac inflammation, to sustain the strength of the patient by suitable food, to control the pyrexia; to guard against relapses, to restore the general bodily vigor, and prevent further attacks.

At the first warning of the advent of osteomyelitis or gangrene the patient is put to bed and kept there until he is well on the road to recovery. The bedroom is well ventilated and in the warmest and most sheltered part of the house. The temperature of the room is kept between sixty and sixty-five degrees.

Arrangements are then made so that after the patient is put to bed he need not be moved until convalescence is well established, save to arrange or change the bed clothing; this should consist of light material, preferably woolen blankets. A wire spring mattress and hair mattress are preferable to any other kind. Ordinarily the patient should be between blankets, but in some the weight of the blankets is distressing to the invalid. The sheet may be substituted for the outer covering, or, better yet, the upper blanket kept off the body by means of improvised supports made of barrel hoops or wires placed over the body and upon which the bed clothing rests. The sleeping suit or nightgown should be of flannel, and on account of the profuse perspiration will require to be frequently changed; it should therefore be slit in front and behind, the sleeves slit along their outer margins, and kept in place by being laced with tape. A garment so arranged can be removed easily with a minimum of disturbance and discomfort.

The affected joints are protected and supported by pillows, air pillows, and blankets. Pressure is minimized by the use of air or water pillows and every precaution is taken to prevent bedsores. The body and limbs should be sponged daily with hot water to which a little vinegar has been added, followed by warm alcohol. Care should be taken to disturb the painful joints as little as possible. To minimize the amount of movement the patient uses the bed pan.

Attendants and friends must exercise great care while in the sick room to disturb the invalid as little as possible by walking across the floor, closing doors, or doing anything which by jarring the bed would give him pain. Ordinarily the temperature is taken three times a day, and then in the locality which would occasion the least disturbance to the patient.

The diet from the onset and until a few days

after the subsidence of the fever consists principally of milk, although other fluids such as buttermilk, koumis, broths, soups, fruit juices, lemonade, limeade, and orangeade, cold carbonated waters, rice water, and barley water may be given. Water ices and ice cream may also be given. After the febrile stage has passed and with the return of the appetite a more liberal diet is given, the quantity and kind of food depending largely upon the patient's appetite. If there is much anemia and emaciation, a generous diet including meats is allowed.

In my opinion, the serum and vaccine treatment is yet in the experimental stage. After having used the widely advertised vaccines quite extensively both in private and hospital practice I have discarded them. Another reason, however, for discontinuing this method was the unusually large number of stiff joints following its use. I constantly find patients with ankylosed joints, showing many signs of beginning arthritis deformans, giving a history of recent infection.

The newest and most successful treatment of osteomyelitis, gangrene, arthritis, and the various infections of the bones and joints is much simpler and one hundred per cent. more effective than any of these old time, troublesome, and uncertain methods. Indeed, scores of victims of recurrent bone diseases operated upon repeatedly by America's most conscientious and ablest surgeons without a cure, and given up almost as incurable, have been cured by us and sent away capable of doing a man's work in the world and with tripled earning capacity.

This newly discovered specific applied locally by osmosis and first chemically combined by us has never been in medical use. Indeed, osmotic pressure, spoken of by the late Professor Morse, of Johns Hopkins University, as a great boon unused by doctors, has, except in the laughed at homemade flaxseed poultice, been ignored by medical men and surgeons and is scoffed at by Doctor Osler.

Certain mineral salts are necessary to physical stability and strength. They are as much fertilizers to your animal fabric as lime and phosphates, potash and nitre are to that agricultural fabric, the soil. We have succeeded in making a double boronitro salt synthetically which seems to take this place in man. After nearly nine years of experimental work and investigations upon seventy patients we feel safe in recommending our method and material. It is better than any known method and has 100 per cent. cures to its credit. Many chronic and almost incurable invasions of bones, joints, cartilages, and tendons have been successfully treated by this new mineral method.

The principle of our triumph over these diseases should be well known to chemists. It is curious that no physician or surgeon ever combined this double nitrooxide. Like many other great discoveries, its origin is incorporated to destroy and oxidize all diseased, decomposed, and useless flesh, bacteria, and matter. Meanwhile, the diseased part granulates or heals from the ground up.

and all of the ill, torn, injured, and infected marrow, bone, muscle, and flesh are simultaneously removed.

So extraordinary have been the results of the application of this new physical principle to bone diseases that victims of bone infections have come to Baltimore to be cured from Chicago, the centre of medical endeavor of the West. When this mineral osmosis method has come into general use on the battlefields and in the hospitals and institutions all over the world, it is hoped that such chronic bone infections as tuberculosis and osteomyelitis will be greatly diminished, if not entirely exterminated. We are certain that it will eliminate most bone and joint affections, and have offered our services and our method to the Government.

2506 EUTAW PLACE.

### THE THYROID GLAND.

#### *Its Rôle in Development and Disease.*

BY L. J. SIMONTON, M. D.,  
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The longer I practise medicine the more deeply am I impressed with the importance of the thyroid. That I am justified in this seems but a natural sequence to the slogan of our brothers of former days and even of the present, namely: "When in doubt give the iodides." The thyroid would seem from all observations to be the organ most affected by iodine exhibition. The diseases relieved by its administration were directly or indirectly the result of abnormal activity of the thyroid. In other words the thyroid by direct effect itself or by absence of effect upon other glands concerned in the ring of internal secretions was productive of diseased conditions or departures from the normal state.

Some observations of mine which may be considered interesting follow:

*Hypothyroidism and hydrocephalus.*—A few years ago I read in the NEW YORK MEDICAL JOURNAL the report of an experimenter (unfortunately I am unable to give the reference) who found that upon removal of the thyroid gland in rabbits the offspring were hydrocephalic. This did not concur, as far as I knew, with current views on hydrocephalus, so I gave it only passing notice.

Since then I have observed two cases of hydrocephalus which I believe to be due to extreme hypothyroidism.

CASE I.—Two sisters, hypothyroids (diminished functional activity of the thyroid), with rough, scaly skin, very slow heart action, and scanty menstruation. Both had had a marked goitre, which had disappeared without treatment. Their mother had a large goitre. The mother and father were first cousins.

The first girl became pregnant. Her husband was a second cousin. Toxic vomiting became so grave that she was removed to a hospital, where for a time operation was considered. She recovered, however, and went to term, bearing a child who now, at nine years of age, wears a seven and a half hat. His father (a physician) and other physicians consider him a hydrocephalic, though his mentality is good. This girl was not treated for hypothyroidism.

The second girl became pregnant. Her husband was unrelated. There was no vomiting, but shortly after be-

coming pregnant she had violent "heart attacks." The heart action was very slow, almost stopping, then whipping up to normal; the beat was very irregular. Thyroprotein (Beebe) was administered with immediate relief. The patient was instructed to take the thyroprotein when she felt the onset of an attack, for fear of untoward effect on the child. The patient was delivered at term of child with a very large head. This child is now four years of age, mentally bright, but wears a seven and three eighths hat. All the physicians who saw him agreed that he was hydrocephalic. Shortly after birth the mother complained that the child was not being well nourished. As her milk seemed little else but water and because of her condition, I arranged artificial feeding.

I believe that the procedure was injudicious, for the following reason: The child immediately developed symptoms of Graves's disease. The heart beat was so rapid that it could not be counted. Exophthalmos, von Graefe's sign and tremor were present. What had I done? Removed his "thyroidectomized" milk? It would seem so. I conclude that the little fellow, in utero, had tried to make up in his own thyroid for what his mother lacked; endeavoring to supply her also with the lacking internal secretion. When the "a-thyroid" milk was being taken it acted for him to neutralize his oversupply; when withdrawn, hyperthyroidism supervened. I gave this child thyroidectin, two grains, for a few days. I do not know that it helped, but he is still living and shows now no signs of hyperthyroidism, except a highly sensitive nervous system and slight "von Graefe."

The history of these sisters simply bears out the known relationship between thyroid deficiency and consanguinity. In this instance there was in addition thyroid disease (simple goitre) in the mother. The connection between hypothyroidism and hydrocephalus is, however, interesting.

*Thyroid disease and sexual development in the female.*—The average physician is graduated from a medical school—then, with or without previous hospital training, locates in some community where he practises for the rest of his life. Local conditions and diseases are to him normal in that he is not in a position to know that some constitutional difference might exist between the people among whom he practises and those living in other localities. He may notice, for instance, that most of the women and many of the men have goitres. He attributes this to the limestone water or to lack of iodine in drinking water and gives it no further thought. He does not connect the two facts, 1, that these women are sexually undeveloped; 2, that they have goitres. He knows that the majority of the confinement cases he attends are very difficult. He knows that he must use forceps in many of his cases, that he must sew many perineal tears; that many mothers consult him about their daughters just coming into womanhood, telling him of their suffering and irregularity in menstruation. He may examine some of them and may diagnose infantile uterus but makes no effort to do anything for them. Why? Because he thinks that such conditions are universal; that women all over the world have the same troubles. And there is nothing in the textbooks to teach him otherwise. Undoubtedly there are isolated instances of these cases in all communities, the result of heredity, consanguinity, etc., but not in the proportion here encountered.



The writer has practised in several localities. After some years' work in the hospitals of a large city he located in a smaller city, his experience covering in all a period of about thirteen years. Six months ago he located in the country on account of ill health. In these six months he has had to use forceps oftener and has had more perineal tears than in all his former practice. He has been consulted by more women begging for relief from menstrual pain and irregularity than ever before in his experience—fully fifty per cent. of the female population covered by his practice. He has never met any such proportion in other localities. The condition is due to thyroid dyscrasia; either as a result of limestone water, consanguinity or both. Practically half the female and some of the male population have goitres. Interaction between the ductless glands (in this case ovaries and thyroid), has not been normal with a resulting subnormal sexual development (not true infantilism but a condition not far removed).

Some of the goitres have been accompanied by hyperthyroid but the majority by hypothyroid symptoms: slow heart, irregularity of heart and menses, rough skin, and scanty menstruation. The latter symptom represents my departure from concurrence with most writers. Practically all state that "hypothyroidism is accompanied by profuse menstruation." In my experience fully ninety per cent. suffered from scanty, irregular menstruation. These symptoms have in every instance been brought to normal by medication directed toward correction of hypothyroidism.

In the cases showing heart and skin symptoms and in those with arthritic symptoms relief has invariably followed the administration of thyroprotein (Beebe). In the sexually undeveloped cases (painful menstruation, irregularity, painful coitus, sterility, frigidity, etc.) corpus luteum has given wonderful results. The corpus luteum is that obtained from the pregnant sow; all others are worthless. Several of my confinement cases where forceps were necessary and second degree perineal laceration took place, refused to lactate. Thyroprotein produced an abundant milk supply but had to be continued though in a very small dose. Any attempt to discontinue the thyroprotein was followed by drying up of the milk. This would seem added evidence that sexual development had been hindered by hypothyroidism.

The above observations have prompted the hope that further knowledge of the thyroid and treatment of the developing female will remove or ameliorate that bane of modern women, child bearing. Parents must be educated to consult their physician about their developing daughters. Physicians must become familiar with the proper treatment of these cases. The purpose of this paper is to give the author's views and to receive the views of others on the subject.

**Hyperthyroidism.**—My experience with this form is limited to five cases. All had goitre. One had exophthalmos; all had tachycardia, and three had tremor.

Tincture of iodine, U. S. P., two minims, to be taken one half hour before meals in a little milk.

was given for two days. In every instance heart action was slower. The dose was increased to three, then to five minims three times a day. No untoward symptoms occurred in any case. In three, the goitre disappeared. In the exophthalmic case and one other continued nervous symptoms were relieved by thyroidectin given in capsules three times a day. Thyroid extracts and proteins are certainly contraindicated in hyperthyroidism. In spite of this fact some men persist in their use. In no condition is the slogan "be sure you're right then go ahead" more applicable than to diseases of the thyroid.

## THE HEART IN PULMONARY TUBERCULOSIS.

By H. SCHWATT, M. D.,  
New York.

Since the cardiovascular and respiratory systems are so intimately and vitally interdependent it is not strange that functional disturbances and pathological conditions of one system frequently manifest themselves by referred symptoms and changes in the other. This close connection led the older writers to refer to the symptomatology of diseases of the heart and lungs by a common term, *respiratio laesa*. Abnormalities and pathological conditions of the heart are held to have important relations to pulmonary tuberculosis, as predisposing or antagonistic factors to its occurrence, and as influencing its course and outcome. The cardiovascular symptoms of tuberculosis must be considered valuable data in its diagnosis and prognosis.

The literature on the relation of the heart to tuberculosis devotes a great deal of space to some aspects of the subject which are of academic interest, but of slight practical value to the clinician. Among these may be first mentioned the influence of an abnormally small heart as a predisposing factor and its presence in a majority of cases of tuberculosis. This view is apparently supported by researches on the weight and size of the heart at autopsy, by orthodiagraphic and x ray examinations. Other investigators, however, find the heart enlarged in just as large a number of cases coming to autopsy. Although it is held that the preponderance of evidence points to a heart subnormal in size, it is by no means clearly established whether this condition is a preexisting congenital hypoplasia and a predisposing factor or whether it is the result of circulatory changes or other causes dependent upon a long standing chronic tuberculous lesion.

Woods Hutchinson found that birds and mammals having a small heart in proportion to body weight exhibit a more marked degree of predisposition compared with those having a proportionally large heart. Pottenger holds the view that the small heart is a direct result of compensatory circulatory changes brought about by interference with inspiration over a long period of time and a consequent adaptation of the size of the heart to a "smaller intake, a smaller content, and a smaller output." This would appear to be somewhat contrary to the fact that long continued chronic forms

of tuberculosis cause hypertrophy, and later, dilatation of the heart, as a result of interference with and contraction of the pulmonary circulation and displacement of the heart. Cornet considers the small heart the accompaniment and result of the general muscular atrophy, emaciation, and fever of chronic tuberculosis; but according to some observers a small heart has been found in nearly two thirds of well nourished and well developed tuberculous individuals.

In types of individuals especially predisposed to tuberculosis, in those exhibiting the marks of constitutional weakness and malnutrition, with long, narrow, flat chests associated with a weak, soft, compressible, unstable pulse, and a subnormal blood pressure we frequently find on x ray examination a contracted area of cardiac dullness and a heart which appears smaller than normal. But to what extent, if at all, the constitutionally small, weak heart itself acts as a predisposing factor to tuberculosis and the influence of such a heart on the course of the disease must be determined by future researches.

Since it is practically impossible to form accurate conclusions as to the size of the heart by the ordinary methods of physical diagnosis, the question of the small heart in tuberculosis and particularly as an important predisposing factor, as held by Brehmer and others of the older writers, is of very little if of any practical importance. Predisposition in general presents difficult and obscure problems and it is especially hard to understand the influence of the heart, *per se*, as favoring the development of a bacterial disease. It is highly probable that the small heart has nothing to do with tuberculosis as such.

Of greater clinical interest is the oft quoted view that valvular lesions are antagonistic to the development of tuberculosis and afford a certain degree of protection from the disease. This idea is based on the relative infrequency of valvular disease in tuberculosis. The protection afforded by valvular lesions is supposed to rest upon the resulting stasis of the pulmonary circulation, yet we cannot find that mitral disease is especially antagonistic. It is the most frequent lesion found in association with tuberculosis, although it does appear to have a favorable influence upon its course. Congenital stenosis of the pulmonary valve, on the other hand, is well known to have a decided predisposing effect; it may even be stated that nearly all cases with this lesion develop tuberculosis.

From the records of the Henry Phipps Institute various organic murmurs are found in about five per cent. and functional cardiac murmurs in about three per cent. of cases of tuberculosis. In 1,000, mostly advanced cases (1), observed by the writer, eight per cent., and in another series of 200 cases (2), mostly of early disease, four per cent., exhibited organic murmurs. Burns (3) found organic murmurs in 17.5 per cent. of his cases. The most frequent murmur heard is the systolic at the mitral valve, and next in order of frequency are the presystolic at the mitral, systolic at the aortic, systolic at the pulmonic and double mitral. It is interesting to note that in the series of 200 cases five

presented unmistakable signs of mitral stenosis. In none of these were there positive physical or x ray findings or symptoms except a slight initial hemoptysis. Although hemoptysis should always be looked upon as a very suspicious symptom, pointing most frequently to pulmonary tuberculosis, it should not be forgotten that slight hemoptysis may occur in mitral stenosis and a thorough examination of the heart may frequently clear up a doubtful case in which a diagnosis of pulmonary tuberculosis has been made.

The development of tuberculous lesions of the heart valves during the course of chronic tuberculosis is extremely rare. That the toxins of tuberculous processes elsewhere may produce sclerotic changes in the valves is possible, but it cannot be proved that it occurs.

A change of varying degrees in the position of the heart in pulmonary tuberculosis is observed frequently enough to be generally accepted as one of the important complicating features of the disease. Some published statistics, however, that the heart is found displaced in nearly all cases with left sided disease and in about two thirds of cases of right sided disease are probably incorrect. And even more erroneous are the statements found in the literature that displacement occurs in very early disease and may therefore be accepted as a valuable diagnostic sign. Displacement to the left is more frequent than to the right and is explained on anatomical grounds on account of which the heart is more easily movable toward the left. In disease of the right side the frequency of displacement increases as the stage becomes more and more advanced while in left sided disease it is erroneously held to be as frequent in the first as in the third stage. Pottenger finds the heart displaced as follows: nine per cent. in first stage, nineteen per cent. in second stage, and seventy-six per cent. in third stage, without reference to the side involved. Displacement, when present, may be of absolute dullness alone or of the heart itself. A displacement of the absolute dullness to the right may be looked upon as a valuable sign of long standing right sided apical contraction. In many cases the displacement is but an apparent one due to retraction of the lung on the diseased side and compensatory emphysema of the border of the lung on the healthy side. In left sided disease both the absolute and relative dullness are equally displaced. In right sided cases there is usually a displacement of the right relative dullness, while the left relative and the absolute dullness are but slightly displaced to the right, the actual condition being rather a rotation of the heart on its axes than a displacement.

Displacement of the heart is always a consequence of contraction and retraction of lung tissue by which the heart, or mediastinum, or both, are pulled over to the diseased or more diseased side. It occurs most frequently in long standing chronic fibroid phthisis with extensive disease of one side and in cases with extensive pleural adhesions. In lesions on both sides we find displacement less frequently. It is practically never present in incipient, and rarely in moderately advanced, disease. It is present in about thirty per cent. of chronic advanced



cases (from a personal study of 2,000 cases). In advanced cases the displacement is frequently very marked, particularly in disease of the right side, the entire cardiac dullness being often transposed to the right. In this type of case the heart may be found displaced upward, a condition more frequent in left sided disease. Pleuritic exudates and pneumothorax displace the heart toward the sound side.

The symptomatology of tuberculosis finds early expression in various functional disturbances of the heart. Its action may be accelerated, retarded, irregular, or unequal. Among the most frequent and important manifestations of pulmonary tuberculosis is tachycardia. It is frequently present even when no physical signs of tuberculosis are demonstrable by the ordinary methods of examination; but in these cases an early lesion may be demonstrated by stereoscopic röntgen plates. A pulse of 100 or over is said to be present in from seventy to seventy-five per cent. of all cases. A characteristic feature of the accelerated pulse due to tuberculosis is its instability. The frequency may be very easily increased by various bodily and mental conditions which although they have a similar effect on the pulse of normal individuals and particularly those of an unstable and nervous temperament, have a much more marked persistent effect in the tuberculous subject. The patient may be unaware of the acceleration or it may be accompanied by annoying palpitation and a sensation of cardiac discomfort. The acceleration is but little influenced by even long continued rest but may disappear after varying periods of time. Tachycardia of such a nature should always be looked upon with suspicion and studied as closely as the slight rises of afternoon temperature. It should be looked upon as an early and even prodromal symptom of great diagnostic importance. The more intense and constant the tachycardia, the less influenced by rest, the more significantly does it point to the presence of tuberculosis in the absence of other causes and when not connected with any change in the respiratory rate and not associated with fever.

The acceleration of the pulse is most generally ascribed to the action of the toxins of the tubercle bacillus and secondary organisms and the pulse is referred to as the toxic pulse. It is not quite clearly established, however, how the toxins influence the cardioaccelerator mechanism. Tachycardia is frequently absent in advanced and active tuberculosis without fever and dyspnea, where the findings point to a high degree of absorption of toxins. And again, tachycardia is often a persistent and prominent symptom in arrested and cured cases, without any cause for it in the heart itself and without marked involvement of lung tissue. It is held by authorities that the tachycardia is due to compression of the vagus by tuberculous bronchial glands and pleural and pericardial adhesions. Although the vagus has been occasionally found thus compressed at autopsy, the rarity of this condition does not account for the great frequency of tachycardia, particularly in early disease. And furthermore, compression of the vagus should cause a slowing of the pulse; although this inconsistency is explained by the fact that gradual pressure produces the same effect as de-

struction or section of the nerve—acceleration. Pottinger holds the view that the heart is stimulated by the sympathetic system, centrally, as a result of toxemia and, peripherally, by the sympathetic and the vagus due to the inflammation in the lung and deduces that the vagus tonus is overcome and the heart shows increase in activity. In his opinion the stimulation of the sympathetic centrally ceases when the toxemia passes off. It is then a matter of which predominates, the sympathetic or vagus, that determines whether the pulse remains normal or becomes accelerated or retarded. If this be the case we have yet to learn, however, why stimulation of the one or the other becomes predominating.

To the adherents of the "small heart" school the tachycardia is the attempt of a constitutionally weak heart to supply the required volume of blood by increased activity. In advanced disease it may be partly explained by the lessening of the respiratory area due to destruction of tissue, by displacements of the heart, chronic myocarditis and chronic pericarditis and endocarditis.

Irregularity of the pulse and change in rhythm is comparatively infrequent in connection with tachycardia. A full bounding pulse associated with cardiac excitability is observed particularly in the neurotic type of individuals, who also exhibit quite frequently a marked degree of vasomotor instability. A subnormal slow pulse is also encountered and is surprisingly frequent in advanced tuberculosis.

The acceleration of the pulse is partly attributable to lowered blood pressure. According to some authorities a fall in the blood pressure is so frequent and constant in all stages of tuberculosis that it may be looked upon as a symptom of diagnostic value in early disease. Although we fairly constantly find a subnormal pressure in advanced chronic disease, marked deviation from the normal is not frequent in initial and moderately advanced stages, and cannot be looked upon as of any diagnostic significance. It is found most frequently in the markedly cachectic and the asthenic type. In early disease I have found it but very rarely and then only in cases with a high degree of waste of nutrition. The cause of low blood pressure is also held to be absorption of toxins and as in the tachycardia of tuberculosis the constitutionally weak small heart is held to be a contributing factor. Degeneration of the heart muscle and general weakness in advanced, as in early disease, also cause lowering of pressure.

One of the most important effects of pulmonary tuberculosis on the heart is essentially a mechanical one and is due to interference with the pulmonary circulation. The greater demands on the right heart in chronic phthisis produces in the course of time hypertrophy of the right ventricle. At first the increased action of the right ventricle manifests itself by an accentuation of the second pulmonic, which is the most frequent abnormal sound heard in connection with tuberculosis, and occurs in over fifty per cent. of all cases. Even in early disease it is extremely frequent. In the examination of the second pulmonic it should, however, be borne in mind that the accentuation may be an apparent one due to infiltration and fibrosis of the left upper lobe. The hypertrophy is contributed to by pleural ad-

hesions in direct proportion to their extent. It manifests itself more rarely by increase in the dullness and epigastric pulsation than by accentuation of the second pulmonic.

The course of pulmonary tuberculosis is markedly influenced by the condition of the heart. Competency of the heart muscle and valves increases the outlook for arrest and cure of the disease and compensates to a large extent for the damaging effects of an extensive lesion. So long as the right ventricle contracts vigorously there is no danger. The compensatory hypertrophy of the right heart, however, frequently fails even under moderate stress. Under greater demands on the heart either by physical exertion or from increasing resistance to the blood flow due to extensive fibroid phthisis or marked cavity formation, or as a result of toxemia, degeneration and dilatation of the right ventricle may result. With the development of this condition there is found a decrease in the existing accentuation indicating an easing up of the lesser circulation and an exhaustion of the right ventricle. Hence the strength of the accentuation of the second pulmonic is a valuable prognostic sign. The dilatation of the heart may or may not be associated with tricuspid regurgitation.

The cause of death in advanced tuberculosis is generally due to cardiac weakness. Dilatation may occur even when the patient is in a condition of complete rest, when the hypertrophy of the right ventricle can no longer overcome the contraction in the pulmonary circulation. Weakness of the right heart manifests itself by stasis in the systemic veins and moderate dyspnea. When the left heart weakens dyspnea becomes a much more pronounced symptom while venous stasis is not so frequent. A combination of these two symptoms points toward a weakening of the whole heart.

Of unfavorable prognostic significance is a persistent acceleration of the pulse, particularly if independent of fever and other discoverable causes. Of equally grave import is a continuous fall in the blood pressure. Preexisting valvular disease makes the prognosis more unfavorable, although it is held that the stasis resulting from mitral disease has a favorable effect on the course of tuberculosis. Marked displacements are of unfavorable import on account of the added mechanical interference with the proper action of an already overburdened heart. Of the greatest importance is the condition of the heart muscle and its weakening introduces a grave outlook upon the outcome in otherwise favorable cases.

In the treatment of tuberculosis the relation of the heart to the disease is frequently not sufficiently taken into consideration. The great importance of complete and long continued rest in the tachycardia of tuberculosis, irrespective of fever, cannot be overemphasized. Accentuation of the second pulmonic sound as evidencing a strain on the right heart and particularly, a decrease in the accentuation, should be dealt with in the same way and by proper medical measures tending to strengthen the heart. Even in advanced disease splendid results are quite frequently obtained by relieving an overburdened heart from toxemia or from mechanical

interference with its proper action. Valvular disease associated with tuberculosis should be watched and dealt with as carefully as such lesions not complicated by tuberculosis.

In general, it should be more strongly emphasized that the heart plays an extremely important rôle in the fight of the body against disease, that a healthy, normal heart is as great an asset as we have toward recovery and that judicious treatment directed to the preservation and maintenance of the heart is an exceedingly important adjunct in the treatment of pulmonary tuberculosis.

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1215 MADISON AVENUE.

### IMMUNIZATION THERAPY IN BRONCHIAL ASTHMA.\*

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The organisms usually found in the respiratory tract associated with bronchial asthma are those usually present in chronic inflammation of the nose, throat, and bronchi and constitute such a list of microorganisms that the respiratory tract seems an excellent culture medium and trap for all organisms both pathogenic and nonpathogenic. However, the frequency with which streptococci, pneumococci, micrococci catarrhalis, staphylococci, bacilli pseudodiphtherici and the various hyphæ are found clearly shows that these organisms play not a mean rôle in the production of a chronic exudative bronchitis and either directly or indirectly may be responsible for spasmodic bronchial attacks of asthma.

Before proceeding to eliminate these organisms from the respiratory tract every avenue of search must be exhausted to locate suspicious foci and reflex causes that may be associated with bacteria in the production of the asthmatic syndrome. Nose and throat diseases, such as polypi, diseased turbinates, sinusitis, deviated septum, and other abnormal conditions must be corrected. The possibility of associated cardiac and renal disease and metabolic disturbances, such as acidosis, as well as nervous diseases, must be borne in mind, and if possible, corrected or improved. Then, and not until then, can the offending microorganisms that flourish in the respiratory tract because of the local nonresistance of the tissues be attacked.

In the immunizing therapy of bronchial asthma several forms of existing methods present themselves for consideration, namely: 1, passive immunization or introduction into the system of animal or human specific immune serum; 2, the injection of foreign protein to stimulate nonspecific reaction to the disease; 3, active immunization, which requires that a bacterial antigen be injected to produce specific antibodies.

\*Abstract of paper read before the Southeast Branch of Philadelphia County Medical Society, March 12, 1918.



1. The production of an animal immune serum suitable for asthmatic cases has several drawbacks. Most sera are antitoxic, and bacteriolytic sera are very difficult to produce, and when produced are very weak; and since asthma is a localized infection with little toxemia, sera will produce negligible changes in this condition. A serum to be efficacious must contain specific antibodies to neutralize the bacterial toxins produced, and since there are innumerable types of every microorganism found in asthma, each peculiarly adapted in its biological characteristics to the tissues of its host, it is inconceivable, without proper classification of the various strains of these organisms, to be able to produce an immune serum suitable for a particular individual. Moreover, asthmatics frequently develop marked anaphylaxis to serum injection.

2. Nonspecific immunization may be tried by using phylacogens, which are fluids, the exact composition of which is unknown, but which are supposed to contain the toxins and filtrates of a multitude of microorganisms, which (according to its manufacturers) are capable of curing asthma as well as other infectious diseases. I do them more than justice in classifying them as nonspecific protein solutions and any beneficial results attained with phylacogen is probably due to the liberation in the body of nonspecific ferment which may digest the pathological products in the lesions present, a theory advanced by Jobling and Petersen. However, I would urge severe caution in the use of this mystic preparation, which will do little for your patient, if indeed it does not aggravate the asthmatic condition.

3. The use of bacterial vaccines in asthma at least assumes the cloak of rationality. Stock vaccines, both polyvalent and mixed, are marketed with the assurance that you will certainly find in the suspension one of the organisms that is responsible for the individual condition. It seems inconceivable under existing conditions, since only a few bacteria have been classified and, at that, only partially, that a stock suspension will contain the identical organisms present in any given respiratory tract. However, it is much more rational to use stock vaccines than phylacogens, because besides the nonspecific proteid reaction produced, specific immunization may sometimes be attained. No such results have come to my notice outside of the manufacturers' claims. Stock vaccines, therefore, hold an intermediary position between phylacogens, which are entirely nonspecific and autogenous bacterins. Properly prepared and administered, they produce a large percentage of immunizations and free the asthmatic of his distressing condition.

When treatment with an autogenous vaccine is undertaken in the asthmatic, several conditions must be fulfilled in order that the results of this therapy may be favorable in the majority of cases. The patient is instructed to collect all material coughed up during the night and early morning in a sterile container and send it immediately to the laboratory. Here the sputum undergoes a general examination including the study of the various organisms present and cultures are made according to the following procedure. Four or five slants of rich culture media (blood or ascitic agar) are inoculated with the plugs of purulent material after washing them in three successive bouillon tubes to remove any contamination of air or mouth saprophytes. Aerobic and anaerobic cultures are made. Two plain neutral agar slants are thickly spread with sputum and incubated at the same time with the foregoing cultures. The rhinologist may at the same time give us cultures from the various localities of the nose and throat, and diseased turbinates when removed are thrown into 200 c. c. flasks of glucose bouillon and later these cultures are transferred to solid media. If contaminations are noted on the twenty-four hour growth, plating may have to be resorted to, to eliminate them. Since our best results have been obtained in those patients in

whose cultures a streptococcus has predominated, we always, if possible, attempt to isolate this organism in cultures either from the sputum or from the various respiratory surfaces, e. g., turbinates, tonsils, etc. If only a few streptococci are found a rabbit may be inoculated with some of the culture or material intraperitoneally. Within twenty-four hours this animal, which is highly susceptible to streptococcus infection, will develop a septicemia. From the animal's heart blood can be obtained a pure culture of streptococci, which is then incorporated in the autogenous vaccine, together with the other organisms found in the nose and throat and sputum. In preparing our vaccines we incorporate in the suspension all organisms cultured in an attempt to increase the relative numbers of the apparently causative organisms. To this suspension we, furthermore, add the films of purulent sputum which were planted on the plain dry agar slants. This material is important in preparing an autogenous vaccine from an exudative inflammation. Since it contains the broken down specific organisms and their products, it acts as an ideal natural aggressin in increasing the antigenic properties of the vaccines.

The results of autogenous vaccine therapy will depend on several factors. If the disease is of many years' duration, with the consequent local and systemic pathological changes, there is not only the localized infection to counteract, but also the weakened resistance of the individual, due to age and organic insufficiency. In such cases cure is difficult and if some amelioration of the symptoms follow a course of vaccine treatment much has been gained. In my experience the individuals that respond best to autogenous bacterin therapy are those below forty years of age, who have been troubled by asthmatic attacks for only a short period (five years at most), and in whom permanent changes have not yet occurred. With such patients remarkable results have been accomplished.

In judging results in asthmatics one must be guided by amelioration of symptoms. Of ten cases of pure bronchial asthma we have rid five patients of all respiratory symptoms, and four have been very much improved, in that the spells have decreased in frequency, and in that any dyspnea is of brief duration and so mild that the patients are hardly inconvenienced. In one patient no change in the severity of the attacks occurs. Changes in the condition of a patient are noticed anywhere from four to six weeks after the series of injections have been completed. This is apparent when the seizures become milder and milder and the interval between seizures lengthens until the patient is entirely well. And lastly, the *modus operandi* of vaccine administration is a very important element in immunizing the patient. Careful clinical observation during vaccine therapy is of utmost importance. The number of organisms injected, the increase of doses, and the intervals between the number of injections given a patient, may sometimes determine whether immunity will be produced. Those physicians, who use autogenous vaccines mechanically, i. e., inject vaccine prepared in the laboratory in graded doses into the patient at

regular intervals, or even intrust a nurse with the mechanical administration of the vaccine, had better spare their patients pain and money and seek other forms of therapy to relieve the condition.

In my experience repeated series of autogenous vaccines in asthma when little results have been obtained after the first course, sometimes aggravate the condition. This is probably due to protein sensitization, and I would urge caution in such procedure.

1208 SPRUCE STREET.

## PREVENTION VERSUS TREATMENT IN TUBERCULOUS LARYNGITIS.

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The complication of tuberculous laryngitis, following pulmonary tuberculosis, is the saddest and most appalling of all complications which follow diseases or ailments to which the human flesh is heir. Starving within the sight of food, dying of thirst with water at hand, because of the excruciating pain in swallowing; progressive loss of weight and strength, difficulty of speech, constant hacking cough, painful, and increasing in severity as time goes on, nevertheless not relieving from the tenacious, adhering mucus that clings to the mucous membrane of the larynx; the vivid realization of the ultimate end which blasts all hope, permits no consolation, gives no solace—is it not the most pitiful of existences? Is it a wonder that the patient prays for relief, everlasting relief?

When he appears before the specialist in the hope of obtaining relief, he is usually already beyond succor. Upon examination the arytenoids as well as the cords are infiltrated, often ulcerated; the epiglottis is very much thickened, possibly ulcerated; the surrounding tissues are in a state of tumefaction. The specialist endeavors to relieve him with the therapeutics at his command: lactic acid locally or by injection; tuberculin; blocking the superior laryngeal nerve; or by surgical means, as cauter, epiglottectomy, laryngectomy, etc. Knowing full well that his results will be limited, he nevertheless endeavors to buoy up the sinking spirit. As Getchel (1) reminds us, the local manifestations in the larynx are only part of the general disease, and their eradication by no means controls its progress. As to operative procedures, only in rare instances does an operation aid, and then in skilled hands alone.

What can be done for these unfortunates? Brown (2) said that the average duration of life of a patient suffering from pulmonary tuberculosis is about eight years. The average duration of life of a patient suffering with laryngopulmonary tuberculosis is a great deal shorter. St. Clair Thompson (3) thinks that laryngopulmonary tuberculosis renders the prognosis twice as gloomy and that in the majority of cases the disease is incurable. By preventing such grave complications the life of the patient may be prolonged.

Tuberculosis in general and tuberculous laryn-

gitis in particular is comparatively easy to prevent. Any cough that lasts longer than the usual period of a cold, occult blood in the sputum, are sufficient to alarm the patient and cause him to seek the advice of his physician, for he immediately fears tuberculosis, and in the majority of cases he is ready to do anything the physician will advise.

The family physician is naturally the first to see the patient, he is the first to examine him, he is the first to decide his fate, he therefore ought to be the first to prevent complications. In order to make clear wherein the physician may prevent complications of the larynx in a tuberculous patient, permit me for a moment to briefly review the etiological factors, mode of invasion, and the direct and indirect predisposing causes of tuberculous laryngitis.

Tuberculous laryngitis is usually secondary to pulmonary tuberculosis. Primary laryngeal tuberculosis is quite rare. Dworetsky (4) in a study of 500 cases of tuberculosis, 128 of which had laryngeal tuberculosis, states that in ninety-one per cent. of the cases the sputum gave positive evidence of tuberculosis. Of the remaining nine per cent. a few were of doubtful nature as to the lesion, while a few did not have a sufficient number of sputum examinations made. Bullock (5) reports 100 cases of tuberculous laryngitis. Positive sputum was found in every case. G. Fetterolf (6) says: "Of 100 cases that died at Henry Phipps's Institute and who have had autopsies performed, eighty-three per cent. showed gross tuberculous lesions, thirteen showed absence of disease and four were doubtful." In other words, eighty-three per cent. of these 100 cases dying from pulmonary tuberculosis or its complications had a definite gross tuberculous lesion involvement of the larynx. The probability is that the percentage of those having actual disease is greater than eighty-three per cent., for unquestionably some of those which appeared normal to the unaided eye will show tubercle formation under the microscope. This will suffice for the etiology.

What is its mode of invasion? Is it through the bacilli laden sputum, the blood stream, or by the lymphatics? Authorities differ on this point. Coakley and Heinz think that the invasion is through the lymphatics, while Ballinger and Bonney claim the invasion to be due to the tuberculous sputum passing constantly over the complicated structure of the larynx. The sputum theory appears to be the more logical and probable, for should we adopt the lymphatic theory, tuberculous laryngitis ought to be very common in children, when the activity of the lymphatic system is at its height; while as a matter of fact tuberculous laryngitis is very rare in children under the age of fifteen years, though tuberculous adenitis is very common. We must, therefore, with our present knowledge accept the sputum theory, where the tubercular sputum is bound to adhere to the minute folds and creases of the larynx while passing from the lungs. This familiarizes us with the mode of invasion and the direct cause of tubercular laryngitis.

There is, however, another important point that we must not lose sight of, and that is the predispos-



ing factors which by their baneful influence pave the way for direct infection. The bacillus tuberculosis, *per se*, is not able to produce tuberculous laryngitis, for all mucous membrane has a natural immunity toward disease; it is only through a lowered resistance of the part in question that it will yield to infection. Metchnikoff truly said, that any organ that is performing its function in harmony with its physiological construction cannot be diseased. It has been shown experimentally that many varieties of bacteria are found in the throats of persons, without their showing any manifestations of disease peculiar to the germ found. It is evident therefore that in order to become afflicted with tuberculous laryngitis we must have a predisposing factor which by its pernicious effect lowers the resistance of the mucous membrane of the larynx, thereby paving the way for the ravages produced by the direct cause.

What is the predisposing factor? There is more than one. Excluding indirect causes as exposure, alcohol, and smoking, it is to be found in a pathological condition of the upper respiratory tract including the nose, epipharynx, and pharynx. The functions of the nose are a natural protection to the integrity of the mucous membrane of the larynx and lungs. The larynx is centrally located between the upper and lower respiratory tracts, and is therefore subject to secondary infection from either end. The injurious effects produced upon the laryngeal mucosa from an obstructed or diseased upper respiratory passage are well known, and it is not necessary to go into details to describe how an ethmoiditis or an atrophic rhinitis, or ozena or a deflected septum produces a pathological condition in the mucous membrane of the larynx. Suffice it to say, that almost all subacute and chronic laryngitis are secondary to pathological conditions in the nose. It is evident therefore, that any interference with the normal function that may cause a pathological condition in the nose will in sequence break down the barriers to infection of the larynx.

From this we can summarize the following: Tuberculous laryngitis is secondary to pulmonary tuberculosis; the mode of invasion is through the sputum, the direct etiological factor being the tubercle bacilli; the predisposing cause is found in the condition of the upper respiratory passage. Having these data before us, our course in preventing tuberculous laryngitis is charted for us unmistakably.

When a patient is examined and the diagnosis is tuberculosis, put the stethoscope aside and attire yourself in a specialist's garb. Examine his nose carefully, see if there is any obstruction, mechanical or pathological. By mechanical, I mean a deflected septum or a spur; by pathological, an ethmoiditis, catarrhal or suppurative, polypoid degeneration, hypertrophied inferior turbinates, posterior tips of same, or sinusitis. The relation of an obstructed nose to tuberculous laryngitis can be seen from the cases studied by Dworetzky. He states that ninety-two per cent. of tuberculous laryngitis patients were found to have nasal obstruction or disease, 36.7 per cent. having slight obstruction, eighteen per cent. having moderate obstruction. In other words,

where the obstruction is least the number of cases are smaller. Next, in order, examine the epipharynx for adenoids, growths, etc. Then pass on to the pharynx. The mucous membrane of the pharynx is continuous with that of the larynx, and there is no reason why a chronic inflammation of the pharynx should not extend to the larynx. Furthermore, a patient with a pharyngitis or nasopharyngitis has a constant desire to clear the throat, either by coughing or hawking, an act tending to cause congestion of the larynx. Examine the tonsils for hypertrophy or open crypts. Notice if there is an elongated uvula, another cause of cough, lastly examine the larynx with a laryngeal mirror, look for an hypertrophied lingual tonsil which irritates the epiglottis, giving the sensation of a foreign body in the throat and thereby inducing cough. In fact any condition found in the nose, epipharynx, pharynx, or larynx which may be the causative factor either in interfering with normal breathing or in acting as an irritant should be removed or remedied. It is the duty of the physician not only to inform his patient of the conditions found, but to impress upon him the absolute necessity of remedying them as a safeguard for his future welfare and well being. Not until such an examination has been made and the patient has been impressed with the absolute necessity of remedying the conditions found does the physician perform his duty toward his patient as well as toward himself. Statistics show that the mortality of pulmonary tuberculosis was reduced in the last ten or fifteen years by forty per cent. And still many more lives could be prolonged and made useful by banishing this dreaded complication of tuberculous laryngitis, which once having laid its hand on its victim, never lets go.

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616 MADISON AVENUE.

**Case of Hematidrosis.**—Charles T. Scott (*British Medical Journal*, May 11, 1918) saw a girl eleven years old who had begun to have peculiar attacks of sweating four months previously without apparent cause. The attacks were usually preceded by a distinct aura in the form of a sick feeling so that the child knew when the sweats were coming on and what the type was going to be. The sweating was confined to the forehead and consisted of clear white fluid, white froth, or bright pink fluid. The phenomenon occurred in attacks which were repeated at intervals of a minute or two up to ten minutes or even an hour. The attacks were much more frequent during the waking hours than when she was asleep, but they also occurred at the latter time, when they always waked her. The fluid always contained both red and white cells. There was no discoverable cause for the sweating in the child's family or personal history except the occurrence of a severe fright which she experienced a week before their onset.

# Medicine and Surgery in the Army and Navy

## RECONSTRUCTIVE THERAPEUTICS.

### *Reinforcement of Body Defenses as a Basis for Therapeutic Procedures.*

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The method I would recommend and myself aim to practise, is to select, combine and apply agencies best capable of conserving inherent body and mind defenses for the purpose of maintaining, improving and restoring health without drugs, or only such as are imperatively needed.

Reserve forces of the body are ample to preserve and to restore health, when made available, set in order, and fortified by natural means and wise guidance from without. The conditions where artificial agencies are demanded, such as drugs, medicines, serological or bacteriological preparations, can be reduced to a minimum by giving more scientific attention to improving the efficacy of natural and accessory remedies.

Reconstructive agencies consist of those capable of producing regulative or invigorative effects upon natural or inherent energies. The solution of clinical problems is, first, by expert selection, application of restitutive procedures, in short, training; and second, by teaching the individual to acquire and practise conscious control, equipoise, in the expenditure of energies.

Remedial procedures may be grouped as natural and accessory or supplemental. Natural measures are the regulation of behavior, of action and rest, of nutrition, of respiration, of circulation, and other master functions; the wise selection and use of time, place, circumstance, of body protection, of environmental conditions (euthenics), and the like: including developmental or corrective movements and postures (biokinetic).

Accessory or supplemental measures are devices capable of reinforcing or augmenting nature, of adding to or of regulating one's inherent powers in order to develop, support, or aid function in overstrained, weakened, injured, or paralyzed parts, whether direct or associated; or to act as substitutes for nature; or to remove or remake damaged, dead or otherwise no longer useful or now dangerous parts; or to so reanimate or fortify natural forces as to enhance or reestablish circulation, respiration, metabolism, and, in particular, to exercise guidance by adjustment, readjustment, manipulation, moulding (orthopedica), and by eliciting the defensive and reparative actions of the reflexes.

Also supplemental remediation includes the education, regulation and readjustment of highly specialized, interacting, associated and delicately poised structures whose functions are evolved through elaborate integrations.

Contrasted with the above are artificial remedies or agencies, such as medicines, drugs, chemical substances, most of which are wholly foreign to the body cells and structures, yet capable of modifying cells, glands, tissues, or functions advantageously or

of even destroying invading infectious organisms; also a newer and even more promising group of serological, vaccinal, and bacterial preparations made from modifications of human or closely analogous materials competent to reinforce body defenses and to reestablish immunity; also organic extracts, substances or scrapings of the ductless glands, of immense efficacy, which it seems to me should be classified as foods, since they act more as a diet than as a drug or medicament.

All clinical aims are, as a matter of course, directed toward conservation of body forces and resources; yet, in modern times, this is chiefly attempted in the form of establishing and maintaining immunity. Thus, while those microscopic organisms from without, capable of acting as adversaries, receive full heed of attention, the question arises, "Is enough attention directed toward the human organism as a whole?"

To this latter aspect of psychophysical repair, conservation and salvation, namely the systematic prevention, alleviation, or cure of disease effects by the reinforcement of native powers, I beg to lend some emphasis chiefly because its importance has lacked appreciation heretofore.

Body defenses as a whole deserve more exact study, at least from certain mechanistic aspects and variants of availability and with appreciation of the part played by the gross or static or neuromuscular mechanisms. Reinforcement of massive or crude body defenses justifies more help than it gets in medical teaching. When set in order, systematized and correlated, they bid fair to render service in particular directions heretofore unrealized. Finally, conditions established by the world war and the prevailing military mental attitudes or trends of medicine, amply warrant approaching therapeutics from this angle of psychophysical readjustment (orthopedica) as a fundamental principle of restitution.

We may thus visualize orthopedica as medical orthopedica, psychic orthopedica, and manipulative, developmental, or kinetic orthopedica.

All clinical problems involve integrations of the mind as well as the body, and both require certain degrees of straightening out, readjustment, in some cases more, in others, less; some by plain and simple means; other problems are so involved, complex and obscure, as to tax all resources, even of the wisest. In acute conditions of a trivial or transient nature, the orthopedic element or need may scarcely be noticeable. Few persons, however, when out of health escape misconceptions of their personal attitude toward their own disorders and hence are the better for psychogenic regulation, for counsel, suggestion, explanation in order to discharge their duty in its broader economic aspects. When any disorder becomes protracted, or runs into chronicity, the need for moral, mental, or psychic as well as kinetic orthopedica becomes urgent. Mind and body forces need to be brought into equilibrium, into harmonious interaction. Hence in a large group of morbid conditions, all four angles of approach or repair deserve proportionate attention: the mental, the medical, the orthopedic, and the surgical. Also mechanistic fac-



tors exist in each condition more often than is appreciated. In my experience surgical measures need involve no cutting, yet the condition may, none the less, urgently require manipulative (adaptative) surgery.

How shall these mechanistic or biokinetic needs be supplied? What natural or accessory resources (physicodynamic) capable of acting as equivalents to the artificial or pharmacodynamic are available? There are too many resources for description here. This will be given elsewhere with the evidence.

The point for emphasis is that in solving clinical problems enough evidence exists to the effect that heretofore undue prominence was given to, or confidence placed in, pharmacodynamic or biochemical remediation as contrasted with abundant resources based on biophysics or biokinetics (physicodynamics). Furthermore, it seems fair to assume from the evidence that physicians must hereafter give proportionate attention to both. Thus there shall ensue—there is rapidly emerging—a comprehensive and more practically efficient system of therapeutics.

My personal aim is to make some contribution to this consummation. The stumbling block is not lack of convincing evidence, but sheer inattention to, or lack of interest in, these unfamiliar mechanistic measures. Little or no systematic teaching of biokinetics is being supplied. Even the terms used are as yet strange and unfamiliar. The word "physics" as used in physics is the opposite of physiologic.

The biggest stumbling block is that these biomechanistic remedies have been seized upon and exploited most absurdly by opportunists. Should that be sound reason for condemning or even for ignoring them? The whole history of medicine is one series of incidents of enthusiasts and often fakirs forcing upon reluctant attention practical points, the better ones ultimately becoming incorporated into medical practice. Extramural exploiters give offense by their insistence; yet even they deserve open minded attention since logical results can only be secured by using principles consonant with facts, causes and effects, with common denominators paralleling other growths in experience.

Some reader may say, "But all this sketched out is common knowledge; what is thus recommended is reasonable enough. The question remains, is it as important as the writer would have us believe? There are many experts in these procedures, but they are liable to overstate claims."

To this the reply is that I have heard such statements often scornfully expressed by those who modestly admit themselves to be masters in medicine; past masters in special lines of consummate value; in "really scientific" as contrasted with plain common sense measures which in their eyes are comparatively negligible.

Perhaps I, too, am fairly well informed on the scope and resources of scientific medicine. The above recommendations are based on precisely similar, on somewhat divergent, directions of approach but with equally valuable forms and manifestations. It is no part of my purpose to belittle so called scientific resources, nor to exaggerate the value of rational, biokinetic, or physicodynamic remediation, but to speak from experience and research.

Of course I make use of all needful laboratory findings and would beg critics to bear in mind the possibility of achieving as high a degree of artistry in the one as in the other chosen groups; for art is, after all, the doing of things as well as possible consonant with personal limitations.

## MEDICAL NOTES FROM THE FRONT.

BY CHARLES GREENE CUMSTON, M. D.,

Geneva, Switzerland,

Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London; etc.

### FALLING BIRTH RATE IN GERMANY.

On May 16th a report on infant welfare in Germany, prepared by the intelligence department of the Local Government Board, was issued; the following figures may be of interest: During the war there has been a heavy fall in the German birth rate. The first three years alone of the war reduced by over 2,000,000 the number of infants who would have been born had peace prevailed. Some forty per cent. fewer babies were born in 1916 than in 1913. I would add that the infantile death rate has been kept well down, but is fifty per cent. higher than in England.

The birth rate, which had risen from 36.1 per 1,000 inhabitants in the decade 1841-1850 to 39.1 per 1,000 in the period 1871-1880, fell in the succeeding decades to 36.8, 36.1, and 31.9. The rate for the last year of the decade 1901-1910 was under thirty per 1,000, and the continuance of the fall brought the rate as low as 28.3 in 1912. In 1913 there were 1,839,000 live births in Germany; in 1916 there were only 1,103,000—a decrease of forty per cent. as compared with 1913.

### TREATMENT OF CHRONIC EDEMA.

I shall now call your attention to some of the recent Italian work, as it is of great importance, and I will first refer to the treatment of chronic edema frequently following contusions of the hands and feet, and the tibiotarsal joint. Although the edema may occasionally be produced and maintained by simulators, in which case the fraud must be detected, it is quite frequently the result of traumatism. The edema always causes a prolonged incapacity and it is important to return the men to the army as soon as possible.

Considering that these edemata are the result of stasis produced by extensive lymphatic thrombosis. Mantelli has endeavored to obtain efficient lymphatic drainage by introducing silk threads in the subcutaneous cellular tissue, extending from the area of stasis to perfectly healthy areas. If the intervention has been perfectly aseptic, which is essential, the lymph is drained away rapidly along the thread. Some very satisfactory results have been obtained in Italy by this method.

### SUPRAPUBIC CYSTOTOMY IN WOUNDS OF SPINE AND CORD.

In the evolution of wounds of the spine and cord, one of the most serious complications is, of course, ascending infection of the urinary tract, and among the causes of death in these unfortunate subjects, it comes immediately after infection of the wound itself and meningomyelitis in importance. Com-

plete retention, then incontinence from overflow, and lastly infection, is usually the sequence of events. To avoid infection of the urinary tract, Colombino suggests doing suprapubic cystotomy. The operation may likewise be attempted in cases where infection has already taken place.

If the retention of urine is aseptic, suprapubic cystotomy should be resorted to as soon as possible, but if there is at the same time considerable distention of the bladder, the organ must not be emptied at once. If retention is complicated by infection, the bladder should not be opened at once, otherwise the perivesical space will become in turn infected, a fact that is particularly serious in these patients whose vitality is already low. In these circumstances Colombino performs suprapubic cystotomy in two sances, in which, as the operation is quite free from all danger of infection of the perivesical space, it will not make the patient's condition any worse, even though it may not attain the results desired. At the first sance the abdominal parietes are incised, the peritoneum is pushed upward, and the intact bladder sutured to the anterior aponeurosis of the great oblique muscle. The wound is then stuffed with gauze. One week later, the adherent bladder is buttonholed with a knife and a small drain inserted. Between the two operative sances, careful catheterization must be resorted to, and if passage of the instrument is at all difficult a *sonde à demeure* should be inserted.

## VOLUNTEER MEDICAL SERVICE CORPS.

By FRANKLIN MARTIN, M. D.,

Member of Advisory Commission and Chairman of General Medical Board, Council of National Defense.

### FOREWORD.

The Volunteer Medical Service Corps was authorized by the Council of National Defense on January 31, 1918. Under this authorization the membership of the corps consisted of all physicians who, because of age, physical disability, dependents, and essential home needs, were not eligible for service in the Medical Reserve Corps of the army or navy.

### ENLARGED SCOPE OF THE ORGANIZATION.

On August 5th the Council of National Defense authorized a change in the scope of the organization and an increase and amplification of its Central Governing Board. Membership in the corps as now authorized, makes eligible to the corps every legally qualified physician, including women physicians, holding the degree of doctor of medicine from a legally chartered medical school, without reference to age or physical disability, provided he or she is not already commissioned in the Government service. This organization has now the approval of the President as indicated in the following letter.

[copy.]

THE WHITE HOUSE,

Washington.

12 August, 1918.

MY DEAR DR. MARTIN:

I have received your letter of August 5th, laying before me the matured plan for the reorganized Volunteer Medical Service Corps, of which you ask my approval. This

work was undertaken by you under the authority of the Council of National Defense; it has had great success in enrolling members of the medical profession throughout the country into a volunteer corps available to supply the needs of the Army, Navy, and Public Health Service. In cooperation with the General Medical Board of the Council of National Defense, the strong governing board of the reorganized corps will be able to be of increasing service, and through it the finely trained medical profession of the United States is not only made ready for service in connection with the activities already mentioned, but the important work of the Provost Marshal General's Office and the Red Cross will be aided and the problems of the health of the civilian communities of the United States assured consideration. I am very happy to give my approval to the plans which you have submitted, both because of the usefulness of the Volunteer Medical Service Corps and also because it gives me an opportunity to express to you, and through you to the medical profession, my deep appreciation of the splendid service which the whole profession has rendered to the nation with great enthusiasm from the beginning of the present emergency. The health of the Army and the Navy, the health of the country at large, is due to the cooperation which the public authorities have had from the medical profession; the spirit of sacrifice and service has been everywhere present and the record of the mobilization of the many forces of this great republic will contain no case of readier response or better service than that which the physicians have rendered.

Cordially and faithfully yours,

(Signed) WOODROW WILSON.

Dr. Franklin Martin,  
The Advisory Commission,  
Council of National Defense.

### EXHIBIT C.

At a meeting of the Central Governing Board, held on Friday, August 2d, it was moved by Doctor Sawyer, seconded by Doctor Martin, that the Central Governing Board shall consist of the present Central Governing Board (excepting Shark, Bradford, and Brophy) and others as follows:

Surgeon General William C. Gorgas, U. S. A.; Surgeon General William C. Braisted, U. S. N.; Surgeon General Rupert Blue, U. S. P. H. S.; Provost Marshal General E. H. Crowder; Dr. Franklin Martin, chairman of Committee on Medicine and Sanitation, Council of National Defense; Dr. Edward P. Davis, president, Volunteer Medical Service Corps; Dr. John D. McLean, vice-president; Dr. Charles E. Sawyer, secretary; Admiral Cary T. Grayson, U. S. N.; Dr. F. F. Simpson; Dr. Frank Billings; Dr. H. D. Arnold; Mr. W. Frank Parsons, Red Cross; Dr. Victor C. Vaughan; Dr. William H. Welch; Dr. Robert L. Dickinson, chief of staff's office; Colonel R. B. Miller, U. S. A., chief of personnel division; Surgeon R. C. Ransdell, U. S. N., chief of personnel division; Colonel James S. Easby-Smith, Executive Officer; Dr. Joseph Scherschewsky, Assistant Surgeon General, U. S. P. H. S. (personnel); Dr. C. H. Mayo or Dr. W. J. Mayo; Dr. William Duffield Robinson; Dr. George David Stewart; Dr. Duncan Eve, Sr.; Dr. Emma Wheat Gillmore.

### GENERAL PLAN.

The Volunteer Medical Service Corps is exactly what its name indicates. It is a gentleman's agreement on the part of the civilian doctors in the United States who have not yet been honored by commissions in the army and navy, and a representative board of governors consisting of officials of the Government associated with lay members of the profession, in which the civilian physician agrees to offer his services to the Government if required and asked to do so by the Governing Board.

It is a method of recording all physicians who are not yet in service and classifying them so that their services when required will be utilized in a manner to inflict as little hardship on the individual as possible. It is a method by which every physician not



in uniform will be entitled to wear an insignia which will indicate his willingness to serve his Government.

As more than sixty per cent. of the physicians of the country will be utilized in caring for the industries at home and the health of the home people, this large percentage of necessity will be expected to maintain their home status and continue their ordinary professional work.

*A. Object of corps.*—1. Placing on record all medical men in the United States. 2. Aiding army, navy, and Public Health Service in supplying war needs. 3. Providing the best civilian service possible. 4. Giving recognition to all who record themselves either in army, navy, Public Health activities, or civilian service.

*B. This organization provides.*—1. Means for obtaining quickly men and women for any service required. 2. Furnishes recommendations and necessary credentials to assure the best of service both military and civil. 3. Determines beyond question the subject's attitude toward the war. Through this organization plan, many men will be registered for army, navy, and Public Health Service who can be called when needed without delay, and thereby a medical reserve of thousands of men will be created which will be immediately accessible for army, navy, Public Health, and civilian service, no matter how urgent the needs. Up to the present there have been so many to be called that no great difficulty has been experienced. From now on quick needs will be more difficult to fill, except as they have been anticipated by having a direct line on all those who are willing to serve. This necessity the Volunteer Medical Service Corps fulfills, not alone as relates to war needs, but also to the increasing civilian needs.

*C. Civilian service.*—One great need of definite organization is in relation to civilian service. Unless some fixed plan is adopted home people may suffer and medicine itself may be discredited. This plan registers all medical men and women for all kinds of service and places them within reach of those who know the needs and will arrange for their supply.

*D. Recognition.*—In the Volunteer Medical Service Corps every one will have definite recognition of his standing as related to the war and will receive proper credit for service rendered, whether in army, navy, public health, or civilian service.

*E. Conservation of the profession.*—If all medical services are conserved, we should not suffer. Indiscriminate placement and inconsiderate acceptance of men for war service may bring suffering, while specific organized handling of all medical forces will afford ample medical attention for all. Such is the purpose of the Volunteer Medical Service Corps.

*Tentative classification plan.*—1. Fit to fight men under forty; 2, reserves under fifty-five; 3, home forces over fifty-five; 4, ineligible.

Reserves will consist of those who may be called upon for army, navy, Public Health, and civilian service when necessity requires. The home forces are those who are only able to do civilian service.

*Definite classification.*—1. Medical Reserve Corps; 2, Volunteer Medical Service Corps; 3, ineligible.

The Medical Reserve Corps consists of such as are needed in the present or near future army or navy service; the Volunteer Corps of such as may be called for special army or navy and Public Health Service and for all civilian service; and the ineligible class of such as have been charged with unprofessional conduct, moral unfitness, or professional inaptitude.

#### RULES OF ORGANIZATION.

*I. Name.* The name of the organization shall be the Volunteer Medical Service Corps of the United States.

*II. Object.* 1. The object of the Corps shall be to mobilize the medical profession in the present emergency in order to provide for the health needs of the military forces and civil population of the country. 2. Services of members will be called for and rendered in response to requests to the Central Governing Board from the Surgeon General of the Army, the Surgeon General of the Navy, the Surgeon General of the Public Health Service, or the General Medical Board of the Council of National Defense.

*III. The Corps.* The Corps shall consist of all members of the organization. The management of the Corps shall be vested in a Central Governing Board.

*IV. Central Governing Board.* The Central Governing Board shall be appointed by the Council of National Defense and approved by the President of the United States.

*V. Officers.* The Central Governing Board shall direct the activities of the Corps and shall select from among its own members a president, a vice-president, and a secretary.

*VI. State Governing Boards.* 1. The State Governing Boards shall consist of the members of the State Committees, Medical Section, Council of National Defense. The State Committees shall select, subject to the approval of the Central Governing Board, from five to ten of their members who are eligible for election in this Corps to act as Executive Committee of the Volunteer Medical Service Corps in the respective States. 2. The duties of the Executive Committee of the State Governing Board shall be to consider applications for membership in the Corps from the respective States and to submit recommendations regarding these applications to the Central Governing Board. 3. The State Governing Board shall aid in the work of the Executive Committee of the State and perform such other duties as may hereafter be deemed essential by the Central Governing Board to accomplish the purpose for which the Corps was created.

*VII. Membership.* 1. Every legally qualified physician holding the degree of doctor of medicine from a legally chartered medical school, without reference to age or physical disability, may apply for membership in the Volunteer Medical Service Corps, provided he is not already commissioned in the government service. 2. Women physicians are eligible. 3. Application for membership in the Volunteer Medical Service Corps shall be made upon blanks furnished for that purpose by the Central Governing Board for proper classification according to training and special fitness. 4. Any member of the Volunteer Medical Service Corps who wishes to change his classification may appeal to the Central Governing Board. 5. The Central Governing Board shall be empowered to elect from time to time to the Volunteer Medical Service Corps members of sanitary engineering and hygienic professions.

*VIII. Method of Election.* 1. The members of the Corps shall be graduates in medicine who are licensed to practice medicine in their respective States, who have made application for membership, who meet the qualification requirements that are now or shall from time to time be established by the Central Governing Board, who are eligible as under Article VII above, and who shall be elected to membership in the Corps by the Central Governing Board. 2. Each person elected to membership in the Corps shall be designated as a member of the Volunteer Medical Service Corps. 3. It shall be the duty of each member of the Volunteer Medical Service Corps to notify the Central Governing Board when he accepts a government commission.

*IX. Insignia.* 1. Members of the Corps shall be authorized and required to wear the insignia of the Corps. 2. The insignia and certificate shall be secured by members of the Corps under such regulations as may be determined upon by the Central Governing Board. 3. The insignia

shall not be loaned to any person not a member of the Corps, nor shall it be worn after notification that eligibility to the Volunteer Medical Service Corps has ceased to exist; and it shall be returned on demand of the Central Governing Board.

X. Any member of the Corps may be expelled for conduct which, in the opinion of the Central Governing Board, is derogatory to the dignity of the Corps or inconsistent with its purposes.

XI. The Central Governing Board shall be authorized to provide such regulations as shall from time to time become necessary.

XII. *Authorization.* The organization, the insignia, and the certificate have been authorized by the Council of National Defense.

## MEDICAL NEWS FROM WASHINGTON.

*Reduction in Mortality from Pneumonia.—Lowest Death Rate in the Navy.—Semiannual Health Report for the Army.—Comparison of Disease and Battle Mortalities for Mexican, Civil, Spanish, and Present Wars.*

WASHINGTON, D. C., August 12, 1918.

Arrangements are being made by the Medical Department of the Army more effectively to combat disease at the camps and cantonments, in view of the large influx of recruits that will come in as a result of the new selective service law, and particular attention is being given to measures to reduce the mortality from pneumonia.

It is appreciated, of course, that this disease, which is the most troublesome from a mortality standpoint with which the medical authorities have had to deal among our troops during the present war, is bound to occur to some extent with the assembling of large bodies of recruits, no matter what the precautions, but every effort will be made to reduce, by the use of improved methods, the number of cases and the number of fatalities.

The very heavy death rate, especially in some of the camps last spring, was caused by the extremely virulent germ streptococcus productive of the dangerous form of pneumonia known as empyema, which was largely responsible for the high mortality. The Surgeon General of the Army was certain he would have to handle the disease in all of the camps with the influx of later recruits in large numbers, and, for this reason, he early directed that proper precautions be taken to meet the situation. He placed the matter in the charge of a special commission of physicians and pathologists, which included some of the best known experts of the Medical Department. For special study and investigation, the members of the commission went to Camp Lee, Va., where they did most of their work. In the meantime, also, special teams of physicians and pathologists were put at work at every other camp and cantonment to investigate and report to the commission at Camp Lee.

\* \* \* \* \*

The lowest death rate during the period of the war for the navy was reached last week, when the death rate from sickness came to the remarkably low figure of 1.2 per thousand per annum. This rate is based upon the receipt of mail reports, and it does not include the casualty lists cabled from France. Only twenty-one deaths were reported from all causes. The reports for contagious dis-

eases showed two cases of cerebrospinal fever, two of diphtheria, fourteen of pneumonia, fourteen of measles, four of scarlet fever, and 110 of mumps from all the principal shore stations.

\* \* \* \* \*

The division of surgery of the Surgeon General's Office now has perfected its plans in accordance with the system recommended by the commission, and it is believed to be unlikely that pneumonia will reach the death rate in the camps and cantonments that it did in some of them in the early part of this year.

\* \* \* \* \*

Records of the division of sanitation of the Surgeon General's Office for the first half of this year show that, despite the severe epidemics of pneumonia, measles, and meningitis during January, February, and March, the health of the troops in the United States was very good.

The annual death rate per thousand for disease for this period was 8.03. On an average, forty-five men out of every thousand were carried on sick report, although a great number of them were not confined to the hospitals. These included all cases of venereal diseases, the greatest single cause of disability in the army. In the majority of these cases, the disease was contracted before the patient entered the army.

For the months of January, February, and March, the pneumonia season, the death rate for disease per thousand was 10.4. For the following three months, it was 4.95 per thousand. Of all deaths during the six months' period, sixty-three per cent. resulted from pneumonia.

The morbidity and mortality rates for the six months for troops in this country were increased as a result of the fact that numbered among the soldiers in the country are all those sick and disabled men left behind when the organizations of which they were members sailed for Europe. This fact explains in part the high admission rate for disease in some of the camps.

\* \* \* \* \*

According to data prepared by the statistical branch of the executive division of the general staff, more than seven American soldiers died of disease to every soldier killed in battle during the Mexican war. Eleven in every hundred fell victims to faulty sanitation.

In the armies of the North during the civil war, the battle mortality increased more than 100 per cent. over the Mexican average, while mortality from disease was reduced nearly eighty-five per cent.; but the disease mortality was still double the battle mortality.

The Spanish-American war witnessed a reversal of the downward curve, with more than five deaths from disease to each death in battle.

During the first ten months of the American participation in the present war, the records of the American expeditionary forces show an exact parity between battle mortality and disease mortality, with a combined mortality, which, if projected throughout a year, would be only a little more than half of the battle mortality and less than a third of the disease mortality of the civil war.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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## IS THE MODERN TREATMENT OF SYPHILIS A SUCCESS?

Most physicians who have been in practice twenty years or more can recall cases of syphilis treated with mercury and iodine via the alimentary canal for the then recognized period of two to three years, and today can place the patients, having had them under observation for that length of time, or being aware of their presence in the community, and can say that they have evidenced no outward or inward signs or symptoms of the disease. They can even recall sporadic cases where the disease has appeared twice in the same patient, thus evidencing a cure for the first outbreak. Furthermore, they can bring to mind cases which have been quite thoroughly treated, but which, ten or more years later, have presented manifestations which point all too clearly to the activating syphilitic poison. Whether cases were completely cured or not, it is certain that the disease remained quiescent and did not give the patient any further trouble, often through a long life.

Today the former treatment has given way to intravenous injections of one of the arsenical compounds, supplemented by the former treatment, or at least by hypodermic injections of some mercurial compound. Can the results achieved by this form of treatment be termed successful? Are we any better off with it than with the older treatment? And which is the remedy, the arsenical compound, or the mercury?

If the results achieved at the Toronto General Hospital can be taken as a criterion and on a par with those achieved in other similar institutions, the majority of physicians can hold to no other opinion than that the treatment is neither satisfactory nor encouraging, even though the writer we shall presently quote states: "Considering the class of cases that have been dealt with at our clinic, the results of treatment are not at all discouraging." This is an opinion of very doubtful value.

In the July issue of the *Canadian Medical Association Journal*, Dr. W. T. Williams outlines the method of treatment and the results obtained in five hundred cases. Of these five hundred cases, 145, or twenty-nine per cent., were at an early stage of the disease; 355, or seventy-one per cent., were at later stages. On an average of seven and a half doses of 0.5 gram plus four and a half intramuscular injections of mercury, negative Wassermanns were secured in only seventy cases, approximately fifteen per cent. Of these seventy cases, twenty-three were in early stages of syphilis, and forty-seven in the later stages. "Practically all of the late cases were given in addition mixed treatment of mercury and potassium iodide." Very important, too, is this sentence: "Twenty-four cases had a return to positive Wassermann, thirty-five still remain negative, while eleven of them passed from our control"—a not uncommon sequence to the treatment of such cases. That is to say, of the series of five hundred cases treated, thirty-five cases, seven per cent., may be said to be cured, that is, so far as a Wassermann negation indicates a cure. The number is very, very small, and instead of being problematically "not discouraging," is, to say the least, entirely so.

How can the conscientious physician face the patient who seeks a cure for this elusive enemy in his blood or his tissues, and tell him that at the Toronto General Hospital seven per cent. of the cases are supposedly cured? Surely these

results are humiliating rather than "not at all discouraging."

Nor can many be found to agree with a further statement that "about eighty per cent. of all cases experienced relief or freedom from all symptoms, which at any rate is encouraging." Has it not been the common experience that a majority of all cases of syphilis experience relief or freedom from all symptoms either with or without the former treatment after the so called secondary stage has been passed?

There is, however, another vital point in this modern treatment of a patient with syphilitic infection, the question of expense. Are physicians justified in placing this added financial burden upon patients, when they can probably secure satisfactory "cures" in seven per cent. of the patients so treated?

The time now seems opportune for the national medical bodies of Canada and the United States (the Canadian Medical Association, and the American Medical Association) to consider the entire question of the modern treatment of syphilis by the intravenous method of arsenical preparations, to appoint commissions or committees, and to have the statistics of hospitals and those of private practitioners with sufficient experience along these lines collected and collated, so that the profession of medicine and the patients may become assured of any real value which this modern method of treatment possesses.

#### TESTS FOR COLOR BLINDNESS.

Color blindness is a factor which under present exceptional conditions must be submitted, like many others, to more accurate and discriminative tests than heretofore. Our nation in particular is learning today a lesson of appreciation of the finer distinction and gradations of efficiency and usefulness in men or means, which our very abundance of resources had led us extravagantly to pass over. Just as we have learned that a slight admixture of the less perfect rye flour in our wheat bread was no real loss in dietary economy but an adaptability of need to material of varying standards, so we are learning conservation in other matters, physiological, psychical, economic, whatever it may be. It is a most important and needed lesson, which nature has often tried in vain to enforce against a blind pride in superiority; the finding of some place and some use even for imperfections and inadequacies, where each fits into some modest groove where it can work, and where often the imperfection

is remedied by the opportunity thus given. This principle is the one upon which reconstructive work and the future employment of our crippled soldiers must be carefully based. It is one which has already changed the tactics of preliminary inspection of enlisted and drafted troops, so that now, even there, weaknesses are many times accepted and training is adapted to the abilities. These weaknesses are thus removed by the right training, or some service is found where they will not prove a hindrance. This method is now supplanting the wholesale exclusion and rejection that formerly have been allowed to prevail in so many spheres.

Color blindness is being submitted to the same treatment. No remedial procedure is claimed for it, but a series of discriminatory tests have been applied by Surgeon Collins of the United States Public Health Service. [Color Blindness: Its Relation to Other Ocular Conditions, and the Bearing on Public Health of Tests for Color Sense Acuity; Public Health Bulletin, No. 92.] Color blindness is prevalent among ordinary healthy individuals in America, Surgeon Collins asserts, to the extent of about 8.6 per cent. of men and 2.2 per cent. of women. This is exclusive of those known as the pentachromatic color blind, as this class is for practical purposes unimportant. The defect here manifests itself only in inability to see the orange of the spectrum and to make the sharp distinctions between the modified color units which the average person makes.

Among those who are included are many whose defect makes of their position a menace, particularly on the sea, on the railroad, and in aviation. Those who have acquired color blindness are aware in general of their defect, and therefore on their guard; but to the congenitally defective there is the added menace of a false assurance of accuracy and ignorance of color distinctions. Yet there are so many grades of color blindness, which are carefully described and distinguished in this report, that many of these individuals can be fitted into some other branch of service or in the case of civilians are perfectly fitted for many positions, where the same exactness of distinction is not required.

In order therefore to discover such differences in color blindness and to create a standard by which fitness for service in this respect can be properly gauged and apportioned, careful tests have been made with special testing apparatus. The examiners find that the apparatus which gives the most accurate, reliable, and discriminating test is the Edridge-Green lantern, which contains slides of specially colored glasses and oth-



ers which modify the colors as they are modified in natural conditions, such as mist, fog, rain, and other factors, which cause the reaction to colors to vary under varying conditions. This device for testing also makes use of certain combinations which are particularly valuable in detecting dangerous color blindness. It has not only these advantages over the older worsted tests, but obviates the inaccuracy resulting from inevitable change of color in the worsteds, from a false distinction often made through the luminosity of the materials and from the fact that the wools as a rule are so large as to subtend too great an angle at the nodal point of the eye, thus allowing peripheral color visions to aid in determining the color.

The lantern test, however, necessitates a somewhat complicated apparatus, and there are many cases in which an adequate test can be made more quickly and easily with the Jennings apparatus, which is a self recording worsted test. This does not permit the accuracy and fine distinction of the lantern tests. It has its use, but not in testing for sea or train service, or wherever danger might result from inaccuracy of test.

This bulletin covers the wide range of results found in these various tests and also presents a consideration of the relation of color blindness to various pathological ocular conditions and the amount of importance to be attached to these in considering the results of the tests.

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#### WHO WILL SUCCEED GENERAL GORGAS?

In October, General William C. Gorgas, Surgeon General of the United States Army, will reach the age for retirement, and the question of who shall succeed him is being discussed quietly but generally in medical circles. A movement was begun to ask the Secretary of War to reappoint General Gorgas after his retirement, but it is said that such a step would be illegal. His services could be retained, however, by appointing some one else as surgeon general, detaching him from the office for special duty, and appointing General Gorgas as acting surgeon general. There is a rumor to the effect that this may be done and that General Pershing would like to have General Merritte W. Ireland, Chief Surgeon of the American Expeditionary Forces, appointed surgeon general and detailed for duty in France, leaving General Gorgas as acting surgeon general to carry on the work of the department in Washington. Brigadier General Charles

Richard, now on duty in the Surgeon General's Office in Washington, is the senior officer in the Medical Corps. He would have to retire for age about one month later than General Gorgas, and it is possible that he may be made surgeon general for this month, so that he may retire with the rank of major general. Under the Senate amendments to the army appropriation bill, provision is made for two assistant surgeon generals in the regular army with the rank of major general, one of whom is to serve abroad. Under this amendment, General Ireland and General Richard might both be given the rank of major general, even though neither was made surgeon general. Brigadier General Robert M. Noble, of the Medical Corps of the regular army, has also been named as a possible choice to succeed General Gorgas. General Noble has been very active in the affairs of the Surgeon General's Office, first as chief of the personnel division and for several months past as chief of the division of hospitals, and has made an excellent record for efficiency. There is also a possibility of going outside the medical corps of the regular army for a surgeon general, in which case Colonel Franklin Martin might be chosen. He certainly deserves special recognition for the invaluable services which he has rendered in the organization of the medical profession for war, in which work he took the initiative long before the United States entered the war.

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#### CANCER OF THE LARYNX.

The hopelessness of the cancer situation in advanced and deep seated cases in other parts of the body is fully shared by the larynx, and this notwithstanding the newer methods of treatment, which are at best only palliatives. In discussing the cancer problem, especially in its reference to the larynx, Dr. J. B. Beck (*Laryngoscope*, March, 1918) sounds a note of warning against undue overconfidence evinced by some writers, who often overstep the boundaries between accuracy and enthusiasm, with the result that promises are frequently put forth which can not be fulfilled, to the disappointment of the public and the consequent chagrin of the profession. The fact cannot be reiterated often enough that we have no specific for cancer, and that the only cure, if any, lies in early surgical intervention. This means an early diagnosis, for one of the chief causes of surgical nonsuccess is the failure to make a sufficiently early diagnosis (assuming, of course, that the case presents itself in time). Another cause is failure to operate extensively

enough to take in the contributory glands. Implantation recurrence along the operative field is still another cause for failure of the operation. The early diagnosis of laryngeal carcinoma is, comparatively speaking, not a difficult problem, and the careful physician will have his suspicions aroused by hoarseness in an elderly person, especially a man, that persists in spite of treatment of several weeks' duration. At a certain age care should be taken to rule out cancer, first of all, as a cause of persistent hoarseness. The situation of the cancerous growth is usually at the anterior portion of the cord, and as the lymphatic distribution from this region is rather limited, the glands are not involved extensively or early enough to assist in the diagnosis. The following methods of treatment, both adjuvant and radical, are mentioned: The Percy coagulation method, a slow destruction of the tumor in situ by heating the tissues, with subsequent sloughing and discharge. There is liable to remain considerable cicatricial formation, and the necrotic mass may be very tenacious. In the diathermia coagulation method a high frequency current is passed from one pole to another through a portion of the tissue to be penetrated by the current. The heat developed varies between 110 and 130 degrees and the treatment is usually applied daily. Deep x ray penetration seems to be of value in sarcoma of the larynx, and in cases of maxillary, postnasal, and pharyngeal sarcoma, but not in carcinoma; however, the author's experience is so limited that no positive results can be given. The same may be said of massive doses of radium, although the author observed in the only case employed a marked reduction of the growth.

Owing to the high mortality attending it laryngectomy has practically been abandoned by him: in the cases that survived the operation, loss of the voice followed. Hopes are given for a modification of the technic of the operation so as to enable the operator to place an artificial larynx from the trachea to the mouth, and thus render some help to the unfortunate sufferer.

#### DOCTORS STILL WANTED AS OFFICERS IN THE ARMY.

The Secretary of War and the Secretary of the Navy have issued the following statement: "Orders issued by the war and navy departments on August 8th suspending further volunteering and the receipt of candidates for officers' training camps from civil life do not apply to the enrollment of physicians in the Medical Reserve Corps of the Army and the Reserve Force of the Navy. It is the desire of both departments that the en-

rollment of physicians should continue as actively as before so that the needs of both services may be effectively met." We direct special attention to this statement, as it is highly important that the enrollment of physicians in the Medical Reserve Corps of the Army and the Reserve Force of the Navy which has been going on so satisfactorily shall not be interrupted. The order issued on August 8th, in which the receipt of candidates for officers' training camps from civil life was suspended, has been misunderstood by some physicians as forbidding the further enrollment of officers in the Medical Reserve Corps. We are glad to direct attention to this official assurance that enrollment in the Medical Reserve Corps will go on as heretofore and that applications for such enrollments will be welcome.

#### A PRISONER OF DUTY.

The Turkish Government is shortly to effect an exchange of 1,000 British prisoners, but there will be still many left over there, and, naturally, they will need doctors. Under the Berne agreement of December last it is arranged that one British doctor and five of the medical personnel of the ranks should be detained for every 1,000 prisoners. No inspection of prison camps under the Berne agreement has yet been made, but it is very probable that conditions there may necessitate more doctors being detained. There are some things in warfare which are harder than actual fighting, and to stay behind in a prison camp tending wounded and nostalgic men when others joyfully set sail for home or active service requires all the unselfish devotion to duty with which doctors are justly credited by the laity.

#### Obituary

##### MAJOR DAVID EVERETT WHEELER.

M. R. C., U. S. A.,  
of Buffalo, N. Y.

Major David Everett Wheeler, of Buffalo, N. Y., was killed recently while attending the wounded under fire during the Allied counter offensive. Major Wheeler went to Europe in the first winter of the war in connection with the Red Cross work. He enlisted as a soldier in the French Foreign Legion on February 7, 1915, and was wounded during the Champagne campaign on September 28th, of that year. Though wounded himself he attended the other wounded men around him and was awarded the French *Croix de Guerre*. He joined the Canadian Army with the rank of Captain and when the United States declared war he joined the Medical Department of the United States Army, was given a commission as major and has served with the American troops as regimental surgeon in Lorraine and at Cantigny and at Chateau-Thierry. Doctor Wheeler was born in 1872 and graduated from the College of Physicians and Surgeons of New York in 1898.



## News Items.

**Lucius P. Brown Reinstated.**—The Board of Health of the City of New York has reinstated Lucius P. Brown as director of the Bureau of Food and Drugs of the Department of Health. He was suspended on May 28th, on accusation by James E. McBride, civil service commissioner.

**American Association of Obstetricians and Gynecologists.**—The thirty-first annual meeting of this association will be held at the Hotel Statler, Detroit, September 16th, 17th, and 18th, under the presidency of Dr. Albert Goldsponh, of Chicago. Dr. James E. Davis, of Detroit, is chairman of the committee of arrangements.

**Civil Service Examinations for Laboratory Assistant and Nurse.**—The Municipal Civil Service Commission announces two examinations for which applications will be received until August 20th, one for a nurse, female, for temporary work in the health department, and the other for an assistant in a chemical laboratory. For further particulars address the Municipal Civil Service Commission, Municipal Building, New York.

**Nutrition Officers for All the Large Camps.**—The Surgeon General of the United States Army announces that nutrition officers will be stationed at all camps having 10,000 or more soldiers in training. These officers, who are specialists in their particular field, have made a survey of the nutrition in the various camps and recommended many changes which have been adopted with advantage to the service. Sixty new officers are to be commissioned in this particular service.

**Red Cross Contributions to Armenian and Syrian Relief.**—The war council of the American Red Cross Society has made an appropriation of \$900,000 as an additional contribution to the American Committee for Armenian and Syrian Relief, making a total of \$3,000,000 contributed to this relief work during the past year. This money is used by the committee for relief work in Armenia, Syria, the Caucasus, Mesopotamia, Palestine, and other countries in the Near East.

**Sioux Valley Medical Association.**—The following officers were elected at the annual meeting of this association, held in Sioux Falls, S. D., Wednesday, July 24th: Dr. Joseph G. Parsons, of Sioux Falls, S. D., president; Dr. Alfred E. Spalding, of Luverne, Minn., first vice-president; Dr. Daniel T. Quigley, of Omaha, Neb., second vice-president; Dr. George S. Browning, of Sioux City, Ia., secretary; Dr. H. G. J. Koobs, of Scotland, S. D., treasurer. The next meeting will be held at Sioux City, Ia., in January, 1919.

**Special Course in Bacteriology for Laboratory Assistants.**—The Surgeon General's Office has issued a call for laboratory assistants in bacteriological work for immediate service in camps and hospitals and for those desiring to qualify a special three months' course at the University and Bellevue Hospital Medical College has been arranged by Dr. William H. Park, director of laboratories of the Department of Health of the city of New York, and Dr. Anna W. Williams, assistant director. It will open September 4th, with daily sessions from nine to five, except on Saturdays. The fee is \$75 and a few scholarships may be available. Application should be made to Doctor Park at the laboratories of the health department, foot of East Sixteenth Street, New York.

**The Medical Society of the Missouri Valley.**—The thirty-first annual meeting of this society will be held in Omaha, Neb., Thursday and Friday, September 19th and 20th, under the presidency of Dr. A. I. McKinnon, of Lincoln, Neb. Arrangements are in the hands of a committee appointed by the Omaha-Douglas County Medical Society, under whose auspices the meeting will be held, with Dr. John E. Summers, of Omaha, chairman. Other members of the committee are Dr. B. W. Christie, Dr. L. B. Bushman, and Dr. I. S. Cutter. The reception committee is composed of Dr. A. F. Jonas, Dr. R. W. Bliss, and Dr. Roy A. Dodge. Complete programs will be issued early next month. Dr. Charles Wood Fassett, of Kansas City, Mo., is secretary of the society. Dr. O. C. Gebhart, of St. Joseph, Mo., is treasurer, and Dr. Paul Gardner, of New Hampton, Ia., and Dr. T. M. Paul, of St. Joseph, Mo., are vice-presidents.

**Typhoid Fever in an Internment Camp.**—Eleven deaths from typhoid fever have occurred among the German civilians and sailors interned at Hot Springs, N. C. About 150 cases of the disease have developed. Shallow wells are blamed for the infection.

**No Danger of Spanish Influenza Epidemic in New York.**—Dr. Leland E. Cofer, health officer of the port of New York, reported that there were several cases of influenza among the passengers on board a Norwegian steamer which arrived in Quarantine Tuesday, August 13th. Since there is no quarantine at this port against any kind of influenza, the patients were removed to the Norwegian Hospital in Brooklyn, and now all have pneumonia. The ship surgeon reported that three deaths from pneumonia had occurred on board, and at least one patient has died since landing. It is Doctor Cofer's belief that there is not the slightest danger of an epidemic of Spanish influenza in this country. The subject was discussed at a meeting of the Board of Health of New York city, Thursday, August 15th.

**Personal.**—First Lieutenant Charles W. Myers, M. R. C., has been awarded the Distinguished Service Cross, according to General Pershing's report of August 7th. At Vaux, on July 1st, Doctor Myers established under heavy shell fire an advance dressing station for the treatment and evacuation of men wounded in the first waves of the assaults.

Dr. J. Torrance Rugh has been appointed professor of orthopedic surgery at the Jefferson Medical College, Philadelphia.

Passed Assistant Surgeon Paul Tonnel Dessez, U. S. Navy, has been awarded the Distinguished Service Cross for bravery.

**Death Percentages from Wounds.**—In connection with the casualties among the A. E. F. in the Marne-Aisne offensive, according to a statement authorized by the chief of staff, it should be stated upon the basis of the officially attested experience of our associates during four years of this war that of wounded soldiers sent to hospitals for treatment fewer than one in twenty die. Of all the soldiers sent to the hospitals only forty-five in every 1,000 die, says the *Army and Navy Journal* for August 10, 1918. These include those who die of diseases as well as those who die of wounds. Of all soldiers wounded in action more than four fifths return to service, many of them in less than two months. It is necessary to discharge for physical disability only 14.5 per cent. These figures are based on an average of both British and French official figures, including both officers and men. The two are averaged together since American troops are fighting with both the French and the British under conditions which vary. They show: returned to service, eighty-one per cent., or 810 per 1,000; discharged from service because of physical disability or other causes, 14.5 per cent., or 145 per 1,000; died from wounds, 4.5 per cent., or 45 per 1,000.

**Health of Troops in the United States Camps.**—The semiannual report of the chief of the Division of Sanitation to the Surgeon General of the Army shows that despite the severe epidemics of pneumonia, measles, and meningitis during January, February, and March, the health of the troops in the United States has been very good. The annual death rate per 1,000 for disease for this period was 8.03. On an average 45 men out of every 1,000 were carried on sick report, although a great many of these were not confined to the hospitals. These included all cases of venereal diseases, the greatest single cause of disability in the army. In the majority of these cases the disease was contracted before the patient entered the army. For the months of January, February, and March, the "pneumonia season," the death rate for disease per 1,000 was 10.4. For the following three months it was 4.93 per 1,000. Of all deaths during the six month period sixty-three per cent. resulted from pneumonia. The morbidity and mortality rates for the six months for troops in this country are increased as a result of the fact that numbered among the soldiers in the country are all those sick and disabled men who were left behind when the organizations of which they were members sailed for Europe. This fact in part explains the high admission rate for disease in some of the camps.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SOME NOTES ON DRUGS AND TREATMENT.

#### *A Review of Recent Progress in Therapeutics.*

BY MARK SADLER, M. D.,

Montreux, Switzerland.

#### III.

#### THE TREATMENT OF HEMOPHILIA.

(Concluded from page 256.)

The organic extracts have naturally been employed in hemophilia. Treatment with thyroid extract has given some good results. Labbé says that under its influence the spontaneous multiple hemorrhages, which nothing could stop, were controlled, health was restored, and a permanent cure resulted. The ovarian extract was used successfully in one case by Tavardier, and it seems that hepatic extracts have likewise given good results. However, Gilbert and Carnot have shown that when given intravenously fatal thrombosis has occurred, a fact which did not prevent these writers from noting that *in vitro* the addition of hepatic extract hastened coagulation. The coagulating action is not peculiar to hepatic extract, and the majority of organic extracts possess a hemostatic action, while the same may be said of tissue juices. In this respect I would refer to a curious experiment of Morawitz and Lösen, who collected hemophilic blood in four different tubes. The first was empty, and coagulation took place in two hours. The second tube contained a one per cent. solution of calcium chloride, and no change was observed. The third tube contained fifteen centigrams of renal juice, and coagulation was complete at the end of a minute. Finally, in the fourth tube there were twenty-five centigrams of a 4:1,000 solution of hirudin. The blood remained uncoagulated.

Therefore, it is evident that of all the therapeutic agents I have considered in the order of gradually increasing coagulating action, it is certain that some have given appreciable therapeutic results in the disease in question, but the benefit derived is much more evident when serotherapy has been resorted to.

Three sorts of sera have been utilized, namely, artificial serum, Fleig's serum of complex mineralization and the animal sera. The first of these sera, representing a 7:1,000 sodium chloride solution, has been utilized not only for its tonic, reconstructive and hematopoietic effects, but also on account of its hemostatic action. Tuffier, Hayem, and Fourmeau speak favorably of its use in hemophilia.

On the other hand, Fleig has demonstrated this hemostatic action of ordinary physiological salt solution in dogs. He made a clean section of a muscle and obtained a capillary hemorrhage which ceased when the salt solution was injected. In two rabbits he cut the gluteus muscle, which was followed by capillary hemorrhage. One animal was left to himself, and the bleeding continued for eighteen min-

utes. In the other it ceased at the end of ninety seconds after an injection of twenty c. c. physiological salt solution, and three minutes and a half after section of the muscle. Continuing his experiments, Fleig came to this most curious result, namely, that massive doses of the serum prevented its hemostatic action.

Besides normal salt solution, Fleig studied the action of compound mineral sera containing all the minerals of the blood, and in proportion as near as possible. He compared, from the viewpoint of hemostasis, the effects of normal salt solution and his complex serum, the following being the formula:

R	Sodii chlorid.,	.....	6 to 8 grams;
	Potass. chlorid.,	.....	0.20 to 0.60 gram;
	Calcii chlorid.,	.....	0.50 to 3.0 grams;
	Magnesi sulphat.,	.....	0.20 to 0.50 gram;
	Sodii bicarb.,	.....	0.50 to 1.50 gram;
	Sodii phosphoglycerat.,	.....	0.70 to 2.00 grams;
	Glucose,	.....	1.00 to 5.00 grams;
	Aq. dest.,	.....	q. s. ad 1,000 c.c.

By means of this serum, Fleig came to the following conclusions: that this complex liquid has a greater hemostatic effect than normal salt solution; that the addition of this serum in certain amounts to normal salt solution still more increases the power of coagulation; that the mechanism of the hemostatic action is due both to the increase of coagulability of the blood and vasomotor changes, and that these sera may be used in practice, either as a curative or prophylactic measure.

There are also the animal sera, whose use has now become general in hemophilia. The rules applicable to animal serotherapy have been well laid down by Weil. He advises the use of fresh serum (from man or horse) in hypodermic injections, and points out that intravenous injections offer certain dangers, although it may be utilized in cases where a rapid effect is necessary. Antidiphtheric and antitetanic sera may be employed, but Weil prefers the fresh horse serum. This is readily obtained from the jugular vein of the animal by puncturing the vein with a large needle. Fifty c.c. of blood are sufficient. This is left to coagulate, after which the serum is removed. An injection of from ten to twelve c.c. is quite enough. Weil says that the fresh serum manifests its effect in from twelve to twenty-four hours after injection, and its effect lasts for twenty-five days, although it gradually decreases. A second injection will produce the same effect as the first one. Schlesinger proves the good results obtained from antidiphtheric serum, but advises not to renew the injection until two or three days have elapsed. Animal serum can also be utilized in local applications.

As to treatment, it is either prophylactic or curative. Weil has published two cases in which the prophylactic, in hemophilic subjects, permitted surgical operations to be performed without any ulterior complications arising. On the other hand, Maclaure had a contrary experience after a prophy-



lactic injection of twenty c. c. of antidiphtheritic serum, the patient dying from a surface oozing following the incision for a suppurating parotiditis. Baum had unsuccessful results in three cases in the same family, where prophylactic serotherapy had been employed, the blood of each subject coagulated *in vitro* in contact with fresh serum.

These failures prove that the preventive method is not always without danger, and for this reason the practitioner will do well not to count too much upon it, but curative treatment by this therapeutic measure has been much more successful, and many published cases, including two of my own, reveal a particularly distinct and trustworthy effect.

Antidiphtheritic serum has been most generally employed. Be careful to distinguish between accidental and familial hemophilia. In the former, Weil has not yet had occasion to test the effect of fresh serum, but there is no doubt that its action is considerable, when we take into consideration its proven efficacy in other hemorrhagic states and all the various dyscrasic hemorrhages. In familial hemophilia its efficacious effects are very marked, while the local action of fresh serum has been verified by Weil in a man who sustained a severe hemorrhage from the arm. It is always advantageous to utilize it when possible in local applications alone, or combined with hypodermic injections. The hemostatic effect is very powerful. Although the effects do not appear until twelve, fifteen, or twenty-four hours after its use, it would be most exceptional that the hemophilic state would be such that this delay would be serious.

**Mode of Action of Lactic Bacillus Therapy.**—P. Carnot and H. Bondouy (*Paris médical*, May 4, 1918) note that the partisans of lactic ferment treatment maintain an ability on the part of the ferment to liberate acids by its action on sugars, especially lactose, in the alimentary tract and thereby to modify the intestinal flora and impede the pullulation of proteolytic putrefactive organisms. Recent observers, however, have failed to note an acidification of the feces, even after ingestion of large quantities of lactic cultures or of yoghoort. In a case treated radically for cancer of the transverse colon and having a cecal artificial anus as well as a partial passage of fecal material to the anus, the authors were able to investigate the subject. In control experiments neither yoghoort alone nor yoghoort with an extra quantity of milk of fifty grams of lactose, led to acidification of the feces. The same condition prevailed in the patient with the artificial anus. Simultaneous examination for a week, however, of the cecal and anal stools in this patient supplied the key to the problem. With yoghoort alone—even 750 mils—the cecal stools remained neutral, like the anal stools, but upon addition of fifty grams of lactose, the cecal stools became very decidedly acid, while the anal stools were still neutral. This persisted even when the yoghoort was reduced to 250 mils; but the acidity disappeared upon discontinuance of the lactose. Tests for lactic acid and lactose were positive in the cecal stools but negative in the anal stools. These findings show that to induce acidification at all, lactose must be given along with the yoghoort. Lactose actu-

ally reaches the cecum, in which the acidifying action occurs. Farther on in the colon, however, the lactose and lactic acid are absorbed and the stools return to their neutral reaction. Lactose is the only sugar which yoghoort will ferment. With any of the lactic ferments one should combine lactose, fifty grams a day, to be taken in solution in several doses between meals. Saccharose and proteoses were also found in the cecum; passage of food from pylorus to cecum took but a few minutes, but from cecum to rectum, over twenty-four hours. Failure of acidification of the anal stools after ingestion of lactic ferment does not prove that reduction of proteolytic organisms is not taking place in the small intestine and cecum. As for the question whether the antiproteolytic action exerted is actually powerful enough to induce an autophurification of the intestine by modifying the flora, this remains to be definitely settled.

**Early Vaccination of the Newborn.**—Wurtz (*Bulletin de l'Académie de médecine*, May 21, 1918) states that the French laws recommend waiting three months before vaccinating a child at the breast. Pinard, however, has long been a partisan of immediate vaccination, deeming it better to take the risk of nonsuccess than to delay the procedure. Recently an unvaccinated child two months old succumbed to smallpox in Paris. Tissier in 1904 published a paper based on statistical data from which he concluded that the chances of nonsuccess at birth are greater than two or three weeks later; inherited immunity rapidly becomes attenuated at the expiration of this period. Yet Tissier, in common with other accoucheurs of the Paris hospitals, himself practises and advocates early vaccination of the new born. Exception is made in cases of congenital debility, skin affections, etc. Bonnaire, having witnessed a case of death from hemorrhage after vaccination of a newborn child, waits until the eighth or tenth day. Wurtz advises that the official recommendation as to time of vaccination be altered to read "all children over ten days and less than three months old."

**Ionization in Incipient Cancer and Other Nodules in the Breast.**—G. Betton Massey (*American Journal of Electrotherapeutics and Radiology*, March, 1918) refers to the value of the faradic current in clearing the diagnosis in suspected incipient breast cancer; it will cause resolution of painful areas of chronic mastitis. A "sticking" pain is an even graver indication of cancer, while absence of both pain and tenderness in a lump is probably the worst subjective sign. The faradic current is advised when expert palpation yields only signs of apparent chronic lobular congestion. Any nodule which resists two to six weeks' daily applications of the faradic current, should be promptly destroyed by massive polar ionization. It is either a cystoma, carcinoma, or fibroma. Local destruction *in situ* without preliminary microscopic examination is urged as the safest procedure for the patient, careful attention being also advised as regards enlarged glands in the axilla, which are to be destroyed in the same way. Patients will consent to this treatment earlier than to removal of the breast, and the physician himself will reach the decision earlier than he will that of advising removal. The

ionization causes both chemical and thermic destruction of all the tissues between the electric needles in a few seconds. The destructive application must usually be carried out under a brief general anesthesia. The author has destroyed in this manner small breast tumors in fifteen cases. In several the diagnosis of probable cancer had been greatly strengthened by the presence of enlarged glands in the axilla. All but one patient remained under observation or were repeatedly communicated with, and in none of these did any manifestations of the disease recur.

**Cerebral Edema.**—L. Bathe Rawling (*British Medical Journal*, May 4, 1918) has seen a considerable number of cases presenting evidences of cerebral edema as the result of heat stroke, cerebral malaria, shell shock, etc., and has come to the belief that the condition is due in part to a damage to the veins of the brain and its membranes which reduces their capacity for absorbing the excess of exuded fluid. Lumbar puncture sometimes temporarily reduces the symptoms of the increased intracranial pressure, but at other times it proves of no value, or even yields no excess of fluid, probably due to the blocking of the communication between the brain and cord. The most satisfactory form of treatment has been the performance of a subtemporal decompression with incision crucially through the dura and followed by replacement of the temporal muscle. This permits the escape of the fluid into tissues whence it can readily be absorbed and after some time the normal functions of the cerebral sinuses and veins are restored. In practically all of the cases in which this operation has been performed by the author the results have been very good and quite permanent. The operation is not dangerous and is recommended for all severe cases in which improvement has not taken place after three months of medical treatment.

**Intravenous Calomel Injections in Syphilis.**—P. Chevallier (*Presse médicale*, May 9, 1918) had previously shown that intravenous injections of insoluble powders is entirely feasible. In the case of calomel, however, such a procedure had seemed impracticable owing to its high molecular weight, which prevented its remaining in suspension in water. With the assistance of Georget and Chazal, the author has secured a stable suspension of calomel and used it with success both experimentally and clinically. In man he injects 0.01 to 0.02 gram, according to the age and strength of the patient, every five to eight days. The dose is gradually increased to 0.05 gram, and the injections administered in series of ten. Over 150 cases have already been treated, with notably favorable results. Selective susceptibility to the injections does not occur. A Herxheimer reaction may, however, be induced. The measure gives incomparable results in healing hard chancres. Skin lesions may reappear very soon if the patient dispenses with treatment when all his symptoms have cleared up under the injections. Erosive mucous patches are often rebellious to calomel, and in such instances novarsenobenzol is to be preferred. Simultaneous injections of novarsenobenzol and of calomel are well borne and active, and sometimes constitute the method of choice.

**Medical Treatment of Gastric and Duodenal Ulcer.**—Alexander G. Brown, Jr. (*Charlotte Medical Journal*, June, 1918) considers the first step the search and removal of the primary focus. The mouth accessory sinuses, teeth, alveoli, salivary glands may be the primary focus. A careful study of the blood should be made: Wassermann, the search for malarial parasites, coagulation time, etc. A study of the feces should also be made and a careful urinalysis is of great importance. It is a good plan to begin treatment by fasting one or two days. This should, of course, be done in a hospital. Following the period of fasting, milk and eggs are administered; later, sugar, fats, and proteids are added. An alkali should be administered to reduce the hyperacidity. Sodium bicarbonate should always be administered with another alkali, as when administered alone it may increase the sodium chloride from which the hydrochloric acid is increased, rather than diminished. Bismuth subnitrate is of great value. Two drams of bismuth in eight ounces of distilled water—of which a tablespoonful is given three times daily—is of value. Nitrate of silver, with extract of hyoscyamus and extract of belladonna should be given before meals to stimulate healing and allay spasm. If pylorospasm is present, hypodermic of atropine sulphate, grain 1/120 to 1/60, is administered once or twice in twenty-four hours. The Einhorn method of duodenal feeding should be used whenever possible.

**Radical Treatment in Oblique Inguinal Hernia.**—J. W. Henson (*Virginia Medical Monthly*, June, 1918) emphasizes the necessity of observance of the following principles: absolute observance of asepsis; high ligation of the sac; restoration of the integrity of the transversalis fascia; the proper plastic work for making a satisfactory muscular and aponeurotic buttress over the inguinal canal; proper suture material; thorough hemostasis before suturing. Serious accidents may and do occur when one is not thoroughly familiar with the surgical anatomy of the inguinal canal. The bladder or vas deferens may be cut, the external iliac artery or vein punctured with a needle, or the deep epigastric artery injured. The omission most frequently made by the trained operator is in not restoring the integrity of the transversalis fascia. The hernial sac and its contents extending down the inguinal canal produce an expansion of the tubular process of the transversalis fascia surrounding the structures of the cord. Recurrence seldom ensues if the sac is ligated sufficiently high and the muscular and aponeurotic buttress well made. Some recurrences are due, however, to failure to correct the expansion of the tube of transversalis fascia, particularly above. At least one stitch of chromic catgut should be placed in the upper end of this tube, thus narrowing the internal abdominal ring. If the transversalis fascia forming the posterior wall of the inguinal canal feels loose, one should take a few reefs in it with chromic gut and make it tense. Another oversight occurring occasionally with good operators is the failure to remove large pads of fat sometimes found among the structures in the inguinal canal.



**Gallstones.**—A. Althabe and E. Nicholson (*La Semana Medica*, April 11, 1918) review 240 cases of gallstones with the following conclusions: The condition is more common in women, the usual age of occurrence is between twenty-five and thirty, and surgical measures are indicated in every case where medical treatment has been unsuccessful. The operation of election is cholecystectomy with gauze drainage of the cystic duct; the drainage of the hepatic duct is not only practicable, but should be carried out in every case of lithiasis of the duct or duct infection.

**Heliotherapy.**—Artant (*Presse médicale*, March 14, 1918) asserts that sunlight treatment can be satisfactorily applied anywhere provided lenses be used to augment the curative energy of the solar rays. Despite the prevailing opinion to the contrary, the rays of the warm portion of the spectrum are those which exert a therapeutic action. The author obtained constantly good results from heliotherapy in lymph node inflammations—even with suppuration and sinus formation—and was often successful in cases of tuberculous osteitis and orchitis. In Pott's disease heliotherapy is especially effectual in allaying pain. It will even influence considerably the pains of mammary or uterine cancer. It yields good results in certain forms of eczema, and markedly allays itching in this disease.

**Spinal Puncture in Sciatica.**—I. A. Allen and R. E. Parrish (*Therapeutic Gazette*, June, 1918) report immediate relief from sciatic pain after lumbar puncture in three cases. A history of exposure to cold and dampness had been obtained in each of these cases. In the first patient the spinal puncture was performed for diagnostic purposes. Thirty mils of spinal fluid, apparently under increased pressure, were removed. At once the pain disappeared. The patient was, however, kept in bed for some days longer. In the subsequent two months no recurrence took place. In the second case thirty mils were similarly withdrawn, and in the third twenty-five. In each the pain was immediately relieved. One patient got up from bed and walked the same day and the other the following day. Pressure of cerebrospinal fluid might have had something to do with the results noted, since it was found definitely increased in two instances.

**Sterilization of Skin and Other Surfaces.**—Victor Bonney and C. H. Browning (*British Medical Journal*, May 18, 1918) point out that all of the commonly used antiseptics are more or less powerfully irritant, so that their prolonged application for the purpose of destroying the organisms lying deep beneath the epithelium, in the sweat and sebaceous glands and hair follicles, is not possible. They are, further, all made inactive upon contact with blood and other albuminous material, so that their action ceases promptly upon incision of the skin. As a result of bacteriological experimentation and clinical tests in actual use for two and a half years, the authors find that a mixture of methyl violet and pure brilliant green is nonirritant, penetrates deeply, destroys all the organisms even in the depths of the skin and its glands, and makes the skin treated actively antiseptic. The solution con-

tains one per cent. of a mixture of equal parts of the two dyes, dissolved in equal parts of alcohol and water. The dyes are first dissolved in the alcohol and the water then added. The skin of the operation area is painted with this solution six hours before operation and a compress soaked in the solution is applied and covered with waterproof batiste. No further preparation is done, the dressing being removed on the operating table. The same solution can be used for sterilization of the vagina and rectum by packing these cavities with gauze saturated with it. The perineum can also be sterilized by the application of compresses wet with the solution. In all cases the application should be continued for six hours prior to operation. Cultures of the skin from various regions after such preparation have proved wholly sterile in all but exceptional instances, when a single colony, or perhaps two or three colonies, has grown.

**Triple Typhoid Vaccination.**—Eric A. Fennel (*Journal A. M. A.*, June 22, 1918) draws his conclusions from a careful investigation of the effects upon the agglutinins produced in healthy men from vaccination with repeated doses of single vaccines and doses of the triple vaccine as practised in the army. He finds that agglutinins are developed for all three organisms equally well after the use of triple vaccine as after alternating doses of single vaccines. The use of the triple vaccine is time saving. Previous vaccination represses the development of agglutinins for the specific organism following subsequent vaccination. After vaccination fluctuations in the agglutinin content of the serum occur in normal persons, and such fluctuations are therefore of little diagnostic value in cases of fever. No relation exists between the systemic and the local reaction after vaccination, and the units of agglutinins produced.

**The Treatment of Hay Fever.**—A. Sophian (*Medical Fortnightly*, July 1, 1918) divides the treatment into two parts: 1, preventive, and 2, curative. In the preventive treatment, much has been done by the enforcement of municipal laws regarding the destruction of weeds near homes. A similar result is obtained by sending the patient away. Active prophylaxis consists in preventive vaccination with the causative pollen. The plan is to test the patient with different pollens by scarifying the skin and applying pollen; by injecting pollen intradermally, and by instilling pollen into the eye. The pollen is prepared in the form of a solution or alcoholic extract. One half the pollen extract which gives the characteristic ophthalmic reaction is used as the initial dose. Injections are given at three to ten day intervals, rapidly increasing the dose up to a final maximum of 1-100,000 dilution of pollen extract. Ophthalmic tests are made every two or three weeks to determine increased ophthalmic resistance. Serum treatment has been used with favorable results. Dunbar's antitoxin serum consists of an immune serum prepared by immunizing horses against different pollens. The serum is used locally. Graminol, another serum, consists of a normal serum of cattle obtained during the period of flowering of grasses. Results with this were equally as good as with the antitoxin serum.

**Solar Erythema.**—Nicolas V. Greco (*La Semana Medica*, May 2, 1918) reports a case of this interesting condition, which is sometimes wrongly called solar eczema. It frequently goes on to the formation of blebs and pus with the establishment of a true deep dermatitis. Usually the condition yields to applications of oil and dusting with a bland powder. Meanwhile, of course, the patient must be protected from the sun's rays.

**Chloralose as Anesthetic in Wound Cases.**—J. Gautrelet (*Presse médicale*, May 2, 1918) suggests the use of chloralose as anesthetic in cases of severe traumatic injury and shock, in which the blood pressure is greatly lowered. Chloralose not only tones up the heart, even when atropinized, but assists in maintaining the blood pressure at its normal level. Furthermore, while exerting a moderate strychninlike effect, it diminishes or allays convulsions and arrests vomiting, whether of central or peripheral origin.

**Serum of the Normal Pregnant Woman in the Treatment of Pernicious Vomiting.**—Romulo Melgar (*La Cronica Medica*, of Lima, Peru, March, 1918) reports the successful subcutaneous injection of the serum of a multipara near term as a curative measure in three cases of apparently hopeless vomiting of pregnancy. An injection of ten c. c. is followed every two days by doses of ten, fifteen and twenty c. c. The very first injection usually shows startling improvement, and in some cases no further administration is required. Melgar recommends this method of treatment enthusiastically in this usually unsatisfactory and frequently dangerous complication of pregnancy.

**Polyarthritides during Arsenobenzol Treatment.**—Chabanier and Bleton (*Presse médicale*, May 2, 1918) state that during the treatment of syphilis with the arsenobenzols, especially the neo variety, there appears rather frequently a general polyarthralgia, localized mainly around the joints, and occurring under the same circumstances as icterus and neurorecurrences. The pains last three or four weeks, and are apparently not influenced by the treatment, which can be resumed as soon as they have disappeared. Since such pains are sometimes noticed in nonsyphilitic individuals subjected to arsenobenzol therapy, they are probably to be ascribed rather to a direct action of the drug than to a localization of the syphilitic infection about the joints under the influence of the treatment.

**Intraspinal Medication in the Treatment of Cerebrospinal Syphilis.**—P. Lewis Witchley (*Charlotte Medical Journal*, June, 1918) concludes that curative agents administered orally or intravenously do not appear in the spinal fluid and hence exert no spirochetacidal action upon the spirochetes lying within the meninges and outer part of the brain. There is probably a separate strain of the *Spirochæta pallida* which attacks the central nervous system, and in order to effect a cure intraspinal medication must be employed. Intraspinal treatment should be carefully controlled by examination of the spinal fluid, including the Wassermann reaction, cell count, globulin test, and colloidal gold reaction. Salvarsanized serum is the safest curative agent to administer intraspinaly.

**Weak Feet in Children.**—Jacob Grossman (*Medical Record*, June 8, 1918) writes that the feet of children up to three or four years of age are apparently flat. Prophylactic measures are important and when they are unsuccessful some support should be used, and of these the Whitman brace is the best. Exercises are of great service such as tiptoe exercise, walking in the bare feet, walking on the fore part of the foot, grasping movements with the toes, exercises with foot weights, and bicycling.

**Charcoal in Mucous Colitis.**—T. B. Broadway (*Lancet*, May 4, 1918) reports two cases of obstinate mucous colitis, which had resisted all known forms of treatment, but which responded promptly and permanently to the administration by mouth of charcoal. The charcoal was given four times daily, after meals, in doses of 8.0 grams (two drams) suspended in water flavored with sherry, or enclosed in cachets. The mechanism of its beneficial action in these cases is suggested as being in part antiseptic and in part astringent.

**Carbon Dioxide Snow in the Removal of Benign and Malignant Growths of the Skin.**—G. H. Sadelson (*Charlotte Medical Journal*, June, 1918) advises this method of treatment and believes it a useful adjunct in the removal of extraneous growths for the following reasons: 1, it is inexpensive; 2, it is practically painless in its action; 3, it requires no anesthetic, either local or general; 4, the patient is not kept from his occupation; 5, it is selective in action; 6, the cosmetic results are better.

**The Injection Treatment of Hernia, Hemorrhoids, and Hydrocele.**—G. N. Murphy (*Charlotte Medical Journal*, June, 1918) uses a forty per cent. solution of carbolic acid in water and glycerin. Twenty minims of this solution should be injected into the hernial canal near the internal opening. Six or eight of these treatments, given once a week, suffice. For hydrocele, the water is first drawn off the tunica vaginalis and then twenty to forty minims of pure carbolic acid are injected into the sac. In cases of hemorrhoids, twenty per cent. solution of carbolic acid is used and each tumor is injected once a week. From one to three treatments are usually required to bring about a cure. The advantages of the injection treatment are that chloroform and ether are avoided, the patient can go about his work, and the treatment is safe.

**Action of Miotics on the Incomplete Sphincter Iridis.**—R. J. Curdy (*Journal A. M. A.*, June 29, 1918) calls attention to the very contradictory nature of the opinions expressed in the literature as to the effects of miotics in cases with radial tears of the iris. The contradictions are concerned with whether the miotics increase or decrease the tears. The effects noticed by the author on three eyes which had been subjected to iridectomy are shown in drawings, there being a narrowing of the pupil in all with no increase in the tear. He concludes that physostigmine can produce contraction of the pupil, narrowing of the coloboma, and reduction of the tension in iridectomized eyes with relaxing effect on the radial fibers. It also seems probable that miotics and mydriatics neither increase nor diminish the extent of radial tears of the iris.



# Miscellany from Home and Foreign Journals

## Tachycardia in the Enteric and Other Fevers.

—H. Fairley Marris (*Lancet*, May 11, 1918) from an extensive observation of the cardiac condition in the enteric and other fevers and during convalescence from such fevers, classifies the tachycardias encountered into those due to cardiac lesions; those of postural or atonic origin; and those arising from general instability of the vasomotor nervous system. In 650 cases of the enteric infections there were seventy-five cases of tachycardia, of which five were due to cardiac affection, forty to vasomotor instability, and ten to postural causes. The others showed features of both of the latter groups. Tachycardias observed in other febrile conditions fell into the same groups, in most of the fatal cases being of cardiac origin, while the majority of the nonfatal cases were of vasomotor origin. The diseases in the fatal cases were chiefly diphtheria, meningitis, military tuberculosis, and scarlet fever. In the nonfatal cases the diseases were chiefly diphtheria, scarlet fever, influenza, trench fever, and obscure pyrexias. In the tachycardia of cardiac disease the rapid pulse was present in sleep as well as during waking, and the ability to hold the breath was much impaired. In the vasomotor tachycardia the increased rate occurred only when the patient was awake and was not influenced by postural changes, and the ability to hold the breath was normal. In that due to atony the increased rate occurred only with the patient in the upright position and was relieved by the application of a snug abdominal binder. The cardiac tachycardias were treated as heart cases; those of vasomotor origin occasionally responded to the use of strophanthin, but usually failed to do so, while they were benefited by graduated exercise, massage, and the administration of bromides. The atonic variety were helped by the use of tight abdominal binders, massage, and the administration of tonics.

**Removal of Brain Tumor.**—W. W. Keen and Aller G. Ellis (*Journal A. M. A.*, June 22, 1918) first saw the patient, then a man twenty-six years old, more than thirty years ago. He then gave a history of having fallen out of a window upon his head, as a child, which caused an indentation of his skull on the left side. After a prolonged period of unconsciousness he recovered and from the age of five developed a discharge from his right ear which recurred frequently. For many years before being seen he had suffered from frontal headache and for two years had had recurrent epileptic attacks. His right arm, leg, and face became paralyzed and he lost most of the vision of both eyes. The paralysis largely cleared up. His skull was then trephined over the site of the old scar in the left temporo-frontal region, an opening  $2\frac{1}{2}$  by three inches being made. A tumor, growing from the dura, and measuring  $2\frac{7}{8}$  by  $2\frac{1}{2}$  by  $1\frac{3}{4}$  inches, was easily shelled out. The tumor was a pure fibroma which had apparently developed from the irritation of a fragment of the inner table of the bone. After a fairly satisfactory course of recovery a large hernia cerebri developed following the reopening of the wound.

This subsided after discharging clear fluid for five weeks and left a large depression which filled and bulged with every muscular or respiratory effort. The patient's symptoms were much benefited by the operation, though he finally underwent a slow deterioration and died over thirty years after the operation. The autopsy then showed that the opening into the skull was covered by a newly formed fibrous membrane beneath the skin and that the cavity left by the tumor had its floor formed by the lateral ventricle for a length of five centimetres and the foramen of Monro was clearly visible two centimetres from the posterior end. Various cerebral structures, including the corpus striatum and part of the thalamus, formed the walls of the cavity. The case presented many points of unusual interest, among which were the great increase in the ventricular area of the brain, the very long period of survival after the removal of the brain tumor, and the fact that this was one of the first instances of the surgical removal of a brain tumor. All of these points are discussed in the paper, which covers the various details of history and progress of the case.

## Stages of Urea Retention in Bright's Disease.

—F. Widal, A. Weill, and P. Valléry-Radot (*Presse médicale*, May 23, 1918) state that while the manifestations of chloride retention in nephritis are curable and can be prevented by a salt free diet, disturbances due to urea retention are always dangerous. Blood urea estimations permit of prognosticating with a degree of precision rare in clinical medicine the subsequent duration of the disease. Patients whose serum shows persistently at least one gram of urea per litre almost always succumb within two years. Where, however, the urea vacillates between 0.5 and one gram, the indications are less definite. Sometimes, after remaining at this level for a time, the blood urea returns to within normal limits; or, it may remain at the same level for years, without aggravation of the patient's general condition; or, again, it soon rises further, exceeding one gram. As a rule this period of initial or warning azotemia is of long duration. The original renal disturbance, however, dates farther back and can be detected before any urea retention has supervened, by means of the Ambard constant. Among seventy-two nephritics with blood urea below 0.5 gram, only seventeen had a normal Ambard constant. The heightened constant appears even in cases of simple albuminuria, of pure hypertension, or of albuminuria with chloride retention but with or without hypertension. In many Bright's cases elevation of the constant appears as a temporary disturbance; a persistently high constant may, however, occur in the absence of urea retention. This first stage of the disease, before urea retention begins, sometimes lasts a number of years. In the third stage, the urea exceeding one gram, Ambard's constant is of no further clinical value; the urea estimations should, however, be repeated several times to make sure that a high reading was not due to a temporary acute exacerbation. Above two grams of urea per litre, death is near.

**Psychoneurotic Factor in Irritable Heart.**—B. S. Oppenheimer and M. A. Rotschild (*Journal A. M. A.*, June 22, 1918) made a careful analysis of 100 unselected cases in a large English military hospital and compared their findings with a similar analysis of normal soldiers made by Wolfsohn to determine the predisposing factors of war psychoneuroses. The authors reached the following conclusions: In the first place the fundamental pathology of the condition known as irritable heart is unknown. The cases can be divided into two large groups, irrespective of whether studied from the side of neuropsychic factors in the family and previous histories, or from that of preenlistment and constitutional symptoms. In Group I there is a positive family and previous history predisposing to psychoneuroses and a history of constitutional asthenia. This group is one of irritable weakness of the whole nervous system including that governing the circulatory system. This group includes about half of the cases. The second group (of about half of the cases) gives past personal and family histories which indicated no predisposition and showed normal resistance. The irritable heart condition in this group develops after prolonged strain or some infection which exhausts the reserve. Such patients show symptoms of exhaustion, which are not found among the first group. These patients give good military services in difficult positions for an average of a year and a half while those of the first group usually break down within a year and seldom serve in arduous capacities. The burden to the army would be much lightened if the cases of Group I could be discovered promptly and refused admission.

**Sympathetic Disturbances and Dyspeptic States.**—F. Ramond, A. Carrié, and A. Petit (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, January 24, 1918) have already described a sympathetic syndrome characterized by vasoconstriction in the extremities, causing more or less cyanosis and coldness of the hands and feet; facial vasodilatation with flushes and redness of the skin; often tinnitus, flashes of light, dizziness, and a sensation of intracranial throbbing; exaggerated sweating, especially in the extremities; attacks of tachycardia and instability of the pulse; dyspneic sensations without increased respiratory rate but with deep inspirations followed by prolonged sighs; fibrillary tremor of the fingers, occasionally with tingling or numbness, and a high degree of susceptibility to emotional reactions. Sympathetic dyspeptic symptoms may either be superadded to the typical sympathetic syndrome or occur secondarily in true dyspeptics. The characteristic sympathetic dyspeptic symptom is a painful sensation of fullness and gastric distention, closely following a meal or beginning even during the meal, and lasting fifteen to thirty minutes or at most an hour. Generally no actual distention can be detected by inspection, palpation, or measurement. Usually there is marked temporary sensitiveness of the epigastrium, and frequently a general lassitude persisting throughout the period of gastric digestion. In the secondary cases the underlying gastric disorder may be of almost any type: hyper or hypo conditions, atony with ptosis,

different forms of gastric ulcer, etc. The typical immediate postprandial discomfort, together with some of the other sympathetic manifestations, are likewise witnessed in these cases. Between the two groups referred to occur a number of intermediate cases, in some of which chemical examinations and radioscopes are alike negative in spite of pronounced burning or cramplike, inconstant, and nonperiodic pain. This condition may be likened to a causalgia. The site of the irritation inducing sympathetic symptoms may reside either in the stomach itself; in a local disturbance in any other organ in the sympathetic distribution; or, the cause of the irritation may be general—an infection or intoxication, or a disturbance of the ductless glands, in particular the thyroid, genital glands, and adrenals.

**Chronic Myocarditis.**—Henry A. Christian (*Journal A. M. A.*, June 22, 1918) presents a clinical study of that form of cardiac disease which is characterized by the signs and symptoms of a failure of the heart to function efficiently and by the absence of valvular lesions. The symptoms are those of cardiac incompetency of greater or less severity. To this condition the name chronic myocarditis is given for want of a better. In a series of cardiac cases seen during a period of three years in general hospital wards there were 367 without organic valve lesion—that is, chronic myocarditis—and 359 with organic valve lesion. In a series of 107 consecutive autopsies on patients with cardiac disease who were over fifty years of age, mitral endocarditis was found in only two, confirming the rarity of organic mitral lesions in persons past middle life. Chronic myocarditis was found more frequently in males than in females, in the proportion of 240 males to 167 females and it was most frequent in the decade between fifty-one and sixty and relatively uncommon below the age of forty. In respect of the etiology of the disease analysis showed that relatively few of the patients had suffered from rheumatic fever; the Wassermann reaction was positive in only thirty-five out of a total of 369 patients tested. Chronic alcoholism was present sufficiently often to suggest its having played some rôle, but analysis of the cases did not seem to point to its having been a factor of much etiological importance. Hypertension seemed to play a part in less than half of the patients and neither it nor nephritis seemed to have very great etiological significance, especially since these conditions might have been due to the same factor which caused the cardiac condition, or might have been purely secondary to the cardiac disease. Coronary sclerosis was a factor of importance in only about half of the cases. The commonest cardiac lesion was increased in the interstitial connective tissue, but this was absent from many of the cases which had presented typical clinical pictures. Clinically, besides the usual symptoms of cardiac weakness or loss of compensation, the heart was usually found to be enlarged, a systolic apical murmur was usually present, and about half of the cases showed auricular fibrillation or flutter, or some disturbance in the conduction system as shown in the electrocardiogram. Digitalis was of great value in the earlier breaks in compensation, but of little help in the later.



**Bacterial Toxin Causing Retinal Hemorrhage.**

—F. Park Lewis (*Journal A. M. A.*, June 15, 1918) reports two cases of recurrent retinal hemorrhages in each of which infection of the teeth at their apices was discovered. In both the infection was caused by the *Streptococcus hemolyticus*. The removal of the infected tooth in one case was followed by cessation of the hemorrhages, while in the other the administration of an autogenous vaccine, made from the *Streptococcus hemolyticus*, checked the recurrence of hemorrhages. In one of the cases the blood pressure was normal, in the other quite high. Lewis discusses the etiology of recurrent retinal hemorrhage in the light of these two cases and points out that the factor of high blood pressure, by some considered the cause of the hemorrhages, is of no essential causative import. He contends that the hemorrhages are due to the action of some protein toxin, probably derived from the streptococcus in these cases, which dissolves or softens the intracellular cement of the retinal, and probably of other, capillaries and thus permits the escape of blood. The recognition of the existence of such a factor as the cause leads to the ability to search out the cause in other cases and to adopt a rational plan of treatment. Other forms of hemorrhage, such as cerebral hemorrhage, etc., may also be due to the similar action of some protein poison and their prevention should be undertaken along the lines of locating the origin of the poison and removing it, or of destroying or neutralizing the poison.

**Epidemic Lethargic Encephalitis.**—A. Netter (*Bulletin de l'Académie de médecine*, May 7, 1918) is cognizant of seventy-one recent cases of this affection comprising thirty-seven in England and thirty-four in France, with fifteen personal cases. The victim is seized with fever, headache, and at times vomiting. Almost immediately there is marked lassitude and somnolence. At first the patient can be momentarily roused from his slumbers, but later the condition passes into an actual coma, occasionally interrupted by delirium and restlessness. Very characteristic are the ocular disturbances, usually bilateral, consisting of ptosis, strabismus, immobility of the eyeball, or nystagmus. The intrinsic ocular muscles are less frequently involved, but paralysis of accommodation and a sluggish light reflex have been observed. The muscles innervated by the facial and those of the tongue, larynx, and extremities may participate in the paralysis. Tremor is not exceptional. The characteristic signs of meningitis, Kernig, rigidity, and pulse irregularity are lacking or but slightly marked. The meningitic line is, on the other hand, constant. Lumbar puncture yields a clear fluid, under normal pressure, without excess of albumin, and with a normal or but slightly augmented cell content. Of fifteen patients, seven died. Death or recovery may occur within a few days, but generally the disease persists through weeks or months. Lassitude and the eye disturbances continue for some time during convalescence. Postmortem examination shows but little macroscopically; microscopically there are chiefly perivascular infiltrations, most marked about the nuclei of the motor nerves of the eye, in the pons, medulla, and gray substance of the ventricular walls. The spinal cord is but

little involved. While manifestly similar to epidemic poliomyelitis, lethargic encephalitis arises from a different cause. The symptoms cannot be held due to alimentary intoxication, e. g., botulism. The cases always occur singly, whereas in botulism several members of a family become victims. An identical epidemic occurred last year in Vienna. Wiesner thinks he has succeeded in transmitting the disease to the monkey by subdural inoculation and in isolating the causative germ as a Gram positive coccus. The disease must, like poliomyelitis, be propagated by germ carriers in good health or affected only with a slight catarrhal form. Probably injections of serum from convalescents, administered early, will here also prove of therapeutic service.

**Predisposition of Streptococcus Carriers to the Complications of Measles.**—Robert L. Levy and H. L. Alexander (*Journal A. M. A.*, June 15, 1918) made a careful study of this problem, and of that of the origin and prevention of the carrier state among the troops at Camp Zachary Taylor. They found that of 388 measles patients admitted to the hospital, seventy-seven per cent. were carriers with positive throat cultures of the *Streptococcus hemolyticus*. The institution of a temporary receiving ward for the measles cases, in which each man was isolated in a cubicle until the results of his throat cultures could be determined, the subsequent segregation of those free from the streptococcus and those who were carriers of it into two wards, cubicle isolation of all patients in each of these wards, and the employment of nurses in the clean ward who were proved not to be carriers of the streptococcus, was successful in keeping the clean cases free from contamination. Complications occurred almost entirely among the streptococcus carriers, the incidence being almost thirty-nine per cent. among them as compared with 6.4 per cent. among the noncarriers. Efforts were made to free the carriers of their organisms, but no method was found which proved in the least successful, the organisms apparently being harbored in the depths of the tonsillar crypts and being therefore inaccessible to agents for their destruction. In a representative company of men in the camp, throat cultures showed that eighty-nine per cent. were carriers of the streptococcus, while cultures taken from 489 new recruits as they came in showed only 14.8 per cent. to be carriers. It was evident that the majority of the carriers had become such from contact with others in the camp.

**Phagocytic Response to Bacteria in Clean Wounds.**—W. James Wilson (*British Medical Journal*, May 11, 1918) conducted a number of experiments upon the phagocytic response of clean wounds in man to the application of cultures of colon bacilli or killed cultures of staphylococci or *Bacillus welchii*. In every case the application was followed by the prompt outpouring of active phagocytes which completely removed the organisms within twenty-four hours. This response began as soon as five minutes after the application, but the simultaneous application of a 1:1,000 solution of brilliant green arrested the phagocytosis for some time, although it began later and proceeded normally.

# Proceedings of National and Local Societies

## THE AMERICAN GYNECOLOGICAL SOCIETY.

*Forty-third Annual Meeting, Held in Philadelphia, May 16, 17, and 18, 1918.*

The President, Dr. JOHN G. CLARK, Philadelphia, in the Chair.

### **President's Address: Medical Teaching and Research after the War.**—Dr. JOHN G. CLARK, of Philadelphia, selected this topic for his address and presented the following conclusions concerning the scholastic maintenance of gynecology and obstetrics:

I. An adequate endowment or an annual budget of not less than from \$25,000 to \$30,000 a year for salaries would render it feasible to combine the departments of obstetrics and gynecology. Some of the advantages of this plan were stated as followed: 1. There would be less duplication of teaching in embryology and in the anatomy and physiology of the female reproductive organs. 2. The pathological aspects of the two subjects could be correlated, making only one laboratory necessary. 3. As many of the diseases were referable to the childbearing process, they might well be grouped under one head. 4. The opportunity was afforded of studying in the obstetrical department the results of various operations and the remedial measures employed for the relief of gynecological diseases. II. When an endowment was not sufficiently large to equip fully and maintain a combined department in the most comprehensive way, or when special endowments for the maintenance of an obstetrical and gynecological department could be secured but were not large enough to allow the chief assistants and director to retire from private practice, such departments might be conducted more successfully as separate units, for the following reasons: 1. In a university medical school special departments were likely to turn out a more refined product and to offer better instruction if the field to be covered was not too extensive. 2. When properly endowed, the department of gynecology might very logically expand and enter the domain of general surgery. The chief function of the head of such a department was that of instructor in diseases of women, and in a minor rôle of clinical teacher of abdominal surgery. 3. With separate chairs, more time could be given in the obstetrical department to the teaching of the very important subject of diseases of nursing infants, a subject that was now receiving inadequate attention for the reason that the obstetrician had no time to devote to this branch.

Dr. THOMAS S. CULLEN, of Baltimore, reported the following cases:

1. **A New Sign in Ruptured Extrauterine Pregnancy.**—The patient, a woman, thirty-eight years of age, suddenly developed abdominal pain and distention. Doctor Cullen saw her three weeks later. The umbilical region was bluish black, although she gave no history of injury. Vaginal examination yielded nothing on account of the abdominal distention. Under ether, however, a

mass eight by six c. m. was clearly felt to the right of the uterus. Doctor Cullen at once diagnosed extrauterine pregnancy, although the patient had missed no period and there was no uterine bleeding. On opening the abdomen he found a rightsided extrauterine pregnancy, and about one and a half quarts of free blood in the abdomen. He referred to a case reported by Ransohoff where a man, fifty-three years of age, had obscure abdominal symptoms. Jaundice of the umbilical region was soon noted and at operation rupture of the common duct was found, and there was much free bile in the abdomen. Judging from analogy the speaker naturally concluded that the bluish black appearance of the umbilicus was due to intraabdominal hemorrhage, and the presence of the nodule to the side of the uterus clinched the diagnosis of extrauterine pregnancy.

2. **Sloughing Amniotic Hernia of the Umbilicus.**—The child when seen by the writer was nine days old. At the navel was a sloughing mass about four cm. in diameter. This projected 3.5 cm. from the umbilicus. The walls of the sac consisted of thin amnion. The sac contained small and large bowel. This was obstructed. Although the child had a general peritonitis, nothing remained but to resect about eight inches of small bowel and a portion of the ascending colon. The anastomosis leaked in a few days but soon healed satisfactorily. All the fecal matter passed per rectum. The child, however, died on the eighteenth day from a continuation of the peritonitis which existed at the time of the operation.

3. **An Umbilical Polyp Associated with a Meckel's Diverticulum.**—The child was a year old. At the umbilicus was a bright red mass 1.5 cm. in diameter. It had been present from the time the umbilical cord came away. It was covered with mucosa and from the surface a little mucus escaped. At operation the polyp was found to be continuous with a Meckel's diverticulum which extended to and was firmly adherent to the umbilicus. The umbilicus together with the Meckel's diverticulum was removed. The stump of Meckel's diverticulum which had been turned into the bowel swelled up after operation and partially blocked the lumen of the bowel. The child died of pneumonia. The speaker would in the future leave no diverticular stump, but would cut it off flush with the bowel and close the linear incision with two slender rows of black silk. The umbilical polyp was covered over by intestinal mucosa.

4. **Removal of a Carcinomatous Cervix Sixteen Months after Supravaginal Hysterectomy for Carcinoma of the Body of the Uterus.**—The patient entered the Johns Hopkins Hospital sixteen months after a supravaginal operation elsewhere for carcinoma of the body. On vaginal examination the cervical lips looked normal, but the external os was fully two cm. in diameter and completely filling it was a friable new growth. Doctor Cullen opened the abdomen, dissected the ureters free,



turned back the bladder peritoneum and was apparently able to remove the entire cervical growth intact.

#### 5. Adenomyoma of the Rectovaginal Septum.

—Doctor Cullen said that during the last five months he had seen three cases in his own practice and one case occurring in the practice of Dr. Howard A. Kelly. He reported two cases in detail. The first case had the typical thickening in the vaginal vault just posterior to the cervix and directly behind the cervix a bluish black cyst about four millimetres in diameter, shone through the vaginal mucosa.

The second case was most unusual. Posterior to the cervix was a slightly raised polypoid area two by two cm. At operation, in addition to rectovaginal growth, there was a second one. This was situated near the pelvic brim, markedly constricted the bowel, and at operation closely resembled a carcinoma. Histological examination, however, showed that it was a typical adenomyoma. There did not appear to be a similar case on record.

#### The Fetal Anatomy of the Female Pelvis.—Dr.

FRED L. ADAIR, of Minneapolis, Minn., based his report on two studies: a, the ossification centres of the fetal pelvis and, b, a wax reconstruction of the fetal pelvis of a female fetus of fourteen weeks' gestation. The first part of the work was based on observations of fourteen x ray plates of fetuses, twenty-one transparent embryos and twenty-five sets of serial sections. From these two investigations the following conclusions were drawn: 1. The first ossification centre of the pelvis appears in the ilium about the sixtieth to sixty-fifth day of fetal growth in embryos with a C. R. length of from thirty millimetres to thirty-five millimetres. 2. The median centre of the first sacral vertebra is the next to appear about the seventy-fourth to seventy-sixth day in embryos having a C. R. length of fifty-one or fifty-two millimetres. 3. The lateral sacral centres appear when two or three median centres are present, in embryos eighty to eighty-two days old having a C. R. length of sixty-five millimetres. 4. The ischial centre appears about the ninety-fourth to ninety-eighth day in embryos whose C. R. measurement is from eighty-eight millimetres to 100 millimetres. 5. The pubic centre is present on the 129th day in an embryo with a C. R. length of 150 millimetres. At this time all other centres which appear, until just prior or subsequent to birth, are usually apparent. 6. Practically all antenatal pelvic ossification centres are evident by the end of the nineteenth week of fetal life. 7. The skeletal pelvis resembles closely that of the adult in its form and markings. Most of the structures of the adult are indicated in the fetal pelvis. 8. The most striking differences between the adult and fetal pelvic skeleton are: a, the second sacral vertebra occupies, in early fetal life, about the position of the last lumbar in adult life; b, the short distance between the ischia, which lie almost parallel in the fetus; c, the very acute pubic (fifteen degrees). 9. The absence of sacral concavities in the fetus. 10. Sex differentiation is well marked in this specimen on the vulva, most of the different structures in the external genitalia being easily recognizable.

11. The vagina is well formed. The cervix is relatively large; the corpus occupies about its adult relations, flexures, and position. It is flattened anteroposteriorly. 12. The two tubes show marked differences in length, source, and height as well as in their relations to the ovaries. 13. The ovaries are large, being much bigger than the uterus. The two differ in their relative positions. They both lie above the pelvic brim. 14. The bladder is well differentiated from the rest of the urinary tract. It is distinctly an abdominal organ. 15. The ureters and arteries simulate the adult relations. 16. The development of the rectum and anal region is well advanced and corresponds approximately to the adult type. The colon enters the pelvis in the mid-line and appears not to have been filled with meconium.

**The Escape of Foreign Material from the Uterine Cavity Into the Uterine Veins.**—Dr. JOHN A. SAMPSON, of Albany, N. Y., stated that radiographs of the uterus, tubes, and ovaries in which the uterine cavity had been injected with bismuth (introduced through the cervix) showed the form of this cavity under various conditions; and also by what channels and under what circumstances the bismuth might escape from the uterus.

If the tubes were patent the bismuth escaped into them; the ease with which this occurred varied with the degree of patency of the tubes. These experiments suggested that intrauterine irrigations were attended with the danger of some of the irrigating fluid, at times, escaping through the tubes into the peritoneal cavity; and also that fluid in the uterine cavity, under favorable circumstances (patent tubes, relaxation of uterus and obstruction in the cervix), might be forced into the tubes and peritoneal cavity. This was one way that salpingitis and peritonitis might arise.

If the endometrium was intact the bismuth would not escape into the venous uterine sinuses even though great force was used. If the patient was flowing when the uterus was removed the bismuth might gain access to them. If the endometrium was removed by curettage, the injection mass would usually escape into these sinuses. The ease with which this occurred varied with the size of the sinuses in the individual specimen and the degree of relaxation of the uterine wall. Under favorable circumstances of venous hyperemia and uterine relaxation, the bismuth easily escaped into the venous sinuses and into the venous circulation outside of the uterus.

A study of uteri in which the venous system had been injected with bismuth through the uterine and ovarian veins showed a rich venous plexus in the endometrium and also one in the myometrium; the latter might be subdivided into a peripheral and radial plexus, situated in the peripheral and radial zones. Arcuate veins between the two zones conveyed the venous blood to the uterine plexus between the layers of the broad ligament.

Relatively large sinuses (receiving) radiated from the base of the endometrium into the myometrium and conveyed the blood from the endometrial plexus into the deeper portion of the radial. If these receiving sinuses were exposed by removing

the overlying endometrium and the uterus was relaxed, thus holding the lumina of the receiving sinuses open, fluid and small solid material could easily escape from the uterine cavity into them and thence into the venous circulation outside the uterus.

Clinical experience had taught us that solid material from the uterine cavity gained access to the venous circulation—puerperal infection and the presence of placental cells (benign and malignant) in the lungs of puerperal women. Experimentally solid material (bismuth in suspension) could be forced from the uterine cavity into the venous circulation under very little pressure if these sinuses were exposed and the uterus relaxed.

Anatomical and physiological studies demonstrated how this might occur—exposure of the lumina of the receiving sinuses, uterine relaxation, and pressure in the uterine cavity greater than that in the sinuses. Doctor Sampson believed that uterine contraction following relaxation, when there was obstruction in the cervical canal and intrauterine irrigation might bring about this increased pressure and force fluid, sterile or containing in suspension bacteria or placental cells, into the venous circulation; one way, and probably a frequent one, by which puerperal infection arose and placental cells reached the lungs.

**Discussion.**—Dr. GEORGE W. KOSMAK, of New York City, stated that the work of Doctor Sampson was a striking demonstration of the warning that we ought to stay out of the uterus as much as possible because the invasion of this organ, particularly in the puerperal state and at other times, was attended with a great deal of danger. Observations which he made some years ago with reference to the extrusion of irrigating fluid through the Fallopian tubes demonstrated this to him in such a dramatic manner that he should never forget the subject, and Doctor Sampson had shown most convincingly the possibility of the invasion of the general venous system by mechanical methods as demonstrated by his injection specimens.

Dr. JOHN O. POLAK, of Brooklyn, N. Y., said the demonstration of the protection of the endometrium against invasion from curetting the uterus was particularly impressive. Years ago we were taught not to operate during the menstrual period, yet in the hurry of hospital work we had violated the rule. Doctor Sampson had given a clear idea of why there was infection in some cases.

Dr. THOMAS J. WATKINS, of Chicago, stated that the paper was of great value in bringing positive evidence against curettage of the puerperal uterus, and the society should put itself on record against any such procedure. Whenever the question of puerperal infection came up before a body of gynecologists and obstetricians, he was surprised and shocked at the number of men who continued to curette and wash out the puerperal uterus. Doctor Sampson had presented an excellent argument against it. Doctor Watkins related briefly a series of investigations which he had made bearing on the subject. The uteri in 200 cases, which were removed by hysterectomy, were examined bacteriologically by Doctor Curtis, and an interesting point was this: In nearly all these cases the endometrium

was sterile, whether it was a chronic case or not, except in those in which a preliminary curettage had been made. If the curettage had been done two or three days or two weeks before the hysterectomy, and done under aseptic precautions, invariably the uterus was found to contain bacteria following such a curettage; and the work of Doctor Sampson emphasized the danger of increasing infection by curettage, and especially increasing the dangers of doing hysterectomy a few days after the preliminary curettage.

Dr. J. WESLEY BOVEE, of Washington, D. C., said that the work of Doctor Sampson confirmed what he had been doing in the last few years, namely, discarding the frequent curettage that was so common, and he feared too common now. Doctor Bovee still clinging to the necessity of having to invade the uterine cavity, injected iodine into it. In two specimens in which he injected iodine previous to removing the body of the uterus within ten days for Neisserian infection, he found iodine in the blood channels in the uterine body, which caused him to discard injections of iodine. Then came the paper of Doctor Curtis which showed the interior of the uterus was nearly always a harmless structure above the internal os, and now Doctor Sampson's paper confirmed that position.

**Elusive Ulcer of the Bladder.**—Dr. GUY L. HUNNER, of Baltimore, stated that this type of ulcer was first described by him in 1914. The lesion consisted of a chronic inflammatory infiltration of all coats of the bladder wall. The areas of active ulceration discovered by cystoscopy were always superficial and usually minute, and an area of congestion seen on one examination might be absent at the next, but would be found later if repeated examinations were made; hence the name elusive ulcer.

The symptoms were usually of the most extreme type characterizing bladder ulcer in general.

The errors in diagnosis in the past had been due to the elusive and minute character of the mucosa lesion, to the examination of the urine, or to the failure to place proper emphasis on the finding of a few leucocytes or erythrocytes in the urine, and to the misleading character of some of the referred extravesical pains.

Systematic treatment with strong silver nitrate solutions, or stick silver, or actual cautery, would give comparative relief to many of these patients, but the only cure thus far discovered was the complete excision of the involved area.

**Discussion.**—Dr. JOHN G. CLARK, of Philadelphia, said that one of his patients, who had gone the rounds and had been treated by several doctors without permanent relief, finally went to Doctor Hunner. He was present at the operation performed by Doctor Hunner, the ulcer was demonstrated to him, and its excision was followed by a remarkable cure. Since that time he had seen three cases of ulcer of the bladder, in all of which the diagnosis was easily made with the cystoscope, and excision of the ulcer bearing area was followed by splendid results.

Dr. PHILANDER A. HARRIS, of Paterson, N. J., recalled the case of a girl, thirteen or fourteen years



of age, who had not begun to menstruate. Her hymen was un torn, and she showed no signs of any infection. Examination of the bladder was difficult by the direct method because she was unable to retain more than three ounces of urine. Night or day the bladder had to be emptied. She had a great deal of pain, and not being satisfied with the nature of the pathology, he resorted to distentions of the bladder with normal salt solution, as advised by Doctor Kelly in years past. After about twelve applications he lost sight of the patient, but subsequently learned that she was able to pass urine in eight or twelve ounce quantities for about two years. She was now twenty-four years of age and married. He did everything he could to cure her, but she was far from cured as she was only able to retain two or three ounces of urine at a time.

He asked Doctor Hunner whether he had had experience with distention of the bladder according to the practice of Doctor Kelly.

Dr. CHARLES A. L. REED, of Cincinnati, asked Doctor Hunner to discuss the question of etiology, in closing, which was especially important in view of his failure to find bacteria in the urine following operation. He also asked Doctor Hunner whether or not there had been any recurrences following excision of the ulcer.

Dr. LEWIS S. McMURTRY, of Louisville, asked Doctor Hunner if he had tried other and more conservative methods of treatment than excision. Excision seemed a severe operation for a benign ulcer.

Dr. EDWARD H. RICHARDSON, of Baltimore, stated that a striking thing in one case of ulcer of the bladder he saw, and this obtained in other cases, was that the clinical picture and the bladder pathology were out of all proportion to what one saw on cystoscopic examination. In this particular instance, when he looked into the bladder, although he searched the bladder many times with the utmost care, he failed to discover any lesion. The patient was not such as to suggest a neurotic individual. He finally called Doctor Hunner in consultation, and operation was decided on. When the bladder was opened, it was found that fully two thirds of the bladder wall was involved in the pathological change. Not only was the mucous membrane edematous, but the musculature of the bladder was thickened to the extent of fully three times that of normal. The woman made a splendid recovery and now voided urine normally.

Dr. EDWARD P. DAVIS, of Philadelphia, said it was his fortune to have under his care during pregnancy and labor one of Doctor Hunner's most successful cases. The history was that the patient became infected by catheterization after a previous operation. He attempted nothing whatever concerning the bladder. He did not examine it, but watched the case with very great interest. Ordinary microscopic examination of the urine showed but a few red and a few white cells, but this was so commonly seen among pregnant women that it gave rise to no suspicion. The patient passed through a more or less miserable pregnancy, went into labor, the normal course of dilatation took place, she was delivered by forceps, passed through a condition of comparative neurasthenia and shock for which no

adequate cause could be found. Her disability was out of all proportion to any vesical symptoms connected with the parturition. Her cure by Doctor Hunner of the bladder ulcer was certainly one of the most satisfactory he had ever known. It might interest the members of the society in this connection to know that so far as this one observation of pregnancy and parturition went, there was neither an increased severity of the lesion, nor did it in the slightest degree tend to make it better.

Dr. CATHERINE MACFARLANE, of Philadelphia, stated that her experience with ulcer of the bladder was limited to three cases which occurred during the past year. The lack of proportion between the severity of the patient's symptoms and the insignificant bladder lesion and trifling urinary findings had been emphasized. A diagnosis was much better made by the clinical history than by the laboratory findings or physical examination. Complete relief followed the operation of excision in these cases.

Dr. W. F. SHALEMBERGER, of Atlanta, Ga., stated that about two months ago he saw his first Hunner ulcer. He saw the patient some years before, and at that time the urinary findings were negative. Cultures were also negative. He overlooked ulcer of the bladder at that examination. The patient then gave a history of bladder distress of some ten years duration. She had been treated by a dozen different men from time to time, and had been operated on by one of them for a pelvic condition without any marked relief. Occasionally treatment would afford temporary relief. In this particular case there were three ulcers of the bladder, one two millimetres in diameter, and two smaller ones near by, situated about three centimetres above the internal urethral orifice back of the symphysis. Wide excision of the ulcer bearing area had given the patient complete relief from her symptoms.

Doctor HUNNER, in closing, said he had tried conservative methods of treatment in these cases. He had used the high frequency current in a few of them, but it caused them so much afterpain that they absolutely refused to have it continued. Strange to say, the actual cautery wire gave fairly good temporary results. He depended mostly upon silver nitrate in one form or another in treating these bladder ulcers, and they could be kept reasonably comfortable by one or the other method. Excision of the ulcer bearing area was the only thing that afforded permanent relief, but this excision must be complete. In the case of a girl there was a recurrence shortly after she returned to her home. Most of the patients he had had were unmarried women and showed no evidence of gonorrhea. The etiological factors were still unknown.

**The Bladder of Women after Operation.**—Dr. ARTHUR H. CURTIS, of Chicago, reviewed briefly the work reported two years ago, which he believed demonstrated that postoperative catheter cystitis was really urinary tract infection caused by residual vesical urine. An essential feature in the treatment of postoperative cases had been the prevention of urine stagnation in the bladder. Four hundred and sixty-five consecutively operated patients had been managed as follows: All who complained of vesical distress were catheterized. Also, even when the

power to void urine was present, catheterization was performed if residual urine was suspected. Furthermore, those patients who had required repeated catheterization were thereafter catheterized once daily immediately after urination, as long as residual urine was obtained. At the time of catheterization fifteen c. c. of one eighth per cent. silver nitrate was instilled before the catheter was withdrawn. Medication consisted of hexamethylenamine in amounts sufficient to maintain a positive formalin test. In the presence of alkaline urine, acid sodium phosphate was added. Those who showed idiosyncrasy to hexamethylenamine, or whose urine yielded no formalin, were treated with alkalies. In the presence of urinary tract infection, meats were permitted but twice weekly. Seasonings of all sorts were forbidden, salt excepted. Sugar, sweets, and pastry were limited.

Before this method of treatment was instituted many operated patients returned with urinary tract distress and infection. Under the present plan post-operative bladder troubles had disappeared.

He had found that many pregnant women failed to thoroughly empty the bladder. He believed that retention of vesical urine was a factor of the utmost importance in the etiology of pregnancy pyelitis. It was therefore urged that obstetrical patients be tested for residual urine whenever carefully collected specimens revealed pus and bacteria. Through judicious catheterization, immediately after urination, it was believed that these patients could often be saved from the danger of pyelitis.

The plan of catheterization for residual urine had likewise been extended to tabetic cases. A patient with well advanced disease, afflicted with intense vesical disturbances, had apparently been permanently relieved. It was thought that the failing bladder of tabes might be reeducated through the use of the catheter combined with intensive anti-syphilitic therapy, provided treatment was undertaken at a time when moderate function still remained.

*Discussion.*—Dr. JOHN A. SAMPSON, of Albany, stated that he found after a radical operation for carcinoma of the cervix that severe cystitis was a common complication, and he attributed the bladder disturbance to interference with the blood supply and with its function. Some of these patients in whom there was incidentally a vesicovaginal fistula, were not troubled with cystitis, and he even went so far as to suggest that possibly in these severe cases the formation of a vesicovaginal fistula temporarily would obviate the cystitis. One of the most important ways of treating a severe cystitis was that carried out by Doctor Kelly in his clinic, namely, establishing free drainage and rest.

Dr. GUY L. HUNTER, of Baltimore, agreed with the essayist that retention of urine was perhaps the chief factor, and this was most often due to post-operative overdistention of the bladder. It seemed to him that interference with the circulation and traumatism to the bladder itself, did not have an important bearing on the question of postoperative cystitis; but if these patients were allowed to go on after operation with overdistention of the bladder, we might get a partial paresis which might last for

several days or weeks, creating a most favorable condition for infection to take place.

Dr. J. RIDDLE GOFFE, of New York City, asked Doctor Watkins about the treatment after washing out the bladder.

Doctor WATKINS, in closing for Doctor Curtis, stated in reply to Doctor Goffe that a catheter was always passed as soon as the patient had any distress. He never allowed a patient to have distress in the bladder on account of the presence of urine. After a patient had been catheterized every two or three days, he also catheterized once a day after that until he was sure the patient was not carrying an excess of residual urine. Daily catheterization was stopped as soon as he was convinced that the patient was not carrying a large amount of stagnant urine.

Dr. LEROY BROWN, of New York City, asked to what extent residual urine was found and in what quantity?

Doctor WATKINS replied that almost invariably a crippled bladder was found in women who had to be catheterized every two or three days. The case that required catheterization very seldom carried stagnant urine.

(To be continued.)

## Letters to the Editors.

### STIMULATION OF THE SYMPATHETIC AS A RESULT OF TOXEMIA.

NEW YORK, August 8, 1918.

To the Editors:

I have greatly enjoyed a number of articles in your pages about the vegetative nervous system, and they have been the means of enlightening obscure points for me. As a result of my interest being stimulated in this field, allow me to offer you the following clinical observation, in the hopes that if the point mentioned has not hitherto received much attention, that a little publicity will serve to stimulate widespread observation.

In giving ether to a number of patients undergoing laparotomy, I noted that the "clean" or non pus cases took the anesthetic much better than the pus cases, the pupil contracting down promptly and being maintained easily in that desirable condition. On the contrary, the pupil in the pus cases could with difficulty be brought into a well contracted condition, and was very hard to maintain that way. I thought that this meant that the sympathetic division of the vegetative system was unduly stimulated as the result of the toxemia, with the tendency noted.

Hoping, if the above has not already been worked out by some one, that this will stimulate a little research, I am,

Yours respectfully,

"SPLANCHNIC," M. D.

### COMMISSIONS FOR DRAFT BOARD DOCTORS.

NEW YORK, August 12, 1918.

To the Editors:

The efficient and expeditious manner in which the conscription law has been administered is the subject of much favorable comment, and it should not be out of place to call attention to the part which the doctors attached to the various draft boards, throughout the country have played in achieving a result so fraught with importance in its bearing on the national welfare at the present time. Specialists have worked side by side with the general practitioners, and all have given freely of their abilities and time to safeguard the best interests of the nation.

The difficulties which the draft board doctors have to contend with are by no means few; and I believe from personal experience that the major portion of these may be charged to the fact that the draft board doctors have been



given no uniforms or other distinctive symbol of rank, which is readily conveyed to those with whom they come in contact. This creates misunderstanding and confusion, which militates against the most efficacious performance of professional duties. In some cases the doctors have even had difficulty in securing admittance to the draft board to which they had been assigned because they were in civilian clothes and not readily recognized. In order to avoid these conditions and in consideration of the important service which the draft board doctors have been and are rendering in the nation's cause, would it not appear desirable that the government should recognize such service by granting them honorary commissions in whichever branch of the service they might like to be enrolled, thus entitling them to wear a uniform and to be accorded due respect in the performance of such professional service during the period of the war?

It occurs to the writer that this subject of worthy of consideration and discussion, inasmuch as it is one that directly affects the war service of many members of the medical profession.

JOHN COGHAN, M. D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*An Introduction to the History of Science.* By WALTER LIBBY, M. A., Ph. D., Professor of the History of Science, Carnegie Institute of Technology. Boston, New York, and Chicago: Houghton, Mifflin Company, 1918. Pp. x-288. (Price, \$1.50.)

The cost of warfare—of the destruction of men—mounts into billions of dollars, but eventually it is paid. The debt to those who war against prejudice, ignorance, disease, has been mounting for some thousands of years, but authorities have a method of settling claims by burning the author or his book, imprisoning him, spying on him, calling up opponents, imputing sordid motives, and by refusing to test his theories, use his inventions, or allow him to live in peace.

Professor Libby has taken down the ledger, blown the centuries of dust from its cover, and shown how great the debt we owe to scientists; and, what is just as important, that which is owed by every learned man to his predecessor, who, in laying the previous stepping stone, showed the utter inapplicability of the term "suddenly discovered"—"for ancient Egypt thought and wrought while Europe still slumbered and Arabia numbered her scores of learned men while infant races had not mastered the alphabet. All this our author shows in attractive wording and concise phrasing without being abrupt, and in graceful gratitude to his learned predecessors, gives the student a bibliography to guide him to the sources he himself has found useful in treating of science and practical needs; its continuity; in the struggle for liberty; its interactions; its connection with religion; its hypotheses and its place in prediction, travel, war, invention, and culture.

The best endorsements of this companionable volume are the official reports we see weekly from Government offices and consulates, even those from large sociologic centres. Though striving only to entertain by music and movies, and magazines, these are dependent on many researches, for music means fine wood and metal; the movies embody the results of patient scientific work for centuries past; the magazines take us to the forest, the cotton and flax fields and the chemist as he grapples with the present momentous question of shortage of paper. In war councils of today the engineer, the physicist, the geologist, the chemist, the physiologist, all are asked to bring their wisdom to solve questions of transport, of suitable sites for our mammoth guns, of deadlier gases, more scorching fires, of human nutriment, of skilful healing, of ever faster message from continent to continent, from mariner and airman. They keep the keys to all supplies, but never lock the doors; they give freely and ask no thanks. This is

perhaps as well, for often a belated ornate monument or a name in dispute as to priority in discovery, is all that the public know of a benefactor until sometimes gently enticed to read of the history of science in a well written volume like the one we have just laid down.

*L'Evolution de la Plaie de Guerre.* Mécanismes biologiques fondamentaux. Par A. POLICARD, Professeur agrégé à la Faculté de Médecine de Lyon. Avec figures et planches hors texte. Paris: Masson et Cie., 1918.

As its subtitle states, this book is a study of fundamental biological mechanisms, a careful, well classified study of war wounds from the point of view of the pathologist and bacteriologist. Although seeming a somewhat academic treatment of the subject at the present time, it was the result of a thirty months' period of research in the laboratory of an active surgical hospital, and the studies presented of treating wounds, and the pathogenic organisms causing infections are direct contributions from the daily work of the surgeons themselves. The book is well illustrated by drawings and photomicrographs.

*Les Plaies de Guerre et leurs Complications Immédiates.* Leçons faites à L'Hôtel-dieu. Par HENRI HARTMANN, Professeur de Clinique Chirurgicale. Paris: Masson et Cie., 1918. Pp. 203.

The book consists of eighteen lectures given at the Hôtel-Dieu by Professor Hartmann, reviewing present day war surgery. He presents varied points of view which have arisen in society discussions, especially those of the Society of Surgery of Paris. War wounds, their treatment, hemorrhage, tetanus, gas gangrene, traumatic shock, the use of apparatus, the study of bone and joint lesions, amputations, wounds of the head, face, chest, and abdomen, and frost bite are made the subjects of various lectures. Eye wounds are made the subject of a chapter by Morax.

## Births, Marriages, and Deaths.

### Died.

ANDERSON.—In Seaside Park, N. J., on Monday, August 5th, Dr. Samuel Frederick Anderson, aged fifty-two years.

BIGELOW.—In Boston, Mass., on Thursday, August 1st, Dr. A. M. Bigelow, aged fifty-six years.

COCKE.—In France, in July, Dr. Paul Lee Cocke, of Birmingham, Ala., Captain, M. R. C., U. S. Army, aged forty-three years.

CROSSMAN.—In Roxbury, Mass., on Monday, August 5th, Dr. Frank E. Crossman, aged sixty years.

EDIC.—In Leavenworth, Kans., on Wednesday, July 31st, Dr. John J. Edic, aged eighty-one years.

FERRIS.—In Cincinnati, Ohio, on Saturday, July 27th, Dr. Chase L. Ferris, aged thirty-nine years.

GAYLORD.—In New Haven, Conn., on Monday, August 5th, Dr. Charles Woodward Gaylord, of Branford, aged seventy-three years.

GREENE.—In Wenonah, N. J., on Friday, August 9th, Dr. William Houston Greene, of Philadelphia, aged seventy years.

HAMILL.—In Phoenix, N. Y., on Thursday, July 25th, Dr. Frank E. Hamill, aged seventy-nine years.

HILLS.—In New York, on Saturday, August 3rd, Dr. Frederick L. Hills, aged forty-eight years.

LEE.—In Sheridan, Mich., on Saturday, July 20th, Dr. Walter A. Lee, aged sixty-four years.

MANN.—In Bridgeport, Pa., on Sunday, August 4th, Dr. Charles H. Mann, aged sixty-six years.

O'KEEFE.—In Boston, Mass., on Tuesday, July 16th, Dr. Michael W. O'Keefe, aged seventy-four years.

ORTON.—In Northampton, N. Y., on Friday, August 2d, Dr. Darius S. Orton, aged seventy-seven years.

ROBINSON.—In West Newton, Mass., on Saturday, August 10th, Dr. Franklin E. Robinson, aged seventy-two years.

TRABUE.—In Elkton, Ky., on Saturday, August 3d, Dr. Lee P. Trabue, aged sixty-one years.

WILLIAMS.—In Roxbury, Mass., on Monday, August 5th, Dr. Edward Tufts Williams, aged seventy-three years.

# New York Medical Journal

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## Original Communications

### SOME CLINICAL TYPES OF NEPHRITIS.\*

#### *A Study of Sixty-eight Cases.*

BY TASKER HOWARD, M. D.,

Brooklyn, N. Y.

I wish to emphasize some distinctions in the clinical varieties of nephropathies which have come to light in recent studies of nephritis, and which I believe are thoroughly substantiated on pathological grounds.

The pathologist has classified and reclassified the nephritides and has put forward so many subvarieties that are indistinguishable clinically that the whole subject has attained considerable confusion from a clinical standpoint—not that the pathologists are altogether clear about it. The more recent work of the physiological chemist has forced a clearer distinction of some of the types which is of great clinical importance. There have been clinical advances too, and the large groups which have been separated can readily be distinguished pathologically, forming three entirely distinct diseases, which differ in their symptomatology, course, treatment, and termination. I refer to glomerulonephritis, the pure nephrosis of Mueller, and the arteriosclerotic kidney, any two of which may be, and not infrequently are, combined in the same patient.

The clinical and pathological aspects of this subject have been combined in so convincing a manner by Volhard and Fahr that I have found at least the principles of their classification a very valuable and practical aid in studying any given case. Volhard and Fahr, as you may remember, divide the nephropathies into the following groups: 1, nephrosis, under a subhead of which they include necrosis, or injury to the kidney by such poisons as mercury; 2, glomerulonephritis, including focal or embolic nephritis (without hypertension) and diffuse glomerulonephritis (with hypertension); 3, mixed forms in which both nephrosis and glomerulonephritis are present; 4, benign or essential hypertonia (the arteriosclerotic kidney); and 5, the combination form, which is a glomerulonephritis engrafted on an arteriosclerotic kidney.

Some of these forms I shall describe briefly and illustrate.

1. True nephrosis is a comparatively rare disease. Of the sixty-eight kidney cases included in tonight's study, but five come under this category. Its main

clinical characteristic is renal edema and its chief histological change, degeneration of the tubules. It is essentially a degeneration and not an inflammation. With the edema there is a marked retention of chlorides and water. The urine in the stage of edema is of high specific gravity and loaded with albumin. Certain negative findings are of importance. There is no hypertension nor cardiac hypertrophy, no characteristic retinal change, no marked nitrogen retention, and hence no uremia. The phthalein output is good except as it is influenced by the edema. There may develop a contracted kidney with polyuria and hypostenuria but other signs of hypertensive nephritis remain in abeyance. Epstein has shown that these patients present characteristic change in the blood proteins, showing a decrease in the serum albumin with a relative increase in the globulins. They do not die of uremia, although they may have eclamptic attacks which are probably due to cerebral edema. One of my series presented this picture. They are particularly susceptible to infections, the four fatal cases in Volhard and Fahr's series dying of pneumococcus peritonitis. In a case on my service, not included in this series, the patient died of a fulminating hemogenous streptococcus peritonitis. Another died from exhaustion due to an uncontrollable diarrhea.

Complete recovery is the rule in mild cases if properly treated, and I believe Epstein's teaching as to the value of higher protein feeding and transfusion has assisted us in the severer cases. Not a few pass into the stage of chronic polyuria and slight or moderate albuminuria and live for many years. Such a patient has been under my observation for six years. He has a constant polyuria, hypostenuria, and albuminuria and absolutely no other signs or symptoms.

Mrs. C. is a typical example of a severe grade of nephrosis. She is a married woman of thirty-one, who had measles in childhood and has borne two children, twelve and eleven years ago. After the second birth her ankles were swollen for a week. About a year ago her face and legs began to swell. She was treated by many doctors and gradually improved but had had a relapse when she entered the Long Island College Hospital, and was complaining of general drowsy, scanty urine, weakness, nausea, and occasional attacks of diarrhea. Examination showed a pale woman with marked general edema. She had many crowned teeth and cryptic tonsils. Her heart was not enlarged, the blood pressure being 112-58. Her hemoglobin was sixty-eight to sixty-two per cent., the red cells 2,600,000, the white cells 5,200, and the Wassermann was negative. Her urine varied from sixteen to forty ounces, was 1012 to 1026 in specific gravity, and contained from

\* Read before the Medical Association of the Greater City of New York, April 15, 1918.



four to twelve grams of albumin per litre. The blood urea nitrogen was 9.4 mg. per 100 c. c., cholesterol 500 mg. Her two hour phthalein was forty per cent. She has had three transfusions, which have markedly benefited her, but she is by no means well yet.

2. Diffuse glomerulonephritis, according to Volhard and Fahr, is always due to infection, and I believe that evidence is steadily accumulating to support that contention. Barker states that the streptococcus is usually responsible. Histologically we will content ourselves with saying that the most characteristic lesions are the inflammatory changes going on to complete destruction of the glomeruli scattered here and there throughout the entire organ. Clinically the most constant feature is hypertension with cardiac hypertrophy. The urine is apt to show more or less blood from time to time, in contrast to the urine of nephrosis or arteriosclerosis. The kidneys eliminate water well, salt with some difficulty, and nitrogenous crystalloids with more and more difficulty. We therefore see no edema until the heart has given out, but an accumulation of nitrogenous waste products in the blood. First the uric acid is retained, then the urea, finally the creatinine, and with the severer grades of retention, perhaps because of them, we get the symptoms of uremia anorexia, weakness, twitching, drowsiness, coma, and death. The phthalein output varies inversely with the nitrogen retention.

To go back to the kidney's difficulty in excreting these nitrogenous waste products, there develops *pari passu* a compensatory polyuria, so that as the disease progresses we find, up to a certain point, more urine but of a lower specific gravity—the so called hypostenuria. With this decreasing specific gravity, we find a tendency for the kidney to work nights in order to finish the uncompleted day's work, so that there is a nycturia as well as a polyuria. Mosenthal has shown that the functional capacity of the kidney can be gaged by watching these factors about as reliably as by the more complicated methods. A normal individual on a normal diet will excrete about twice as much urine in the twelve hours of the day as in the twelve hours of the night, the night urine will have a higher specific gravity, and the variations in the specific gravity of the urine collected in two hour periods during the day will amount to eight to ten points. Constant variations from this normal are extremely significant.

Albuminuric retinitis is found exclusively in glomerulonephritis.

It is said that some grade of anemia is more apt to occur in nephritis than in the benign form of hypertension. I have not found it so.

Mr. G. represents a typical case of chronic diffuse glomerulonephritis. He was forty-eight years of age, a Hungarian, a tailor, and married. He had had typhoid at nine and frequent attacks of tonsillitis. Six months before admission he began to complain of weakness, anorexia, nycturia, and dyspnea. One week before admission he developed dependent edema. He was pale, showed a marked dependent edema, a large heart with a blood pressure of 226-224, the urine varying from twelve to twenty-three ounces, having a specific gravity of 1005-1010 and containing considerable albumin. The phthalein output was 0. The hemoglobin was seventy-six per cent, the reds 4,200,000, the whites 12,000. The blood urea nitrogen eleven days before his death was 32.2, the creatinine 3.3, and the alkaline reserve 7.6 (Marriett). The eye grounds

showed albuminuric retinitis, hemorrhages, arteriosclerosis, and hazy nerves (Doctor Rogers). He became delirious, went into coma, and died. Autopsy showed a large heart. The two kidneys weighed 172 gm. The left kidney was about one third less than normal size, with a finely granular and pale surface. The capsule stripped with difficulty. Two small cortical cysts were present. On section the cortex was seen to be thinner than normal and the markings were indistinct. Microscopically many tubules were filled with desquamated and necrotic epithelium. There were areas of compensatory hypertrophy of tubules, with edema and flattened epithelium, and many areas of small round cell infiltration. The connective tissue was increased with atrophy and obliteration of many tubules. Well marked vascular sclerosis was present and very marked glomerular changes, including atrophy with hyaline degeneration, proliferation of cells lining Bowman's capsule, disuse atrophy, edema of tufts and fluid in capsular space, with occasionally some red cells in the capsular space (Doctor Murray).

3. The mixed form combines the findings of the two types just described. The early acute stage of a glomerulonephritis frequently presents this picture.

4. Benign or essential hypertonia is, as you know, not a kidney disease at all, but is classed here because it usually presents some kidney pathology, and because it is so often confused with nephritis. The kidney in such cases is apt to show patches of degeneration due to narrowing or obliteration of the vessels supplying these patches. The glomeruli involved are as a rule entirely destroyed and these destroyed glomeruli are bunched and not scattered diffusely through the organ. Evidences of inflammation, such as adhesions between the layers of the capsules and proliferation of the tufts and capsules, are lacking. I have heard Dr. L. A. Conner emphasize the fact that there may be no kidney changes whatever.

Clinically the essential feature of this disease is arterial hypertension with cardiac hypertrophy. There may be no other finding. The urine may contain a little albumin and a few casts, and there may be enough damage to kidney function to cause a slight polyuria and fixation of the specific gravity. Nitrogen retention is moderate, never amounting to enough to cause uremia, unless as sometimes happens, there has been superadded an actual nephritis—the combination form of Volhard and Fahr. From a practical standpoint it should be remembered that about ten or fifteen per cent. of patients with apparently benign hypertonia ultimately develop symptoms of actual nephritis.

In simple hypertensive cases the phthalein output remains good until the heart fails, the retinal changes are those of arteriosclerosis only, and uremia is absent. The dangers are apoplexy and heart failure.

A typical example of benign hypertension is found in Mrs. L., whose case may be summarized as follows: A woman seventy-five years old had been complaining of dyspnea and swelling of the legs. Clinically she exhibited a large heart, a blood pressure of 240 over 120, and a dependent edema. The urine was 1018 in specific gravity and contained a trace of albumin but no casts. The Wassermann was negative, the red cells 4,000,000. A blood analysis showed 45.9 mg. of urea nitrogen, 6.4 mg. uric acid, and 0.8 mg. of creatinine. The phthalein output was 0. The patient died of a failing heart. Autopsy showed the following: The heart weighed 475 gm.; the valves were normal, but there were marked fibrous changes in the myocardium. There was general passive congestion with

edema of the lung and some fluid in each pleural cavity. The kidneys were lobulated, the right and left weighing 135 and 150 gm. respectively. The surface was not granular, the width of the cortex varied, being indented at the margins of the lobulations. Microscopically these indentations were found to correspond to wedge shaped areas of degeneration, the tubules being atrophied and crowded together, the glomeruli having undergone complete hyaline transformation. Elsewhere the kidney picture was normal.

5. The combination form of Volhard and Fahr, as has been stated, consists in the addition of the inflammatory changes of glomerulonephritis to the degenerative changes of a wide spread arteriolar sclerosis. Ophuls, from a careful study of a number of such cases followed to autopsy, has come to the conclusion that the pathological changes are inflammatory from the beginning and that they are always due to infection. At all events they are so similar to the diffuse glomerulonephritis just described that at present the writer sees no practical advantage gained in trying to separate them and has not done so in this study. The important point lies in remembering that what seems to be a simple arteriosclerosis may turn out to be a malignant glomerulonephritis.

TABLE OF SIXTY-EIGHT CASES STUDIED.

Diagnosis.	No. of cases.	Average Range in age.	Average Maximum B. P.	Average Phenolphthalein output—of 2 hrs. Deaths.
Chronic Glomerulonephritis . . .	33	47	17-64	202-119 11.5% 15
Nephrosis . . . . .	5	30	22-43	120-80 43.0% 1
Mixed Form . . . .	11	38	17-45	187-116 24.0% 0
Benign Hypertension . . . . .	18	59	42-86	201-113 25.0% 5
Passive Congestion . . . . .	1	.....	.....	..... 1

Comparative youth is a diagnostic factor pointing to nephritis rather than arteriosclerosis, but simple hypertension is sometimes seen as early as the twenties, so that age is not an absolute guide.

The average maximum blood pressure recorded was as follows: nephritis, 202-119; arteriosclerosis, 201-113; combination form, 187-116; nephrosis, 120-80.

Of course many of the patients studied are in an early stage of the disease, which has tended to lower the blood pressure averages. A high diastolic pressure has been considered as pointing to nephritis rather than to arteriosclerosis, but in this series patients were encountered with apparently simple hypertonia who registered diastolic pressures of 130, 140, and 150.

The phenolphthalein output for two hours may be seen in the table. Aside from the kidney function, the one factor which most influences the phthalein output is the presence of edema. When the drug is injected into edematous tissue, it is absorbed slowly and therefore excreted slowly. This has to be taken into account in the consideration of any reading. Many of the arteriosclerotics and all of the patients with nephrosis, were edematous at the time the readings were made, or their figures would have been higher, as was shown by a study of their nitrogen retention, or rather the demonstration of their lack of it. A kidney that can eliminate nitrogen well can eliminate phthalein well.

*Polyuria and hyposthenuria.*—It is impossible to give the figures in such a report but it should be remarked that a study of the amount and specific

gravity of two or four hour specimens taken through the day and of the night urine as a whole proved of great assistance in differentiating glomerulonephritis from simple hypertension. One of the two mistaken diagnoses out of nine cases studied histologically might have been avoided had sufficient attention been given to this point.

A man of sixty had suffered from dyspnea and dependent edema for two months. He had a large heart, a blood pressure of 260-150. His urea nitrogen was 20.7 mg. per 100 c. c. The day urine varied from 1010 to 1018 in specific gravity, the total amount being 800 c. c., while the night urine amounted to but 100 c. c. and had a specific gravity of 1010. He died of a bronchopneumonia before other observations could be carried out, and the autopsy showed chronic glomerulonephritis with considerable arteriosclerosis, the combination form of Volhard and Fahr. The low specific gravity of the night urine should have put us on our guard against supposing, as we did, that he had a simple arteriosclerosis.

The other mistake, on the contrary, was due to a misinterpretation of these findings. It occurred in the case of a man with cardiac dropsy, who, under diuresis, was passing large quantities of low specific gravity urine day and night. He also had hypertension and retinal hemorrhage, and we supposed that a chronic glomerulonephritis complicated his passive congestion, in spite of a blood urea nitrogen of 8.9 mg. The uric acid was 5 mg. Autopsy however, showed no nephritis.

The test then, to be of value, should be carried out under conditions approximating the normal; that is, on a general mixed diet, and in the absence of artificial diuresis.

Blood chemistry opens a wide field for discussion. It was used as a routine in these studies, as an aid to diagnosis, prognosis, and treatment. Some degree of nitrogen retention was invariably found in nephritis cases, affecting first the uric acid. Of the twelve nephritics in whom this was investigated the uric acid varied from three to 8.2 milligrams. The same was true of arteriosclerosis. One case showing a retention of 6.4 milligrams of uric acid came to autopsy and the kidneys merely showed patchy areas of arteriosclerotic degeneration. One of the pure nephrosis cases also showed a uric acid retention of five milligrams. Urea is a very variable factor and at times may be much influenced by treatment. A high urea nitrogen content is dangerous but what appears to be a comparatively low reading does not always indicate freedom from danger, Widal's old dictum that uremia could not occur with a reading below 100 was revised by himself. Of the seven patients in our service dying of uremia and in whom the urea nitrogen was estimated within eleven days of death, the urea nitrogen read as follows: 239, 174.9, 156.8, 97.4, 82, 54.6, 32.2. The last figure mentioned (32.2) was obtained eleven days before death, at which time the creatinine read 3.3. The case with the urea nitrogen of 54.6 had a creatinine reading of eight. The patients with nephrosis averaged 12.8 milligrams of urea nitrogen.

Creatinine was not determined as regularly as the urea. The five uremia cases in which it was studied shortly before death gave reading as follows: 8, 5, 3.3, 2.5, 1.1. The last two mentioned gave high urea figures. One patient with a reading of 3.2 two months ago is now up and about, having left the hospital much improved. Of the eight arteriosclerotics on whom a creatinine determination was



made but one exceeded two milligrams and that by but 0.1 milligram.

Albuminuric retinitis was found in fifteen of the nephritics examined, including the mixed form, and in no other condition. Twelve nephritics exhibited retinal hemorrhages and ten edema pupillæ. The only changes seen in nineteen simple hypertension cases examined were those of arteriosclerosis. The nephrosis cases were all negative.

The hemoglobin in twenty-six nephritis cases including the mixed form was seventy-one per cent. In eight arteriosclerotics it was seventy-four. In five nephrosis patients it was sixty-five.

Convulsions occurred in seven of the nephritics including one who died of uremia with a urea nitrogen of 174.9, in one arteriosclerotic, and in one patient with nephrosis and edema.

Twenty-two of the series died. Of these fifteen had nephritis, five arteriosclerosis, one nephrosis and one passive congestion. Eleven autopsies were performed. Unfortunately two of the eleven were not examined histologically. Of the nine who were studied histologically six showed glomerulonephritis, including the combination forms. Two were arteriosclerotic, and one was a kidney of passive congestion.

#### CONCLUSIONS.

From a practical standpoint there are three common nephropathies which differ widely in signs and symptoms, course, treatment, and prognosis. These are: 1. Pure nephrosis, characterized by renal edema without hypertension or nitrogen retention. It is usually curable by rest and a dry diet relatively rich in protein. Transfusion is of great benefit in some cases. 2. Simple hypertonia characterized by hypertension and its dangers. 3. True nephritis in which to the dangers of hypertension are added the dangers of nitrogen retention and uremia. Combinations of these types frequently occur, the nephritic element as a rule being the malignant component, and justifying us in considering them as actual, if modified, examples of true nephritis.

#### Negative Laboratory Findings in Syphilis.—

Albert E. Sterne (*Journal A. M. A.*, July 13, 1918) discusses the difficulties which often arise in diagnosis when the results of laboratory tests do not agree with the clinical picture, or when their results are negative in cases of syphilis. He concludes that a Wassermann reaction, properly done by a conscientious and competent man, if positive on either the blood or specially the spinal fluid, means syphilis invariably. A negative blood reaction, or even spinal fluid reaction, does not necessarily exclude syphilis. This and other laboratory diagnostic tests should be regarded solely as clinical signs which may be present or absent. In every case of suspected syphilis the spinal fluid should be subjected to the Wassermann, the colloidal gold, and other tests. The best results in the diagnosis of doubtful cases are only to be obtained when the laboratorian and clinician are more closely related scientifically than is usually the case. The laboratory and clinical findings should harmonize to the extent that the former agree with the latter.

## THE RATIONAL TREATMENT OF CHRONIC NEPHRITIS.

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It is not the purpose of this article to present any startling new discovery in the treatment of chronic nephritis. I wish merely to advocate therapeutics based upon the functional pathology of the kidney. I wish to divert our therapeutic attention in chronic nephritis from the fatalistic acceptance of the disease as a chronic incurable condition in which we must sit quietly at the bedside, adapting the patient to his progressive lesion. I think the sooner we learn to employ our efforts in attempting to attack the lesion itself, the more will our therapeutic results parallel the brilliant achievements of modern chemistry in elucidating the functional pathology of the disease.

For therapeutic purposes the usual classification of chronic nephritis along pathological lines into chronic interstitial and chronic parenchymatous nephritis is not practical. Nor are the attempts to localize the excretion of various waste products of any definite clinical value. In the first place, in many instances there seems to be no relation between the clinical phenomena and the post mortem pathology of the kidney. Moreover, a pathological classification does not give us any aid in the treatment of the disease. For clinical work the following classification, based upon the blood chemistry, seems to me to be most helpful in the treatment of chronic nephritis, irrespective of the underlying pathology of the kidney.

Since the kidney is the main excretory organ for protein waste products, and since the retention of protein waste products in the blood is the most vital element of the nephritic syndrome, chronic nephritis may be classified into the following three groups: 1, chronic nephritis without retention of protein waste products; 2, chronic nephritis with retention of protein waste products; 3, chronic nephrosis, or better still, metabolic nephrosis. In the latter group are included many of the cases of the so called chronic parenchymatous nephritis, but not all.

#### METHOD OF HANDLING INDIVIDUAL CASES.

When a suspected case of nephritis comes under our observation, it is essential: 1, to establish the presence of a nephritis; 2, to obtain the basic data for a therapeutic classification; 3, to place the case in one of the groups outlined above.

#### DIAGNOSIS OF CHRONIC NEPHRITIS.

When a case of chronic nephritis comes under our care, the existence of a chronic nephritis will be established by the following data: 1. Repeated examinations of the urine will show the presence of albumin and casts, associated with or without high blood pressure. 2. In doubtful cases, however, one of the most important and perhaps one of the earliest signs is an increase in the uric acid content of the blood, and the presence of a nocturnal polyuria of more than 400 c. c. from 6 p. m. to 6 a. m.

## BASIC DATA FOR THERAPEUTIC CLASSIFICATION.

When the existence of a nephritis has been established, an attempt should be made to place the case in one of the groups I have outlined. To do so it will be necessary to obtain the following data:

1. A record should be kept of the total intake of fluids during every twenty-four hours.
2. A daily record of the patient's weight should be kept. This enables us to note the quantity of fluid lost by the skin and the bowels, as well as the status of his nutrition.
3. A record should be kept of the total output of urine for twenty-four hours, as well as the output from 6 p. m. to 6 a. m.
4. The degree of albuminuria, preferably by quantitative method, should be determined, as well as the presence or absence of casts.
5. The phenolsulphonaphthalein test should be done weekly. It is the most reliable test for functional capacity of the kidney.
6. The blood pressure should be recorded every week.
7. The blood should be examined chemically every week, to determine the quantities of nonprotein nitrogen, urea, uric acid, creatinine, and cholesterol present.
8. The carbon dioxide combining power of the blood should be estimated in all cases to determine the presence of acidosis, and especially in cases showing uremic symptoms.
9. In selected cases it may be helpful to determine the nitrogen partition of the urine, and to determine its ability to eliminate added chlorides, nitrogen, and urea.
10. In cases that have been proven to be merely nephroses, it may be wise to determine the protein content of the blood and the ratios of serum albumin to serum globulin, which Epstein has shown to be changed in such cases.

## CLASSIFYING THE CASE.

When the essential data have been established, the case should be placed in one of the groups I have outlined.

The cases showing practically normal percentages of nonprotein nitrogen, urea, uric acid, and creatinine in the blood, although the patients may show evidence of the existence of a nephritis, such as the increased percentage of uric acid in the blood, should be placed in the first group. These are the cases which usually come under our observation in office practice, suffering from few symptoms other than the nocturnal polyuria, increased blood pressure, and the presence of albumin and casts in the urine. The cases showing increased percentages of protein waste products in the blood are the most common cases seen in hospital practice during an acute exacerbation of a chronic nephritis. The majority of these cases suffer principally from oliguria, more or less marked albuminuria, increased blood pressure, and edema, with or without uremic symptoms.

Chronic nephrosis, or better still, metabolic nephrosis, is a type of chronic kidney lesion to which most of the cases of so called chronic parenchyma-

tous nephritis belong. These cases can be more definitely isolated by means of chemical examinations of the blood and by functional tests of the kidney.

In this type of case the lesion is probably a degeneration of the cells of the tubules and glomeruli, or a disturbance in their function, so that they become more permeable to the serum albumin of the blood, which then filters through into the urine. The condition may be secondary to a metabolic disturbance, possibly to a disturbance in the metabolism of proteins. Perhaps the evident faulty utilization of proteins is the result of a disturbance in the activities of those fascinating regulators of metabolism, the endocrine glands.

The cases that may be placed in this group are nephritics with marked edema, who pass urine containing large quantities of albumin. They usually eliminate more fluid than they ingest, and are constantly losing in weight. The phenolsulphonaphthalein output is fairly normal. Repeated blood examinations of these cases usually show no retention of protein waste products, except as a terminal phenomenon. According to Epstein, the blood of these patients shows a diminution of the protein content with a relative increase in the globulins. In other words, we are dealing with a functionally normal kidney whose cells are permeable to albumin.

When we have placed the case in the category to which it belongs, it is important to attempt to determine the prognosis, so that we may tell the patient or his family what his prospects are for an ultimate cure or improvement. While we cannot in each individual case offer an ironclad prognosis, we can, however, determine by means of repeated chemical blood examinations and by careful observation of the daily urinary output, those cases in which a fatality is imminent, or those whose lease on life is very short.

Cases with uremic symptoms showing persistent low figures of carbon dioxide combining power of the blood are usually fatal within a few days. The presence of uremia may be shown by high figures for total nonprotein nitrogen, urea, and creatinine in the blood. The figures may be high even before actual uremic symptoms occur. High percentages of these substances in the blood merely indicate the degree of uremia, although these substances are not the cause of the condition. I cannot emphasize too strongly the value of the high percentages of protein waste products in the blood as an indication of uremia. It is often surprising to find very high figures of these waste products in cases which are not frankly uremic but which soon pass into a fatal uremic condition.

A bad prognosis should not be made on one blood examination alone; but when repeated examinations of the blood show a total nonprotein nitrogen of more than 100, urea nitrogen of fifty or more, and creatinine of five per cent. or more, the prognosis is usually bad. The higher the figures the sooner does death ensue. Figures of 200 or more for total nonprotein nitrogen frequently occur before death. High percentages of protein waste products are usually associated with a hypocholesterinemia.



## THERAPEUTIC ATTEMPTS ON THE LESION.

Before considering the treatment of chronic nephritis, let us consider the pathology of the disease in the light of function. The kidney is not an inanimate filter; its function is carried on by means of the living cells which form the glomeruli and tubules. Whatever the type of pathological change in the kidney in chronic nephritis, whether the lesion is a glomerulitis, a diffuse fibrosis, or a vascular involvement, from the standpoint of function the essential disturbance in the kidney is the atrophy of the cells of the glomeruli and degeneration of the tubules. Functionally, it is generally agreed that the water of the urine is eliminated by the glomeruli, and the salts by the tubules. The ideal treatment of chronic nephritis would consist of a method to stimulate the regeneration of the cells of the glomeruli and tubules. At the present time, however, there is no such direct method. Yet I am keenly conscious of the hope held out to us by the ante bellum studies of Carrel and others on the growth of cells *in vitro*. It is quite probable that such studies of the factors which govern the growth and regeneration of cells may ultimately develop a method for the stimulation of atrophic cells and for the formation of new ones.

In the present state of our knowledge, however, the only known practical factor that stimulates cell regeneration, even to a small degree, is an improved circulation. The only method which produces this effect on the kidney is the operation for decapsulation of the kidney. Because this method actually attempts to attack the pathology of chronic nephritis, I shall depart from the usual custom of discussing it last, just as the method itself is usually considered a last resort.

The evidence of Edebohls and numerous subsequent observers has shown that decapsulation of both kidneys in chronic nephritis results in a cure or marked improvement in about thirty per cent. of the cases, and a lesser degree of improvement in a great many others. As a rule the milder cases were those that showed the most improvement.

In the absence of other more direct methods, I believe this operation should occupy a prominent place in our therapeutic armamentarium, in those cases of chronic nephritis with retention of protein waste products that have had one or several acute exacerbations which have been rather resistant to treatment. We have absolutely no guide to the degree of destruction of kidney tissue in the lesion of chronic nephritis. I am quite conscious of the fact that Edebohls's operation will not regenerate a diseased kidney; but no harm is done by the operation apart from the small surgical risk. And a patient who has had repeated acute exacerbations should certainly have the benefit of such treatment. A recent report of Morse, of Boston, showing the cure of a number of acute cases of nephritis, some of them almost moribund from uremia, further emphasizes the value of the method.

My own observation of cases in which the method was tried has convinced me of the following facts: 1, the efficacy of the method in improving some late cases of chronic nephritis, which were the only

ones in which I had the opportunity to see the method used; 2, the small risk of the operation even in bad cases of nephritis with uremia. In the cases thus operated upon the mortality was due to the progress of the original nephritis, and rarely was it the result of surgical interference. Whatever the theory as to the cause of the improvement, whether it is the formation of a collateral circulation as promulgated by Edebohls, or the removal of tension as Harrison explains it, or a change in the nerve supply as the work of I. Levin seems to show, the fact remains that there is evidence of improvement, as shown by the records of the competent observers who have had the courage to try the operation. Perhaps the improvement is due to the stimulation of the regenerative kidney cells as a result of the collateral circulation and change in nerve supply. I am quite conscious, however, of our innate reluctance to advise surgical treatment of what is ordinarily regarded as a medical disease. Yet as evidence of the favorable results of the operation accumulates, I believe that the method will be tried more frequently.

Another method for treating chronic nephritis that has been used on a definitive basis is the treatment of Martin Fisher, of Cincinnati. Fisher believes that chronic nephritis is caused by toxins which cause an accumulation of acid products in the cells of the kidney, with a consequent disturbance of the kidney function. He believes that many of the symptoms of nephritis, such as the edema, are due to a similar condition in all the tissues rather than the result of the nephritis itself. He, therefore, attempts to neutralize the acid condition throughout the body. Fisher's treatment consists in allowing the patient to drink large quantities of water, about a glass every hour, preferably an alkaline water. If an alkaline water is not obtainable, sodium carbonate or sodium bicarbonate in doses of 0.5 to one gram may be added to each glass. Sodium tartrate or sodium acetate may also be given; or we may use calcium hydroxide by adding lime water to milk. The diet consists mainly of vegetables, preferably cooked. Such a diet is rich in alkalies. Plenty of salt should be given in the form of salt fish and salt meats.

In severe cases suffering from an acute exacerbation of an old lesion, more vigorous treatment is instituted. In such cases Fisher gives the following solution, by rectoclysis:

Sodium carbonate, .....	gm. 10.0;
Sodium chloride, .....	gm. 14.0;
Distilled water, .....	c. c. 1000.0.

This solution makes the blood hypertonic, consequently fluid is withdrawn from the tissues into the blood, which then becomes hydremic. The excessive fluid is then eliminated by the kidneys and the elimination of urine is increased. The sodium carbonate solution makes the blood more alkaline, so that the acid condition of the cells of the kidneys and tissues is neutralized and the kidney function is improved.

My own experience with this method of treatment has been quite satisfactory. The best results are obtained in those cases in which the total urinary

output is fairly normal; in other words, in cases in which the dominating lesion is a tubular one.

THE TREATMENT OF CHRONIC NEPHRITIS WITHOUT  
RETENTION OF PROTEIN WASTE PRODUCTS  
IN THE BLOOD.

The cases which may be classified in this group are those which usually present themselves for treatment in office practice. A great deal can be accomplished in these cases in a prophylactic way. A knowledge of the etiological factors of chronic nephritis will enable us to eliminate at once those factors which clinical experience has proven to be important in the cause of the disease. On this basis, the elimination of the continued use of alcohol and other irritants and condiments from the diet should be advised.

In the treatment of those infectious diseases which are particularly apt to be followed by chronic nephritis as a complication, the conservation of the kidneys should be instituted before a kidney lesion is manifest. This may be accomplished by eliminating the proteins from the diet, and thorough stimulation of the other excretory channels, such as the bowels and the skin, throughout the illness. If a syphilitic basis is found, then the treatment of the syphilis may improve the nephritis. Although it is questionable whether overactive antiluetic treatment may not really aggravate the nephritis.

The limitation of meat in the diet, or better still, the substitution of vegetable for meat food, and the diminution of the total daily quantity of food ingested, will do much to conserve the kidneys of a man who is entering the terminal years of an active life.

When the disease is already manifest, the treatment should begin by the determination of the functional capacity of the kidneys, and the presence or absence of protein waste products in the blood.

Since the kidneys are the main excretory organs of the body, the most important essential in treatment should consist in putting as little strain upon those organs as possible. This may be carried out by limiting the total daily quantity of food ingested, especially the solids, and by a moderate reduction of the proteins.

In the cases belonging to this group, repeated blood examinations show no retention of protein waste products. The limitation of proteins in the diet is carried out with the idea of lessening the formation of protein waste products in the blood, but as there is no retention of these substances in this type of case, a rigid limitation of protein in the diet is unnecessary, and the patient should be allowed considerable latitude in the choice of his food, so long as his nutrition is maintained and he feels well. The presence of albuminuria alone is no reason for limiting his proteins.

Great care should be taken, however, not to eliminate all the proteins from the diet, nor to regulate the patient's diet to the extent that the patient suffers from starvation or feels uncomfortable. The diet in these cases should be rather liberal, without attempting to curtail proteins entirely. Meats should be limited and vegetable proteins should be substituted. But more attention should be paid to limiting the quantity of food and maintaining the

nutrition than attempting to limit accurately the proteins ingested.

Many a patient is treated for chronic nephritis by gradual reduction of the proteins in the diet, until he is actually suffering from malnutrition, when excellent results are obtained by suddenly putting the patient on a full diet. Needless to say, dietetic treatment does not affect the underlying pathological lesion. The diet simply adapts the food to the degree of retention of waste products and to the eliminative capacity of the kidney. But as the lesion is a progressive one, the patient should be observed frequently and repeated examination made for the evidence of a change in both the degree of retention and functional capacity of the kidneys. Changes in the diet should then be made accordingly, without, however, sacrificing the patient's caloric needs.

As far as drugs are concerned, I believe they are of little value. For the oliguria, the administration of potassium iodide in excessive doses does help the elimination of urine, and the administration of diuretics is useful in some cases. The saline diuretics, often combined with such rather old fashioned but useful substances as the infusion of juniper, are often very valuable. In cases, however, where the urinary output is persistently low, the glomerular lesion is probably too extensive to hope for much favorable reaction to treatment.

A great deal can also be done by attention to the blood pressure, when the patient suffers from symptoms due to excessively high blood pressure. For the reduction of blood pressure, much better results can be obtained from the use of saline cathartics and the limitation of fluid intake than from the use of vasodilators; although the nitrites in larger doses than those usually given are not to be disregarded entirely.

When the patient's financial condition permits, a sojourn for the winter in a warm southern climate may be extremely beneficial.

In cases suffering from secondary myocardial insufficiency, rest in bed and a course of digitalis are very valuable. The tincture of digitalis should be given in large doses up to about 120 minims a day until the heart is thoroughly digitalized.

THE TREATMENT OF CASES WITH RETENTION OF  
PROTEIN WASTE PRODUCTS IN THE BLOOD.

These cases usually come under observation during an acute exacerbation suffering from edema, slight uremic symptoms, or in actual uremia. After our basic data have been established, the degree of retention, the severity of the uremia, the urinary output, its relation to intake, the functional capacity of the kidney, etc., our first aim should be to attack the most important symptoms.

The most vital condition in chronic nephritis that requires treatment is uremia. This is so regularly associated with marked retention of protein waste products, although these are not the cause of the condition, that the retention becomes the most important symptom to treat. Our first aim should be to attack this. We can lessen the formation of protein waste products in the blood by eliminating from the diet as much of the protein foods as is commensurate with maintaining caloric needs. We



must, however, be very careful to avoid starvation, which is perilous in actual uremic cases. Instead of determining the quantities of protein necessary to eliminate the waste product retention, by gradual reduction of the normal diet, it is perhaps better, when there are no imminent uremic symptoms, to put a patient on starvation treatment for a few days. Such a patient should receive nothing but small quantities of sweetened coffee or lemonade, or perhaps a little alcohol to maintain his energy requirements, until the protein waste products have been appreciably reduced; and at the same time sufficient alkalis must be added to the diet. We then gradually add carbohydrates and small quantities of proteins in the form of milk and vegetable substances.

While the use of accurate diets based upon the absolute functional capacity of the kidneys, or based upon the ability to eliminate the various solid constituents of the urine are very valuable, such diets can only be carried out in exceptionally well regulated institutions. In ordinary practice, however, such methods are impracticable. Besides, the margin of safety in the use of diets in chronic nephritis is so elastic that I do not think it wise to force the patient to adhere strictly to an accurate diet, which, for practical reasons, cannot be kept up for a very long time.

#### THE TREATMENT OF EDEMA.

The presence or absence of edema is not as vital as the degree of retention of protein waste products, yet the two conditions are often associated with each other. I believe that most edemas that we see in chronic nephritis are due to myocardial insufficiency, rather than to the nephritis, because most of them occur principally in the lower extremities. The usual nephritic edema is a general edema; occurring over the entire body, the face, chest, abdomen and the extremities, and is associated with a very marked pallor. It seems from the general distribution and the extent of the edema that its cause is not due to the kidney alone, but is rather a disturbance in the tissues themselves, giving rise to an accumulation of fluid in them. Experimentally, we can remove a large part of both kidneys without producing edema.

The removal of the edema may be effected by dietetic and medicinal treatment. The diets generally used are the Karell and the saltfree diet. The Karell diet, which consists of four glasses of milk in twenty-four hours, represents 1,000 c. c. of fluid, about thirty-two grams of protein instead of the necessary seventy-five grams for the normal individual. Its caloric value is very low, but it combines a low salt content with a low water intake. Because of its low caloric value, this diet cannot be maintained very long.

In selected cases this diet works very well, but we must remember that the result of any method of treatment will depend upon the amount of functioning kidney tissue that is left, and this may account for the rather discouraging results in some cases. Of course, when the urinary output is persistently low, when we may assume that the dominating lesion is in the glomeruli, little is to be expected from any method, because the elimination of

the fluid depends upon the efficiency of the circulation and upon the functional efficiency of the glomeruli.

The saltfree diet, which was originated by Widál, is based upon the fact that the edema is due to the retention of chlorides in the blood and tissues, consequently the fluid remains in the tissues, so as to keep the salt content of the blood and tissues isotonic. The difficulties in the use of the saltfree diet are its unpalatability, and the difficulty of obtaining and preparing foods that are absolutely saltfree.

Personally I have obtained the best results in the removal of edema by utilizing the physiological salt and sugar constants of the blood in a therapeutic way. These constants in the blood are maintained by absorbing fluid from the tissues or by drinking, when the percentages are higher, and by eliminating fluid when the percentages are lower, or when the blood is hydropic. Consequently, I have used the following modification of Fisher's solution given by rectoclysis, or in severe cases intravenously, with the fluid intake limited at the same time, although in many cases limiting the fluid intake alone is sufficient.

Sodium carbonate (crystallized),	.....gm. 10.0;
Sodium chloride,	.....gm. 14.0;
Glucose,	.....gm. 30.0;
Water,	.....up to 1000.0 c. c.

The theory upon which the use of this method is based, is that by making the blood hypertonic to salt and sugar the fluid is absorbed from the tissues, resulting in a hydropic condition of the blood that increases the flow of urine, and thus releases the edema. However, in cases that have a persistently low urinary output, when we may assume that the dominating lesion is glomerular, little is to be hoped from this method; or indeed from any method.

At first sight the use of such a solution seems to be contrary to the principle involved in the use of a saltfree diet, but it must be remembered that the saltfree and Karell diets both limit the quantity of fluid, which, with the elimination of fluid by the lungs and bowels, makes the blood and tissues hypertonic, thus acting in a similar way. Furthermore, Fisher believes that the edema is due to the retention of acid products in the tissues throughout the body. He has also shown that sodium chloride neutralizes the acidity, and that the retention of sodium chloride in the tissues (a well established phenomenon) is perhaps compensatory to the acid retention in the tissues.

Intravenous injections of glucose in five per cent. solutions may also be used for the relief of edema, and are often very valuable. In the few severe cases in which I have used such solutions, the results were very astounding. The action is probably due to the production of a hyperglycemia, causing an absorption of fluid from the tissues, and subsequent diuresis. A similar diuresis may be observed in the polyuria of diabetes.

The relief of edema by drugs should only be tried when the usual dietetic and physiological methods fail. As a diuretic, perhaps digitalis is the best drug, because it acts indirectly through the heart and thus serves to relieve the functioning kidney tissue. Theobromine sodium salicylate, agurin, and saline diuretics may also be tried, but in cases where

the kidney tissue is inactive, either as the result of atrophy, toxic degeneration or vascular disturbance, little is to be expected from these substances.

Coincident with stimulating the secretion of urine, our efforts should be utilized toward increasing the elimination of fluids through other channels, such as the skin, by means of electric baths, by hot packs, by pilocarpine, and through the bowels, by the administration of saline purgatives in sufficient doses to produce ten or fifteen fluid stools a day. When a marked result is brought about by these methods, the retention of protein waste products is also considerably lessened. These methods should be used vigorously when the urinary output is persistently low and the protein waste product retention is high.

#### THE TREATMENT OF UREMIA.

Uremia, the onset of which is dreaded in any case of nephritis, is a group of symptoms largely cerebral, due to the presence in the blood of as yet unknown toxins. The degree of uremia may be determined by the degree of total nonprotein nitrogen and urea in the blood, though these substances are not the cause of it. In observing a large number of nephritics with uremia, I am struck by the remarkable infrequency of convulsions, which seems to be the one expected but rarely met symptom of nephritis, except in the nephritis of eclampsia. This leads me to believe that perhaps the convulsions are due to a specific toxin, or to an associated edema of the brain. I believe edema of the brain is more frequent in nephritis than we suppose. The regularity of the association of high blood figures with uremia seems to indicate that the presence of uremic symptoms with negative blood figures is probably due to an edema of the brain rather than to uremia. In such cases lumbar punctures are often very helpful.

The object in the treatment of uremia should be to eliminate as much of the toxins as we can, to stimulate all the other excretory channels as actively as is possible and to prepare ourselves against acidosis by vigorous alkaline treatment.

Frequent venesections with the removal of large quantities of blood, followed by intravenous injections of alkalies, have given brilliant results. After observing the effects of transfusion in other conditions, I believe repeated venesections followed by transfusion of the blood from normal individuals would be an ideal treatment in cases of uremia. I have tried it in one case with excellent results. At the same time, free purgation by means of saline purgatives should be carried out, and colon irrigation given twice a day. It is sometimes surprising, after a series of disheartening failures, what brilliant results may be obtained by active unrelenting treatment.

#### ACIDOSIS.

Acidosis is the condition that ends many a case of nephritis. It is best to anticipate it in severe cases of nephritis by vigorous alkaline treatment. If the condition does occur, intravenous injections of sodium bicarbonate preceded by venesections often give surprising results, but usually when the carbon dioxide combining power of the blood is very low, the case is quite hopeless. In the diet of such patients one should avoid starvation by limiting the diet in any way. In fact, dietetic treatment must be

abandoned temporarily and the patient put upon a full diet, as the danger from the proteins is usually less than that from the acidosis.

#### THE TREATMENT OF METABOLIC NEPHROSIS.

This condition comprises a group of cases which are lost in the maze of chronic nephritis, without a careful attempt to differentiate them. Clinically, these cases are perhaps types of what is ordinarily called chronic parenchymatous nephritis. It is merely an excretory phenomenon, however, of either disturbed permeability of the kidney cells, or possibly a diminished protein destruction as a result of deficient protein metabolism, or perhaps a very early stage of chronic nephritis. These cases frequently follow in the course of diabetes. If we substitute protein for sugar and kidney for pancreas in our conception of diabetes, the picture becomes a similar syndrome of disturbed protein metabolism.

The characteristic phenomenon is the presence of a nephritis with a marked edema, with excessive amounts of albumin in the urine, with usually a normal output of urine, very often even a greater output than intake of fluid, normal blood figures and a normal phenolsulphonaphthalein elimination, with a severe anemia, loss of weight, and other evidences of malnutrition. Epstein has shown that in these cases there is a diminished protein content of the blood and a relative increase in the globulins.

In these cases there is no need to lessen the protein intake, since there is no retention of protein waste products. Such patients may be given white of egg, lean meats, poultry, and other proteins. Personally I have had good results by the addition of plenty of salt and sugar to the diet, especially in those cases that are eliminating more fluid than they ingest, since the addition of salt and sugar helps to retain the fluid in the tissues, while at the same time it retains the protein and diminishes the albuminuria. After such treatment the edema usually subsides, the patient gains in weight, a more normal relation between intake and output of fluids is established, the albuminuria is diminished and improvement follows.

Medicinally, the use of thyroid extract in large doses gives good results in some cases, but the exact underlying disturbance of internal secretion, if indeed it be that, is as yet unknown. The occurrence of the edema in these cases may be explained by the fact that the protein content of the blood is lessened. Consequently, a higher percentage of protein in the blood is established by passing some of the fluid into the tissues. It is interesting to note that the edematous fluid in these cases contains a small amount of protein. The edema may be relieved by the addition of salt and sugar to the diet, which increases the percentage of these ingredients in the blood, thereby withdrawing the fluid from the tissues and reestablishing an isotonic condition of the blood.

In a recent typical case of chronic nephrosis, with the presence of albumin and casts in the urine, with normal blood figures and normal phenolsulphonaphthalein output, with an output of fluid of 2,000 to 2,800 c. c., and an intake of 1,000 to 1,500 c. c., with a progressive loss of weight and anemia, the improvement resulting from a regular diet with the



addition of salt and sugar was quite startling. The patient gained in weight, the output and intake ratio were normal, the edema subsided, and the patient gradually improved.

#### CONCLUSIONS.

1. I have endeavored to discuss the treatment of chronic nephritis from the standpoint of functional pathology. Function, however, is always dependent on structure. There is no way in which we can determine the amount of functioning tissue of the kidney, but we can determine in each case the functional capacity of the kidney, its ability to excrete the various constituents of the urine and whether the dominant lesion is glomerular or tubular.

In those cases with a persistently low water output, in which the dominant lesion is evidently a glomerular one, there is but little to be hoped for from treatment, for no matter how actively the tubules may excrete waste products there is no fluid being secreted for their solution and retention of waste products and uremia will result.

2. Besides determining the dominant lesion, we can also differentiate the cases without retention of waste products, and with retention of waste products, and from these two groups we may exclude the chronic nephroses.

3. I have attempted to show that we should aim to attack the lesion itself more actively rather than to adapt the treatment to the inevitable outcome of the disease.

4. The operation for decapsulation, while it is by no means a panacea for chronic nephritis, nevertheless is rational and should be tried more often in earlier cases, and especially in those with repeated acute exacerbations.

5. In cases without retention of waste products, more attention should be paid to regulating the general regimen of the patient's life than to limiting the diet or treating him with drugs. The aim of the diet should be to limit the total quantity of food ingested, with a very moderate limitation of proteins, if any. It is more important to maintain the patient's nutrition than to attain a scientific balance of elimination.

6. In cases with retention of protein waste products it is essential to eliminate this retention as much as possible. This may be done by dietetic means, by lessening the protein intake without sacrificing caloric needs. When uremia is absent or not imminent, the protein tolerance may be attained, without producing retention of waste products in the blood, by beginning with starvation and increasing the proteins until tolerance is established.

7. Edema may be best relieved by taking advantage of the physiological constants of the blood by the use of hypertonic salt and glucose solutions, though the Karell and saltfree diets often give excellent results. Medicinal methods are of very limited value, with the exception of digitalis.

8. Uremia should be anticipated by treating the retention of protein waste products. When it does occur, venesection and intravenous or rectal use of alkalies gives best results. Venesection followed by transfusion should be tried more frequently.

9. Acidosis should be anticipated by the use of

alkalies. When it does occur, more vigorous intravenous use of alkalies should be resorted to.

10. Cases of nephrosis should be treated iconoclastically, by not limiting the proteins and by adding extra amounts of salt and sugar to the diet.

1114 MADISON AVENUE.

## TWO INTERESTING CASES OF MEASLES.

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It has undoubtedly been noted by those interested in the diagnosis of eruptive diseases that the percentage of atypical rashes has been unusually high this spring. Particularly has this been true of measles, although scarlet fever has also presented a large number of very puzzling cases, as is characteristic of that disease. I believe, too, from personal observation, that prodromal rashes in measles have been more frequent in proportion to the number of cases seen than in other years. It makes one suspicious that measles is preparing to follow in the footsteps of scarlet fever, so far as furnishing constant pitfalls for the unwary diagnostician is concerned. I have recently seen two cases which have deviated so far from the textbook variety that I feel justified in reporting them:

CASE I.—On April 18th, I was called in to see a boy of four years, whose brother I had treated for measles shortly before. The mother stated that he had not felt well for two days, but he was bright and showed no evidence of illness so far as his appearance went; no involvement of the eyes, and no coryza or cough. The rectal temperature, however, was 102° F. and examination of the buccal mucous membrane revealed numerous Koplik's spots.

I next saw him on the morning of April 21st, the rash having first appeared the evening before. At this time, the little fellow was quite ill, temperature 105° F. (R), well marked bronchitis with a troublesome cough, very much congested eyes, and he showed no interest whatever in his surroundings. The throat was hardly as sore as that usually seen in a severe case. The postcervical glands were enlarged and the mucous membrane lining the cheeks was shot with Koplik's spots. The rash was very striking—the most unusual it has ever been my privilege to see, in measles. The skin on the face, that behind the ears, on the trunk and extremities, was literally covered with small macules; these were slightly smaller than a split pea, not noticeably elevated, perfectly round and light pink in color, resembling very much the shade of pink seen in rubella. These lesions were clean cut, clearly defined, and closely set, but white skin showed plainly between the spots. The writer does not recall having seen such an evenly formed rash or such clear cut lesions in any skin affection, and it certainly developed with remarkable rapidity.

On the morning of April 22nd, the temperature had risen to 106° F. (R) and all symptoms were intensified, the patient being about as ill as it is possible to be in an uncomplicated case. The exanthem had changed completely in character. It had become a generalized, confluent erythema, dark red in color, not unlike the skin manifestation in a well marked case of scarlet fever, and this likeness was emphasized by the fact that, in some areas, darker punctate spots appeared in the place of the small macules of the day before. In addition to this, the face, in a poor light, seemed clear, though with better illumination the rash was easily noted. On the side of the hips and on the buttocks, little groups of the typical blotchy maculopapules of measles could be found, but only in these localities was there to be seen anything bearing re-

semblance to the classical rash of measles. The patient remained very ill until the morning of April 25th, when the temperature fell to normal and recovery followed.

The unusual features in this case are: 1, the rapid development of the rash, which spread practically over the entire body in about twelve hours; 2, the remarkably small, clear cut lesions, somewhat resembling rubella, and the even formation and distribution of the initial rash; 3, its rapid amalgamation into a scarlatiniform type of eruption. I would like to add that, without question, this sort of rash is very often mistaken for scarlet fever, especially if the case is not seen during the prodromal period, and if the catarrhal symptoms and the signs in the mouth are ignored. Such cases get into scarlet fever wards occasionally and cause trouble. My own feeling is that mixed infections of scarlet fever and measles are extremely rare. The fact that desquamation frequently follows in these attacks has been brought forward to back up the opinion that scarlet fever had existed alone or with the measles. It is easy to see, however, that with such an intense congestion of the skin as the type of case just described presents, more or less profuse desquamation can readily ensue; and measles, at times, can certainly desquamate most freely.

CASE II.—The second patient, a boy three years of age, was seen in one of the hospitals where he had been admitted April 10th for a minor operation. There was no history of exposure to contagion before admission. The history stated that the child had developed a rash on April 18th, which had persisted for two days. When I saw it on April 20th, it consisted of very red punctate spots a little larger than those normally seen in scarlet fever. There was a lighter red erythema involving the skin between these punctæ. The eruption was confined to the trunk and extremities and was accentuated in the groins and flexures. The face had been, and still remained, absolutely clear. The inguinal glands were somewhat enlarged, but nothing unusual was noted about the glands of the neck. The eyes were clear; there was no cough or coryza. On the other hand, while there was no history of vomiting, and the temperature was irregular, the throat was congested and showed a uniform redness. The tongue was also clearing off with the papillæ showing. Bearing in mind the possibility of a prodromal rash, I examined the mouth thoroughly for Koplik spots and can say positively that there were none there at the time. Here then was a rash, out for the third day, with the proper distribution for scarlet fever, and possessing many of the characteristic points of the scarlet fever eruption. Besides, there was marked angina and a tongue showing a disposition to clear. There were no catarrhal symptoms present, and I felt certain that this was a straight case of scarlet fever. The diagnosis was concurred in by two experienced physicians, though it is fair to state that a third, just as competent, disagreed with us. Less than forty-eight hours later, this rash had faded out and a typical eruption of measles had developed, with all the usual accompanying symptoms and signs, including Koplik's spots.

In this case the following points seem of interest: 1, The prolonged existence of a prodromal rash with no facial involvement; 2, the complete absence of any pathognomonic symptoms or signs of measles thirty-six hours before the appearance of a distinctive measles eruption; 3, the prodromal rash was scarlatiniform in character. This I believe to be the type of eruption most commonly preceding an attack of measles.

202 WEST EIGHTY-SIXTH STREET.

## ADVANTAGES OF HOME TREATMENT IN TUBERCULOSIS.\*

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I wish to relate in short and condensed form the experiences I have gained during the last ten years in the home treatment of tuberculosis. The number of cases of tuberculosis which fall into my hands is so large that it will be of interest to the general practitioner to inquire into the results obtained in cases of tuberculosis occurring among the poorer laboring classes who, for financial reasons, cannot afford the comforts and luxuries of sanatoria. For a long time a diagnosis of tuberculosis of the lung meant nothing less than a trip to California, Colorado, or the Adirondacks, but we have learned during the last decade that tuberculosis can be treated at home and that a victim of the disease need not be turned away from his family circle, nor segregated as a carrier of the white plague; that the victim of tuberculosis can be restored to health and usefulness; that he can again become a wage earner and a welcome member of the family circle under conditions which are within the reach even of those who are not endowed with riches.

I consider tuberculosis a curable disease. It is our first duty to convey to the patient the encouragement which a favorable prognosis can give, but we can be successful only if the diagnosis of tuberculosis of the lungs is made early. In the incipient stage the disease can be arrested and the patient restored to health. Patients frequently apply to us when the disease has advanced considerably, and the process of destruction has extended to such a degree that there is hardly any chance for restoration of the tissues. In a large number of cases the symptoms of incipient tuberculosis are indefinite, and it is in these cases that we physicians err. It is the sin of omission, not commission, that is responsible for the large number of advanced cases of tuberculosis. Those of us who study larger bodies of men where the examinations are compulsory, where members of organizations have the opportunity to apply for medical examination and advice without any individual tax, are convinced that incipient cases of tuberculosis readily escape observation, and that if we are not on the constant lookout, if we are not continually trying to disprove the existence of tuberculosis, many a positive case will escape attention.

It is not my intention to convey the impression that the diagnosis of early tuberculosis is to be relegated to the specialist. I am quite sure that every physician is fully able to arrive at an early diagnosis if he spends sufficient time and gives sufficient attention to his patients. The physical signs are lacking in the early stages, but the short hacking cough with or without sputum, slight rise in temperature in the afternoon, the rapid increase of pulse on slight exertion, the slight loss of weight, and the easy fatigue—these are all very suggestive symp-

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toms. Do not wait for a positive sputum; it is then obvious that a definite breaking down of the lung tissue has taken place, and such cases can hardly be considered incipient. In this group the early incipient stage has been overlooked. Our conclusion as to the causative factor of the change in the condition of the patient, if the physical examination is definite, can be fortified by x ray examinations and serological tests. X ray examination by plates or fluoroscope has been of the greatest help and should not be omitted in any case where the physical examination is not conclusive. In experienced hands the x ray examination affords undeniable findings.

During the last two years, the examination of the blood of tuberculosis patients was of decided diagnostic help. According to the results obtained by Zinsser and Miller and corroborated by many reliable investigators, the complement fixation will soon occupy the same position with respect to tuberculosis as the Wasserman test does to syphilis. The test is found positive in cases of active tuberculosis, in other words, specific antibodies are found in the sera of patients who are actively diseased, and as it is these cases of active tuberculosis that chiefly concern us, such supporting evidence from the laboratory is unquestionably of great value. Brawfennbrenner has recently published a series of cases of much interest. Doctor Lowy and myself are now working along the same lines, and we hope shortly to publish the results.

I have dwelt on the diagnosis of tuberculosis because successful treatment depends on early diagnosis.

In my trade union antituberculosis work, I have collected the data concerning 284 patients, all of whom had tubercle bacilli in their sputum. Of these, 208 were treated at home, and 76 at the sanatorium. Of those treated at home 149 are alive and well, or 71.4 per cent.; of those treated at the sanatorium, 51.3 per cent. are well and working.

It is my opinion that home treatment of tuberculosis is not dangerous to the family or to the community when it is conducted under intelligent medical supervision. I believe that ninety-nine per cent. of all infections occur before the physician gets control over the cases, and that when the diagnosis is made and the patient cautioned, there are few who will not use ordinary precautions to safeguard those living with them.

In considering home treatment of tuberculosis, I do not include the acute miliary type, the symptoms of which are very acute, the sputum containing numerous tubercle bacilli. This type is of course a potent source of infection and is often mistaken for an ordinary pneumonia. The subacute type of the disease may be ushered in with acute symptoms, but these gradually lessen and continue as in a chronic, or chronic ulcerative type; these are the types met in every day practice, and for months they infect those in contact with them until they come under the supervision of a physician.

In my work in the Trade Union Antituberculosis Association, I have made it a practice to examine all children in the family where a case of tuberculosis occurs. I apply the Von Pirquet test imme-

diately. Those children who gave a negative reaction, continued to be negative for three or four months after the patient carried out the home treatment (118 children—sixty-seven positive, fifty-one negative).

In order to bring out clearly the advantages and the disadvantages of home treatment versus sanatorium treatment, we shall have to go somewhat into detail, as to what constitutes good home treatment. The term home treatment means, not only medication, but also proper supervision of the entire household. On visiting a patient there are many things to be taken into consideration; the surroundings, financial status, character of food, sleeping facilities, and the general home conditions. The first things to be considered in the home treatment of tuberculosis are sleeping facilities and willingness to obey orders. I have made it a practice to pick out the largest, airiest and sunniest room that is available. This is at once stripped of everything except a small table, a chair, and the bed, which is placed facing the window, not along side of it. The next step to be taken up in detail with the housekeeper, mother, wife, or person who will care for the patient, is the character, quantity and caloric value of the food.

I always endeavor to have the patient sleep in an enclosed porch; I have also made use of protected roofs with excellent results. Linens should be changed frequently and boiled; if they are soiled by excretions, they should be changed daily. All excreta are burned and containers boiled for at least twenty minutes. Sputum cups of paper are the only ones to be used. The room should be dusted with a damp rag daily, windows should be open at least eighteen hours out of twenty-four, and sunlight admitted.

Medical treatment is a secondary consideration.

Children should not be allowed to see patients, more than once or twice a day, and then only for a few minutes; embraces and kisses on the mouth should not be permitted.

Patients having a temperature above 100°, with sweats, rapid pulse, and profuse expectoration will respond only to one method of treatment, absolute rest in bed. Bleeding cases belong to the same group. Such patients must be strictly confined to bed, must not get out of bed under any pretext; a bedpan should be used, and all exertion by the patient avoided.

I have made it a practice to put all patients to bed at the beginning of the treatment until I have determined to which type they belong, and two weeks is the shortest period I have kept them in bed. Fever cases are kept in bed just as long as the temperature goes above 90° F., even for months if necessary. As the fever decreases the cough, expectoration, sweats, dyspnea, and rapidity of the pulse will diminish. When these symptoms are gradually reduced, and the range of temperature becomes normal, I permit them to get up, beginning with half an hour the first day, and then increasing every three or four days, by half hours, meanwhile watching the temperature and pulse very closely and gauging the amount of exertion the patient may be able to stand without causing the return of

acute symptoms. If he has reached the stage where he may be up practically all day without causing any appreciable rise of temperature and pulse, then he is allowed to walk gradually; first around the house, afterwards in the open, for increasing periods of time. After I find the patient is able to walk two or three hours without causing any undue symptoms, he is made to walk up hill very slowly.

Now, we have him in such condition that we may take up the consideration of some kind of work for him. I do not approve of taking patients away from their usual occupations, and putting them at other work which would involve the use of new muscles and new training, unless easy outdoor work can be found. I think that the patient will spend less energy and do better at the work to which he is accustomed, if he is careful to limit the amount of work undertaken. It does not seem fair or just to prevent a man from supporting his family as soon as a diagnosis of tuberculosis is made. If this man is careful he is not a source of danger and should be allowed to work with other men. My experience has been that the men with whom he is working will very soon report the case if he is careless or unsanitary in his habits.

The foregoing, constitutes my opinion of what home treatment must consist to be effective.

I am not a believer in the tuberculin treatment in pulmonary tuberculosis. Statistics have proved that tuberculosis cannot be cured in less than four to eight years. It is impossible for patients among the poorer classes to give so much of their time to the search for health, and except for the well to do, sanatorium treatment is out of the question. Many of the free and semiprivate sanatoriums of today limit their terms of residence to six months or one year. It is well known that most cases of tuberculosis cannot be cured in that period. The result is that the patient goes back to the same conditions he left, believing the disease is completely arrested, and consequently, puts aside all precautions. Therefore, after he has been home six or eight months the lung condition becomes active again, and the patient is as badly off as he was in the beginning. I am not condemning sanatoriums, as I am aware they do much good, especially from the educational point of view; but I am absolutely opposed to the theory that all patients must go to a sanatorium.

Home and living conditions differ with each patient, and it should be the duty of every medical man to inform his patients as to the proper mode of living, and the care he should take in preparing himself for the trying conditions of life which the modern struggle for existence renders necessary. Formerly, we considered climate the prime requisite for treatment of tuberculosis of the lung; we now know that climate is not a specific for the disease. We have lost sight of the fact that ninety per cent. of our tuberculous patients are financially barred from going to a sanatorium, and of this ninety per cent. only about eight to ten per cent. can go to the so called free sanatoriums established by municipalities and charity organizations. Even if these institutions were all that advocates claim for them,

we should still have the vast majority of cases on our hands, and these would require some intelligent supervision at home.

It is the opinion of many that some antituberculosis association should take up the establishment of tuberculosis pay clinics in large centres, to be operated for the benefit of the middle class sufferers from this disease who present the most difficult cases for the antituberculosis worker. Such a clinic has already been established in Boston, at the Boston Dispensary, and also in other cities.

When wage earners whose salaries range from \$18 to \$25 per week become afflicted with tuberculosis they are reluctant to go to charitable institutions for free treatment, while, on the other hand, they are unable to pay for maintenance in a private sanatorium. There are a number of institutions charging \$7, \$10, and \$15 per week, such as the Adirondack Cottage Sanatorium, the Loomis Sanatorium, the Agnes Memorial Sanatorium, and the Stonywood Sanatorium for Women. These semiprivate, semicharitable institutions are, however, compelled to solicit funds in order to make up the difference between the small amount paid by the patient and the cost of maintenance.

Poor patients having no resources at all are not loathe to go to a dispensary and receive free treatment, but the patient who is earning a moderate salary, and who, in some cases, especially in the beginning, can afford to pay a small fee to the physician, is under the impression he is lowering his selfrespect if he applies to a charitable institution for free treatment. But he would not hesitate to go to a pay dispensary, charging a fee within the limit of his means. There is no doubt that a tuberculosis pay clinic for middle class patients, where ambulant cases could be examined at regular intervals, and salaried nurses provided to pay frequent visits to the homes, would be most desirable. In such an institution much good work for the tuberculous patient and his friends could be accomplished through educational propaganda against the disease, by giving courses of lectures, the aims being preventive, curative, and consulting work. Such an institution could be made a general information bureau on tuberculosis, open to all citizens.

I am sure that if such service were rightly organized, it would provoke little or no opposition from medical men, and if such institutions were established by public spirited men and physicians, they would most undoubtedly have far reaching results.

In Newark, N. J., there are about 8,000 cases of tuberculosis with sanatorium facilities for only 120. Is it not ridiculous to consider sanatorium treatment for the 7,880? At present I am very glad to say that through the efforts of my association and myself, the county will build a hospital of 1,000 beds for these patients.

Comparison made by Pratt of the results obtained in sanatorium and in home treatment in his tuberculosis work in Boston with results obtained by two English sanatoriums and the Massachusetts State Sanatorium, shows the following: Fifty-two per cent. of the patients discharged from the English sanatoria were alive and well, four to eight years



afterward. The report shows twenty-four per cent. of the former patients of the Massachusetts State Sanatorium were leading normal lives four to seven years after discharge. Pratt in his report on home treatment shows that sixty per cent. of patients who had home treatment are alive and working after four to eight years. By no means do I oppose sanatorium treatment; but I am considering the best interests of the average patient and the community. When one compares the great number of cases of tuberculosis and the exceedingly limited sanatorium facilities, it is apparent that the problem to solve is the treatment applicable to all cases and the protection of the healthy.

I cannot too strongly emphasize that in the case of this disease the most important consideration should be given to the prevention of infection in children.

Phthisiophobia or the hysterical fear of tuberculosis is very often fostered by the Board of Health nurses with the result that the entire family are in fear of contagion and the patient is shunned as though he were a pest. The duty of the nurse or doctor should be to enlighten the family and patient as to the chances of infection, thereby relieving their minds of a great amount of worry.

I have dwelt on the importance of early diagnosis, giving the results of my experience. I have endeavored to point out that home treatment is the only means of adequately and intelligently dealing with the vast majority of cases of tuberculosis; that this treatment is not a menace to the community since the preventive measures necessary can be carried out in most homes, and that it is as fully effective as sanatorium treatment in bringing about a cure. Here I would reiterate that I do not wish to be taken as opposed to sanatorium treatment; but I have tried to demonstrate the fact that sanatoria can only take care of a very limited number of cases.

My experience forced on me the opinion that the prime requisites for intelligent treatment of tuberculosis consist of the trinity, fresh air, rest (mental and physical), and proper food with a minimum of medication.

616 MADISON AVENUE.

## THE PROTEIN TREATMENT OF PSORIASIS.\*

BY ELEANOR VAN NESS VAN ALSTYNE,  
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New York.

A preliminary paper has already been published about this method, but the results have continued to be so favorable that it may be of interest to summarize the conclusions which it has been possible to make during the last few months. The treatment of psoriasis has always been an interesting and baffling problem to the dermatologist. The comparative ease with which early lesions can, at times, be controlled temporarily, together with the almost invariable redevelopment of the lesions at a

later date, stimulate feelings of alternate hope and despair in both the physician and the patient. Psoriasis has sometimes been classed by dermatologists as a disease of the healthy, and "once a psoriatic always a psoriatic" has become almost a proverb in this department of medicine. It indicates in a striking fashion the limitations of the therapeutic methods now in use. For the most part psoriasis has been treated by empirical methods which are based on clinical experience, but it has been impossible to outline a method of treatment both logical and effective because of the limitations of our knowledge of the pathogenesis of the disease.

There has been considerable dispute as to whether psoriasis is to be considered an expression in the skin of a constitutional condition or whether the lesions are caused by a local infecting organism. The most careful search has failed to demonstrate any organism having a causal relation to the disease, but on the other hand in recent years studies in metabolism have demonstrated a quite remarkable and fundamental metabolic fault in the organism. The deranged metabolism is a constant and most important factor in the disease, and the writer's method of treatment has a direct relationship to this disturbance.

The investigations of Shamberg, Raizias (1), and associates have demonstrated that during the period of the attack there is a marked retention of nitrogen even on a low protein diet. In the severe cases they found the nitrogen in the urine elimination depressed to the lowest level on record in normal or pathological conditions. Of course during the period of active scaling much more nitrogen is lost through the skin than is ordinarily the case, but even if all losses of nitrogen through scaling, urine, and feces are taken into consideration, there is still a retention even on a low protein intake that is beyond anything observed in other conditions. The remarkable facility with which the body can normally adjust itself to different nitrogen levels indicates that this is a metabolic fault of no small significance. These investigators further found that in both eczema and psoriasis there is no increase in the nonprotein nitrogen in the blood; so that there must be a true tissue retention in which it is quite possible that the skin takes part. The skin shows itself particularly sensitive to the presence of foreign proteins and it not infrequently happens that the introduction of a considerable dose of foreign protein parenterally, such for instance as a large dose of tetanus antitoxin, may cause a marked inflammatory reaction in the skin, followed by scaling. Such reactions have been observed frequently following the introduction of other proteins than serum proteins. In so called serum sickness, there are at times remarkable skin manifestations varying from hyperemias and erythemas to efflorescences resembling measles or scarlatina. Of course not all patients subjected to protein administration show these reactions. Many of them do, however, and it may not be illogical to suppose that if through a metabolic fault in the organism, imperfectly assimilated nitrogen is retained in considerable quantities, as has been shown to be the case during an attack of psoriasis, this protein may give rise to the

\* Read before the Women's Medical Society at the New York Academy of Medicine, March, 1918.

chronic inflammation and scaling noted in the disease, and we have then a chronic protein poisoning rather than the acute protein poisoning noted in serum sickness.

If an excess of imperfectly metabolized protein is an important factor in the etiological production of the symptoms of the disease, it is logical to suppose that a low protein diet should be of some service in relieving the condition, in that it would require the organism to deal with a much smaller amount of the food element than it was incapable of properly handling. As a matter of fact, such observations have been made for many years, and Bulkeley (2) long ago pointed out the value of such a diet in this condition, basing his conclusion entirely upon clinical observation. Without having exact analytical evidence that there was a protein retention, Bulkeley nevertheless concluded that psoriasis was, at least in part, due to protein poisoning and put his cases upon a strictly vegetarian diet. He found that as a result of observing more than 200 cases for more than twenty years on a vegetarian diet, he was able to state that in effectiveness it far exceeded anything which had been previously secured by the best treatment at the hands often of the best men in the profession. These conclusions have not been universally confirmed but it is quite possible that some of the failures have been due to an imperfect regulation of the diet and to its continuance over too short a period of time.

Shamberg and his coworkers cite one case of eczema as showing a marked nitrogen retention somewhat similar to psoriasis, and it was in this case that the low protein diet exerted a beneficial effect which, as they state, was gradual and progressive.

It would appear logical, therefore, to attack this problem not only by reducing the quantity of food protein which is difficult for the organism to properly handle, but also by trying to educate the cells to deal effectively with the amounts which must be handled. Walker has found that the administration of thyroid extract produces favorable effects in these patients and it is quite possible that this is due to the well known stimulation to nitrogen metabolism which this gland extract produces. It is indeed quite possible that the nitrogen retention which the psoriasis patient exhibits has its origin primarily in a deranged activity of the endocrine glands.

The method of treatment in which the writer has been interested is based upon attempts to correct the metabolic fault by stimulating the organism to deal with protein by the repeated hypodermic injection of small doses of a foreign protein. While a single injection of a foreign protein in a large dose, as has been stated above, often produces a severe cutaneous reaction, the repeated injection of graded doses over short intervals of time gradually trains it to deal with larger doses without producing any severe disturbance. The parenteral introduction of a foreign protein stimulates the production of enzymes capable of splitting the particular antigen in much the same way as the digestive enzymes, pepsin and trypsin, do. Not only does the organism respond to a fully formed native protein but the work of Abderhalden has shown how effective this

response is toward even the protein fragments, peptones, and polypeptids. Formerly all the emphasis on this question has borne on the specific quality of this response and there is no question that reactions may be devised which show *in vitro* a high degree of specificity but in the living organism nonspecific reactions are quite as important. The specificity in all biological reactions has quite dominated the field until up to the last three years. There is now, however, a growing understanding of the fact that when a foreign protein is injected into the body, a variety of responses is elicited other than those which we have been accustomed to measure in the test tube. To such a degree has this development proceeded that Davis in his paper on Vaccine Therapy, published a year ago (3), states that "the nonspecific effect of vaccines is just now probably the most important problem that concerns the vaccinationist" and "at the present moment the facts would seem to indicate that the nonspecific substances referred to are able to do almost everything that specific vaccines have done in the cure of disease. In other words, the curative effects of vaccines reported heretofore may be explained by the action of nonspecific substances in the vaccine rather than by its specific factors."

Briefly what the writer has attempted to do is to whip up or stimulate the metabolic process dealing with retained nitrogen by using a foreign protein as a vaccine. The success obtained in the treatment of the disease by this method affords some confirmation of the theory at its foundation.

Proteins have been injected before as therapeutic agents in the treatment of psoriasis. Based upon this premise a number of workers have used autoserum injections in this disease. The results were sufficiently encouraging to cause favorable reports. As a means, however, of stimulating the organism an autoserum is not to be classed as an alien protein. More in line with the writer's work is Perry's use of horse serum (4) as a therapeutic agent. These workers were using serums in the belief that the serum itself possessed some curative property aside from its protein content.

About a year ago Engman and McGarry (5) reported some success in psoriasis with typhoid vaccine given intravenously, and Scully has continued that method in conjunction with applications of chrysorobin ointment to the lesions. The use of typhoid vaccine intravenously in this condition has been used to produce a severe reaction, accompanied by fever, in the belief that the reaction and hyperpyrexia are the essential elements in the beneficial effects. These men give a small number of injections only and expect immediate results following the severe reactions. There is no gradual, long continued process of educating the tissues to deal with foreign protein and the permanency of the results by that method is thus far open to serious doubt. Engman and McGarry note that in their most favorable cases relapse occurred in a week to ten days. There is no question that typhoid vaccine given intravenously is a foreign protein. It has, however, extremely toxic properties for the human organism and is not a suitable protein to be used over a continued period of reeducation. Its injection is followed by severe general reaction, accom-



panied by chill, fever, headache, vomiting, and occasionally a collapse, so that it is not a method which can be used outside of the hospital nor for any considerable period of time. Scully (6) observes that it was not considered advisable to use typhoid vac-



FIG. 1.—CASE 1. Psoriasis of eighteen years' standing.

cine on a patient who did not remain under observation for the period following its administration. When one considers the severity of the reaction there can be no question as to the wisdom of that conclusion.

Unless it can be demonstrated that this severe reaction is essential, which Scully, Engman, and McGarry report, and which is similar in all respects to that observed by Miller in his treatment of arthritis by the same method, there can scarcely be any justification for producing it. The protein selected by the writer for this purpose has none of the disadvantages inherent in animal serums or bacterial vaccines. It causes no disturbing general effect nor local reaction. It is not necessary for the patient to be in the hospital during the period of treatment nor to have his usual activities in any way interfered with, and since the therapeutic results are better than any that have been described following the injection of the typhoid vaccine, it does not seem to be in any way necessary to produce such an unpleasant disturbance in order to benefit the patient.

The protein selected for this purpose is prepared from millet and alfalfa seed according to the method outlined by Beebe. This protein has already been administered to many patients so that its reactions and doses are well known. The method of preparation was described in detail in the first paper published on this matter (7), but it is essentially an acid

hydrolysis of the protein to a point where the solution may be sterilized by heat without causing coagulation. It has all the advantages of being stable, sterile, and readily standardized and agrees in every respect with the conditions described by Davis for such a therapeutic agent. Davis states that "in case it is shown conclusively that for therapeutic purposes any foreign protein may serve, the logical preparation for use would seem to be a sterile chemical preparation of some proteose which can be carefully standardized." The method of preparing these proteins was devised before Davis's paper was published but the preparation agrees in every respect with his outlined conclusions.

In the treatment of psoriasis with this protein, the remedy is given by hypodermic injection, subcutaneously in the arm, in gradually increasing doses, beginning with a dose of six to eight minims of a two per cent. solution and increasing gradually up to twenty or thirty minims. The injections are at first given three times weekly. As previously stated, they in no way cause any disturbance to the patient nor do they interfere in any way with his ordinary activities. Improvement is a slow and gradual one and the treatment must be continued over a considerable period of time. In from ten days to six weeks, that is, after five to fifteen injections, there will, in most cases, be observed a diminution of the erythema about the scaly patches, followed by falling of the scales. This beneficial change continues



FIG. 2.—CASE 1. Showing condition after six months' treatment

gradually and slowly, until finally the scaly patches are entirely cleared up and there is left a pigmented area which itself gradually fades and leaves a clean, healthy, pink skin.

The changes which take place during the improve-

ment in the case of psoriasis under this treatment are slow and gradual and this point must be remembered. There is no dramatic cessation of the whole difficulty within a few days. During the last few months this method has been applied to some cases



FIG. 3.—CASE 2. Psoriasis of two years' standing.

of psoriasis that have resisted all forms of treatment heretofore employed. There are cases in which the whole body has been covered with the lesions and the condition has been a chronic one, in that the process was always active without the remissions which are observed in the less serious degrees of the disturbance. In these cases the improvement has been decided and definite not only as regards the skin lesion itself but with respect to the general health of the patient; but the improvement has been slower to manifest itself than in patients who have had a smaller area of the skin involved and in whom in all respects the disease had a much milder form. The mild early cases respond promptly, the long standing severe cases more slowly, but in each case the first sign of improvement is a diminution in the inflammatory reaction of the skin and a diminution in the formation of scales.

The treatment has thus far been employed on fifteen cases for a sufficiently long time to make it possible to say that very satisfactory effects are obtained by means of it, but obviously no final conclusions as to the permanent curative value can as yet be made. The two cases pictured in the first report were of a severe form and in one patient the disease had lasted for a period of eighteen years. These cases were under treatment altogether for a

period of about six months and they have now been without treatment for the same length of time without any recurrence of the disease.<sup>1</sup> This is of interest in contrast to the findings of Engman and McGarry who found that the intravenous injections of typhoid vaccine produced temporary relief but that even in the best cases there was a relapse after a period of a week to ten days. In contrast to the typhoid vaccine the protein used by the writer is of such a character that the injections may be carried on throughout this long period without any disturbance to the patient and the continuous stimulus to the formation of proteolytic enzymes which is thus afforded is apparently a much more favorable factor in the relief of the disorder.

It is of interest to note in this connection that none of the cases of psoriasis seen by the writer can by any means be classed as being in good health and the generally accepted dictum that psoriasis causes no impairment to the general health is difficult to understand. It is furthermore of interest to observe that progressive improvement with final complete relief has been obtained in some cases that have con-



FIG. 4. CASE 2. Showing condition after five months' treatment.

tinued throughout the period of treatment on a high protein diet. The organism has apparently been educated to deal effectively even with the larger

<sup>1</sup>The two cases pictured were the first cases treated. The older patient has shown a few scaly recurrences since this paper was read. She has lived in most unhygienic conditions during the unusually severe winter. The recurrences are yielding rapidly to renewed injections.



quantities of protein which the patients have been taking. In none of the cases has there been a restriction to a low protein vegetarian diet. In the course of five or six years it will be possible to determine how permanent the results are as obtained by this method and its place in the treatment of the disease may have a final decision. Nevertheless, the favorable effects obtained thus far seem to indicate that it is possible to afford great relief to these patients by this method and these clinical observations taken in conjunction with the known errors in metabolism which such patients show make it seem probable that a reeducation in the metabolism of nitrogen has been effected.

17 EAST THIRTY-EIGHTH STREET.

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#### SPANISH INFLUENZA.

*Cases of Influenza and Pneumonia Taken Off SS. "Bergsjord," Arrived in New York, August 12, 1918, from Norway.*

By EDWARD E. CORNWALL, M. D.,  
Brooklyn, N. Y.

From the Norwegian liner, *Bergsjord*, which arrived in New York with a story of having had more than two hundred cases of sickness resembling influenza or pneumonia during the voyage, with four deaths, eleven sick passengers were transferred immediately, or very soon after arrival, to the Norwegian Hospital, in Brooklyn. Four of these patients entered the hospital with histories, symptoms, and physical signs which suggested influenza, and seven of them with histories, symptoms, and physical signs which suggested pneumonia complicating influenza. One of the patients, who entered the hospital with a temperature of nearly 106° F., and signs of pulmonary edema, died two hours after admission. Another, who had signs of consolidation involving nearly the entire right lung, showed increasing dyspnea and progressive weakening of the heart, and died on the third day after admission. A third, with consolidation involving the right upper and left lower lobes, died on the third day after admission. At the present time, August 19, 1918, all the remaining cases are either frankly convalescent or are progressing favorably.

One of the patients who entered the hospital with a diagnosis of influenza, gave the following history: Five days before admission he had a moderate chill, and felt chilly for two days after. He also felt very weak, had a poor appetite, and suffered from a frontal headache. He did not go to bed until one day before admission, when he felt too weak to keep up. Shortly after going to bed he had another moderate chill. This patient states that ten years ago, when in the United States, he had an attack of sickness with symptoms almost exactly the same as those of the present attack, except that the headache was not so much frontal as lateral.

In all these patients a leucocytosis was found and an increase in the percentage of polymorphonuclears. The leucocytosis in the four cases which were diagnosed as uncomplicated influenza was respectively, 14,500, 11,600, 10,950, and 14,500; and in six patients with pneumonia, it was respectively, 16,400, 10,200, 35,600 (died), 21,200, 27,500, and 10,600 (died). The percentage of polymorphonuclears ranged between eighty-two and eighty-five in most cases, but in one patient who died it was ninety-one.

Cultures were taken from the throats of all, except from the patient who died two hours after admission, and also cultures of the blood; and the sputum was examined in one case. The report of the examination of the cultures and sputum, by Dr. Esmonde B. Smith, is as follows: Throat cultures made on Loeffler's blood serum show chiefly staphylococci. Two of the cultures show many minute colonies of a biscuit shaped diplococcus. Blood cultures from the two most severe cases showed no growth after thirty-six hours. Sputum: But one specimen could be obtained, as there was little expectoration in spite of considerable cough. This specimen [which was from a patient with signs of pneumonia and a clinical history suggesting a previous influenza] showed white, frothy mucus, slightly tinged with blood. It contained streptococci, diplococci resembling those obtained from the throat cultures, and clumps of organisms morphologically like *Bacillus influenzae*.

The prevalence of influenza in Europe at the present time, "Spanish" influenza, is the excuse for reporting these few apparently ordinary cases.

1218 PACIFIC STREET.

#### THE STATUE OF EDWARD LIVINGSTONE TRUDEAU.

By S. ADOLPHUS KNOPF, M. D.,  
New York.

A distinguished company of physicians, friends, and former patients of Dr. Edward L. Trudeau gathered in the grounds of the Trudeau Sanatorium, Saranac Lake, N. Y., on August 10th, to witness the unveiling of a memorial statue of the noted physician. In this life size bronze the sculptor, Gutzon Borglum, has succeeded in reproducing in a marvelous manner the spiritual expression so characteristic of the great teacher.

The statue is the gift of 1,200 of Doctor Trudeau's former patients, and the formal presentation to the institution was made by one of these patients, Miss Louise E. Bonney, now a high school teacher in New York.

Dr. Walter E. James, of New York, president of the board of trustees of the Trudeau Sanatorium, opened the ceremonies with a feeling tribute to the founder of the great institution as the pioneer of the sanatorium movement in the United States, as a scientist and a great humanitarian who, like Saint Theresa, started out to build hospitals with nothing but faith in God and man. He stated that no less than a hundred former patients of the sanatorium are now in the military service of the United

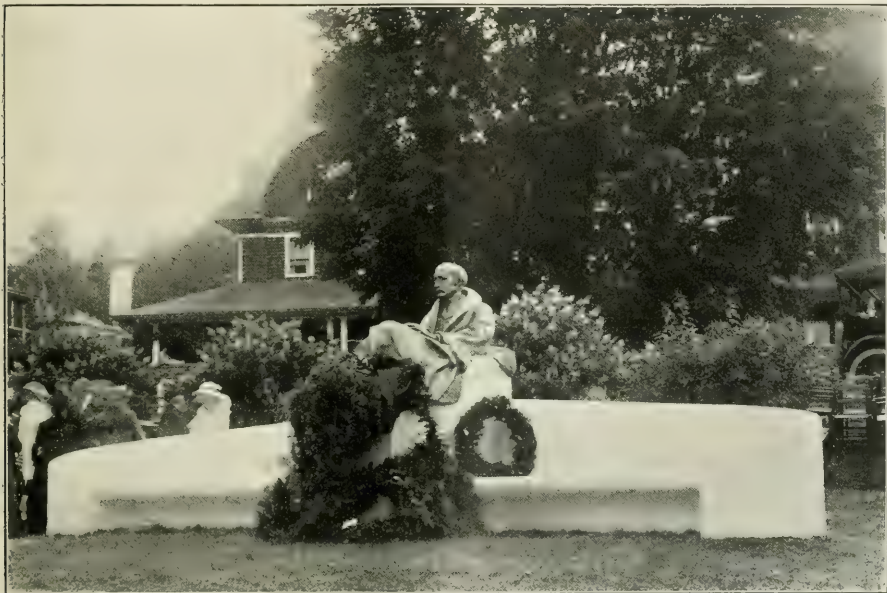
States fighting for democracy and liberty for all nations. There could hardly be a better proof than this of the curability of tuberculosis.

Rev. Philemon F. Sturges, rector of Grace Church, Providence, R. I., a former patient and life long friend of Doctor Trudeau, delivered the oration. Doctor James said there was so much of the spiritual and religious in Doctor Trudeau's life that the Board of Trustees felt that a teacher of religion rather than a medical man should have this honor. Reverend Mr. Sturges in an eloquent and touching address traced Doctor Trudeau's career from his arrival in the Adirondacks as a seemingly hopeless invalid to his death after forty years of continued and most successful labor among tuberculous

invalids. He described the gradual growth of the institution from a little cottage accommodating two patients to the great sanatorium of the present day with its infirmary, library, laboratories, and post graduate school. The statue was then unveiled by Francis B. Trudeau, now a captain in the Medical Reserve Corps and the only surviving son of Doctor Trudeau.

The exercises concluded with the placing of wreaths on the monument by a group of nurses in uniform and a benediction by Rev. W. B. Lusk, rector of St. Stephen's Church, Ridgefield, Conn.

The following lines express the thoughts suggested by the contemplation of the spiritual but somewhat saddened face of the great Trudeau so accurately reproduced:



Statue of Edward Livingstone Trudeau by Gutzon Borglum at Saranac.

#### EDWARD LIVINGSTONE TRUDEAU.

A youth he came into the wilderness  
Where few before him cared to seek a home.  
Weak, in broken health, he found this place.  
And called sweet nature here to be his nurse,  
And she was kind tho oft times stern indeed.  
Health, strength, and courage came again to him.  
The mountain air, the sun, the balsam's balm,  
All helped him to be strong; a man again.

What did he with this glorious gift of health?  
Did he enjoy it merely for himself?  
His first thought was to share what he had found  
With those afflicted just as he had been.  
Who had abandoned hope of being well,  
Who needed courage to renew the strife.

A modest cottage his first mountain home;  
But soon another at its side was built.  
Good men and women saw the glorious work.  
They came to help him who was helping them.  
Thus cottage after cottage rose where once  
Was naught but wilderness of hill and wood,  
And thousands came to find new health and life.

To this great love for men unfortunate  
He added wisdom, science, common sense;

His fame as teacher spread o'er all the world  
And millions blessed through his disciples' deeds.

He bore his sorrows as few mortals could,  
Serene and hopeful to the last sad end.  
His faith in God and man showed through each thought  
And blessed were those who could be near to him.  
I well remember when I saw him last,  
This noble man, beloved teacher, friend,  
Though ill once more and then not free from pain,  
Still no complaint escaped from those brave lips.  
He spoke of science and the common good,  
Discussed the modern ways of cure, and his  
Last words to me expressed a hopeful prayer  
That care may be bestowed upon more poor  
Than he had yet found means to shelter here.

Rest thou in peace, brave soul, thy poor want not.  
Like this fair place that bears thy name, they are  
Provided for in days that are to come.  
Thou art not gone, thy deeds and spirit live,  
This monument may crumble into dust,  
But what thou didst and what taught to the world  
That must endure. Such men as thou die not.



# Medicine and Surgery in the Army and Navy

## THE HOSPITAL SHIP "MERCY."\*

*A brief description with remarks on the application of the Hague Conventions to hospital ships in general.*

By MEDICAL DIRECTOR NORMAN J. BLACKWOOD,  
U. S. NAVY, COMMANDING.

In 1868 an attempt was made to apply the principles of the Geneva Convention of 1864 to naval warfare. The Hague Peace Conference of 1906 agreed upon a new Geneva Convention for land warfare, and the Conference of 1907 found it necessary to revise the Convention of 1899 in order to apply its principles to naval warfare. The German delegation presented a draft which was taken as the basis of the deliberation of the Conference. The first three articles of convention X of the 1907 Conference are exactly like those articles of convention III of the 1899 Conference. Article I applies to military hospital ships, and reads as follows: "Military hospital ships, that is to say, ships constructed or adapted by states specially and solely with the view of aiding the wounded sick and shipwrecked, the names of which have been communicated to the belligerent powers at the commencement or during the course of hostilities, and in any case before they are employed, shall be respected, and cannot be captured while hostilities last. These ships, moreover, are not on the same footing as warships as regards their stay in a neutral port."

Article 4 is the same in both conventions and reads as follows:

The ships mentioned in articles, 1, 2, and 3 shall afford relief and assistance to the wounded, sick, and shipwrecked of the belligerents without distinction of nationality. The governments undertake not to use these ships for any military purpose.

Such vessels must in nowise hamper the movements of the combatants.

During and after an engagement they will act at their own risk and peril.

The belligerents shall have the right to control and search them; they may decline their assistance, order them off, make them take a certain course, and put a commissioner on board; they may even detain them, if the gravity of the circumstances require it.

As far as possible the belligerents shall enter in the log book of the hospital ships the orders which they give them.

Article 5. Military hospital ships shall be distinguished by being painted white outside with a horizontal band of green about a metre and a half in breadth. The boats of the ships above mentioned, as also small craft which may be used for hospital work, shall be distinguished by similar painting.

All hospital ships shall make themselves known by hoisting, with their national flag, the white flag with a red cross provided by the Geneva Convention, and, further, if they belong to a neutral State, by flying at the mainmast the national flag of the belligerent under whose control they are placed.

Hospital ships which under the terms of Article 4 are detained by the enemy must haul down the national flag of the belligerent to whom they belong.

The ships and boats above mentioned which wish to insure by night the freedom from interference to which they are entitled must, subject to the assent of the belligerent they are accompanying, take the necessary measures to render their special painting sufficiently plain.

Article 6. The distinguishing signs referred to in Article 5 can only be used, whether in time of peace or war, for protecting or indicating the ships therein mentioned.

\* \* \* \* \*

Article 8. The protection to which hospital ships and sick bays of vessels are entitled ceases if they are made use of to commit acts harmful to the enemy. The fact of the staff of the said ships and sick bays being armed for maintaining order and for defending the wounded and sick, and the presence of wireless telegraphy apparatus on board, are not sufficient for withdrawing protection.

\* \* \* \* \*

Article 18. The provisions of the present Convention do not apply except between Contracting Powers, and only if all the belligerents are parties to the Convention.

Austria-Hungary, Great Britain, Italy, France, Turkey and twenty-one other nations have all ratified the 1899 Convention, but Germany, Great Britain, Turkey and the United States, signed with reservation of Article 10. It was subsequently agreed, on an understanding reached by the Government of the Netherlands, with the Signatory Powers, to exclude Article 10 from all ratifications of the Convention.

The Convention of 1907 was ratified by Austria-Hungary, France, Germany, United States and twenty-two others, whereas Great Britain and Italy have signed the Convention but have not yet (1915) ratified.

The above quoted articles are the only ones which refer directly to hospital ships and their method of treatment and distinguishing marks. It will therefore be seen that the character of the officers and crews has not been a matter of question, each government simply guaranteeing that the ships shall be used only for their designated purpose, the good faith of the nation standing as guarantee for the honesty of the ship, the Geneva flag flown at the main assuring protection to all aboard. But if any belligerent doubts the good faith of his enemy, he has a perfect right to stop and search any hospital ship, and so ascertain that all is as it should be.

The simplicity of the articles, the lack of elaborate details in specifications, is a perfect indication that the nations entering into this Convention felt assured that all that would be necessary would be to indicate definitely that a certain vessel was a hospital ship, to have her granted complete immunity from attack, and that no nation would knowingly jeopardize its wounded and sick, by using hospital ships for any but their legitimate purposes.

The United States navy has now three hospital ships in full commission: the *Solace*, the *Mercy* and the *Comfort*. The first of these was placed in commission in 1909, fully fitted as a hospital ship, and since that date she has been doing continuous duty with the North Atlantic Fleet. She, like the other two, was originally built as a merchant ship and had to be converted throughout in order to make her serviceable as a hospital ship.

To make a thoroughly satisfactory hospital ship, she must be built from the keel up, and such a hospital ship is now in process of construction, but

\*Published by authority of the Secretary of the Navy.

her ultimate completion has been delayed by the onset of war which necessitated the stoppage of work on her in order to build more essential fighting craft for the immediate requirements of the war. Taking into consideration the fact that these ships are converted merchant ships, they accomplish their purpose remarkably well, and will serve for many years to take care of the sick of the navy afloat and to be the foundation upon which plans for future hospital ships will be built up.

The *Mercy* and *Comfort* were respectively the *Saratoga* and *Havana* of the Ward Line. They are ships of about 10,000 tons displacement, and, therefore, about twice the size of the *Solace*.

commanding officer of the *Mercy* in his work of fitting out these two new ships, and every suggestion that could be gained from other sources was carefully weighed, and when practicable and advisable, was adopted. Inasmuch as the *Mercy* and *Comfort* are sister ships, and as similar equipment was placed on each ship, a description of one will serve for both, their differences being only in minor details.

This ship is capable of carrying over 300 patients in all departments without expansion, and if necessity arose, space could be utilized to carry for a brief period, such as the transatlantic trip, from one to two hundred additional patients. There are 312



The U. S. S. *Mercy*, our first completely equipped hospital ship, which is now in active service. Her sister ship the *Comfort* is about to be placed in commission. The *Mercy* is under the command of Dr. Norman J. Blackwood. Both ships will serve our Navy and are among the most completely equipped vessels of their kind in the world.

While the arrangement and equipment of the *Solace* were as near perfect as could be made at the time she was converted, and new and more modern equipment has been added from time to time, yet these two new ships, being converted nine years later and being so much more capacious have turned out far more serviceable hospital ships and are equipped in many respects in greater detail and with greater facilities for the handling of the sick and wounded.

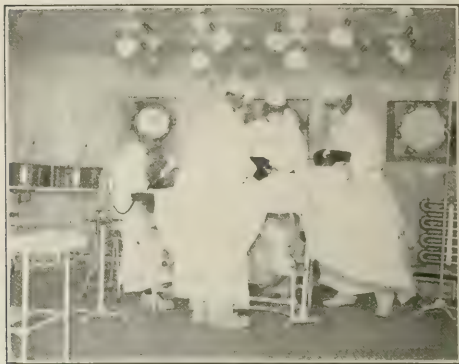
The knowledge and experience gained while in command of the *Solace* were utilized by the present

bunks for the sick, and provision is made for expansions, by the placing of cots and Gosso beds in the unoccupied spaces. The ship is divided into two main departments, that having to do with the ship itself and that having to do with the hospital proper; the latter is the one of most interest to the medical profession and is, therefore, the one which will be dwelt on in this article.

Every department found in a well equipped hospital ashore is represented in the ship and the wards are divided into surgical, medical, genitourinary, eye, ear, nose, and throat, contagious, and convales-



cent. Each department is presided over by a specialist with an assistant, all of whom are officers of the regular or reserve force of the navy. Besides these medical officers, there are a röntgenologist, a laboratorian, a dentist, three pharmacists,



The operating room of the *Mercy* corresponds in size to the solarium. It is forward of the ship and on the upper deck. Its equipment, complete to the minutest detail, was donated by the Colonial Dames of America.

eight chief pharmacist's mates, and 111 trained male nurses.

The operating suite is a model in all respects and has within it the main operating room with two tables—one of the orthopedic type—instrument cabinets, sterile dressings drums, a pantostat, solution bowls and every appliance necessary to a perfect operating room. There is a large sterilizing room with all of the equipment found in the most modern hospitals ashore, a scrub-up room, an anesthetic room, an instrument room, and a smaller pus operating room. This suite is all done in white enamel and white tiles and the furniture is the latest equipment for operating suites. It is connected with the surgical ward of fifty-four beds, which is situated on the deck below, by an elevator with capacity for at least two wheeled stretchers.

The medical ward for acute medical cases contains thirty-six bunks and is likewise fitted with all appliances for the care of medical cases.

The genitourinary and convalescent ward combined contains 134 bunks and has a special operating room with table and all appliances for cystoscopic work.

The contagious suite consists of five wards and a disinfecting room and contains forty-four bunks, with the possibility of expansion on the open decks under canvas. These wards are chiefly on the upper decks where there is free circulation of light and air and are in every way attractive and serviceable for the care of the sick and injured. Where wards are situated below decks, and have not the advantage of natural ventilation, artificial ventilation is provided. In addition to these wards, on the after end of the promenade deck is built a large, light and airy solarium in which fifty to 100 patients may obtain relaxation and the benefits of air and sunlight at all times, protected from the weather, or where, under the circumstance of large numbers of con-

tagious cases being suddenly thrown on the ship, these cases could be segregated and taken care of. Under normal conditions this solarium is used for the care of tubercular cases. This is an addition, the necessity for which was learned from experience on the *Solace*, where the overflow of contagious cases had to be taken care of under canvas on the open decks and where there was otherwise no place for the convalescents to enjoy the open air and sunlight. This solarium, being protected from the weather, is available at all times.

The eye, ear, nose, and throat ward, situated below decks and in a quiet part of the ship, contains twenty-eight bunks and is in close proximity to the operating and examining room of that department and easily takes care of the cases which come under the ophthalmologist.

Each ward is provided with a pantry where all diets are served and mess gear cared for, and the surgical ward has in addition a surgical dressing room where dressings are changed and minor operations may be performed.

A large central diet kitchen provided with all modern electric appliances for preparation of special diets is situated near the centre of the ship and within easy access to the pantries of the wards.

The x ray room, presided over by a specialist in röntgenology, is equipped with all of the latest improvements in that specialty, including modern table and tubes, stereoscopic view holders, high frequency machine, and everything for the most minute x ray examination and development of plates.

There is a good sized laboratory, presided over by a special laboratorian, where all of the laboratory proceedings can be carried out in relation to microscopical examinations, serum and culture tests, blood and stomach contents examinations, and attached to the laboratory is a modern animal house



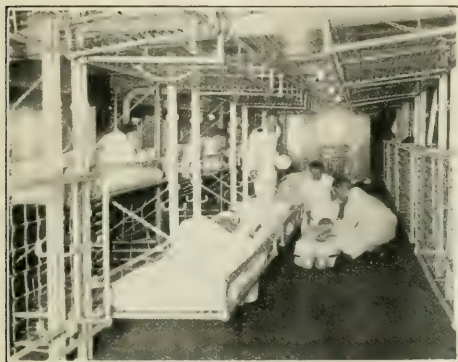
The whole section of the upper deck aft is enclosed and officially termed the solarium. Here the slightly wounded and convalescent spend their leisure hours.

containing rabbits, guineapigs, fowl, and sheep for the various uses required of them in laboratory technique.

There is a dental office, presided over by an officer of the Dental Corps of the Navy, thoroughly equipped with all appliances, not only for the ordi-

nary but for the special work connected with that profession, and also with the means of performing operations in modern oral surgery.

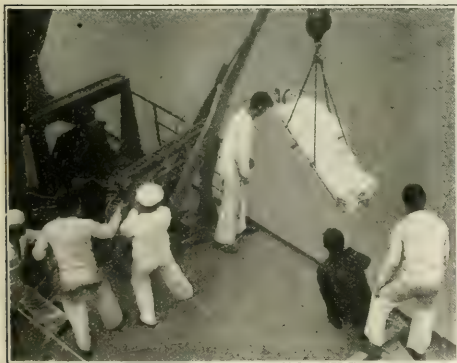
In addition to the equipment for the purely medical and surgical care of patients, the ship is amply



A section of the large surgical wards. The photograph shows particularly well the clever utilization of bunk space in the ward.

provided with refrigerating and ice making machines and a cold storage plant capable of carrying foods for a period of six months for at least 600 people.

One of the most important and latest inventions to aid in the feeding of the sick has been installed, a machine which is popularly known as the mechanical cow. This machine is probably one of the most valuable additions to any hospital ship afloat, for by it, with the aid of milk powder and unsalted butter, can be produced in the course of about an



Transfer of a wounded man from a tug to the upper deck of the *Mercy* by means of the form fitting Stokes stretcher.

hour, fifteen gallons of the most delicious, pasteurized milk containing any degree of butter fat that may be desired. The problem of furnishing milk to the sick when away from communities having dairies, and milk of known purity and proper nutritive value, has been completely solved by the introduction of this machine, and inasmuch as the ship's cold storage plant is capable of carrying, in

addition to other food stuffs, a six months' supply of the ingredients with which to make this milk, there is no visible danger of the patients ever being deprived of this most necessary article of diet.

Besides the things already mentioned, there is a large sterilizing plant for disinfecting bedding and clothing; there are sterilizers in all of the pantries for sterilizing mess gear; there is an autopsy room complete in its equipment, and a morgue with a capacity of eighteen caskets, the temperature of which may be kept as low as desired to preserve bodies which have already been embalmed and prepared for shipment. The ship also has a complete modern electric laundry, which can care for all the linen.

For the benefit of the medical staff, a large medical library is provided, containing most of the standard and many of the newest works in medical literature, and the weekly and monthly periodicals.

The method of handling patients aboard a hos-



Medical Director N. J. Blackwood, U. S. Navy.

pital ship, while similar in many respects to that in a hospital ashore, has some features of special interest. The so called Stokes stretcher is now in general use in the United States Navy, and consists of a long wire mesh basket reinforced with iron rods and shaped something like the casing of a mummy. Patients are strapped into this stretcher aboard the ship from which they come and they can then be handled in any way desired, without danger, either by hand or by means of block and tackle. When leaving their ship they can either be lowered over the side or carried down the gangway and placed in a boat. The hospital ship is provided with two large commodious ambulance boats of the gasoline motor type, capable of holding about sixteen stretchers, which make trips about the fleet and gather up the patients. They are then brought alongside the hospital ship and if the weather is smooth they are carried up the broad gangways and distributed to the different wards. If the weather is rough, the boat lies off, clear of



the ship's side, and the stretcher is picked up by a tackle lowered from a special davit, and hooked into a bridle attached to the stretcher, and so hoisted to the boat deck.

The happiness and amusement of the patients is also looked after in every way that that could possibly be suggested. A large circulating library of several hundred volumes of fiction, history, and travel is provided; most of the current literature is subscribed to in numbers sufficient to accommodate everybody; the daily papers, through the kindness of some of the large New York and Providence journals, are supplied and there is a nightly exhibition of moving pictures, the films being generously

## REEDUCATION OF DISABLED SOLDIERS AT BOMBAY.

By DOUGLAS C. McMURTRIE,  
New York,

Director, Red Cross Institute for Crippled and Disabled Men;  
President, Federation of Associations for Cripples.

Since the outbreak of the war, it has come to be regarded as sound national policy to train disabled soldiers for special trades which they can follow in spite of their handicap rather than leave them to a future of idleness, dependent for support upon pension alone. The enlightened provision by the state of such "reeducation," as it is called, was early



Crippled Indian soldiers intent upon their work at the Harrison knitting machine making socks and stockings, neckties, vests, caps, mufflers, etc., at Queen Mary's School, Bombay, India.

provided by the Y. M. C. A. A pianola and a number of victrolas are placed in different parts of the ship and quartets and choral societies are organized together with a volunteer band which will furnish music on demand. Comfort kits have been provided by the Red Cross and sewing kits by individual donations, while the American Chocolate Fund has supplied the ship with chocolate.

Nothing that could be thought of to while away the hours of tedious convalescence has been omitted, and the mothers and fathers, sisters, brothers, and wives of those who are fighting in this war can be well assured that their loved ones, when stricken down by wounds or disease, will have every care and every comfort that medical science and friendly hands can administer.

made by the European belligerents. The British colonies have, one by one, followed suit, and all of them now offer training for the crippled soldiers of their own forces.

At Bombay, India, is one of the most picturesque schools in the world. It is known as Queen Mary's Technical School for Disabled Indian Soldiers, and was founded about a year ago through the efforts of Lady Willingdon, wife of the Governor of Bombay. Soldiers of the Indian Army, of all ranks and classes, who have been disabled in action or pensioned for any reason as unfit for military service, are offered a course of instruction six months or longer in duration.

The building itself, formerly Braganza Hall, is at Byculla, and was generously placed at the disposal

of the committee, rent gratis, by the executors of the late Sir Jacob Sassoon, Bart. It is splendidly appointed with sitting rooms, dormitories, and workshops accommodating 200 men, and is surrounded by beautiful gardens where the pupils take their exercise or spend pleasant hours conversing or reading. Spacious verandas afford them ample space for games and amusements. In the well ventilated dormitories, each man has beside his bed, his own "lock up," in which he keeps his personal belongings.

Everything that the disabled man needs is supplied at Queen Mary's School. He is provided with clothes, bedding, and food during his entire training period; he is given a return railway ticket and traveling expenses if he comes from a distance, and very often, after he has completed his course, he is supplied free with a set of tools for his trade. Each man is permitted the choice of the trade that he wishes to pursue.

On a large poultry farm disabled soldiers are taught by an expert instructor all branches of modern poultry raising. The poultry houses are stocked with prize fowls, among them Minorca, White Leghorns, and other species. Breeding by means of incubators is one of the branches taught. The school's spacious grounds offer ready opportunities for teaching the elements of agriculture. Lectures and personal instruction in the most modern scientific principles of the cultivation of grain, fruits, vegetables, etc., are given by experienced men.

Besides poultry farming and agriculture, classes have been started in tailoring, motor car driving and motor mechanics, knitting, carpentering, cinema operating, oil engine driving, fitting and turning, and elementary engineering. A machine shop is being constructed with the following machinery for instructional purposes: metal lathes, wood lathes, drills, nut making and bolt making machines, brass foundry, tin box making plant, copying lathes for making handles of every description, dovetailing machine for making ammunition boxes, electric motors, etc.

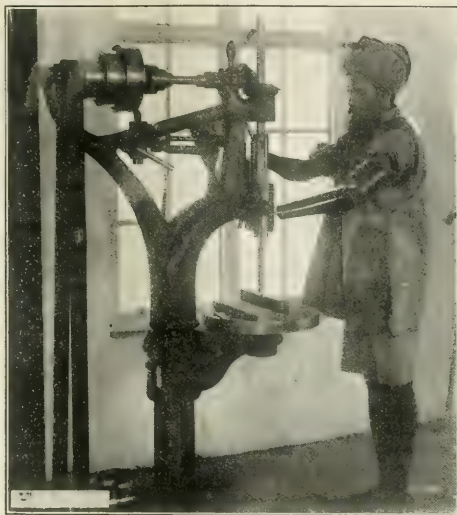
The committee in charge of the training uses the following general plan for the placement of trained men: in Bombay and other industrial centres, in workshops and factories; as tailors in regiments, and in the army clothing department; as chauffeurs in the mechanical transport service; as turners, fitters, machinemien, engine drivers, and ammunition boxmakers in the government dockyard, ordnance factories, and arsenals.

There are at the present time about 200 men in the school. A number have received diplomas for oil engine driving, motor car driving, and other trades, and employment has been secured for them at salaries ranging from twenty to 100 rupees a month (\$6.40 to \$32). The value of such a sum of money must be estimated on the basis that the average man in the school can live easily on twenty rupees or \$6.40 a month. Upon completion of his course, he is likely to receive a small sum from the sale of some piece of work that he has made during his training period. The disabled man's pension continues, of course, regardless of his salary.

Artificial limbs are provided for cripples at one of the hospitals in Bombay, while in hospitals at Dehra, Dun, and Mussoorie, electrical and massage treatments are given for disabled men.

In addition to the employment department of the Queen Mary's Technical School, there have been formed at the various centres in India bureaux that take care of the problem of placing disabled men in suitable employment.

The school is under the patronage of the King and Queen of England, and is maintained by a monthly subscription from the Women's Branch of the Bombay Presidency War and Relief Fund, by substantial donations from the Western India Turf Club, and the Bombay Presidency Branch of the Imperial Indian Relief Fund.



Science finds a way. This Indian soldier uses a prosthetic appliance instead of a left arm, and goes about his work as deftly as an ablebodied mechanic. [Queen Mary's School, Bombay, India.]

**Reconstruction Work in the Army.**—The Division of Reconstruction of the Medical Department of the United States Army has recently issued a report covering 537 cases sent to five general army hospitals from overseas and from base hospitals in this country. Of these patients, 151 are now able to return to full duty and 212 to partial duty. One hundred and twenty-two will be able to return to their former occupations despite their injuries. Only thirty-nine will be unable to resume their former occupations. Many of these patients were suffering from more than one injury or disease which accounts for apparent discrepancies in the following statistics: 530 patients suffered from medical diseases, seven had been gassed, and 292 suffered from some surgical disease. While the total number of patients was 537, the number of disabilities was 1,034. Fourteen general military hospitals have been designated by the Surgeon General for the work of physical reconstruction.



## MEDICAL NEWS FROM WASHINGTON.

*Coming Appointments in the Medical Corps.—Health Conditions in the Naval Service.—Organization of the Volunteer Medical Service.—Health Conditions in the Army.*

WASHINGTON, D. C., August 19, 1918.

Notwithstanding the fact that it is about nine weeks before Major General William C. Gorgas, Surgeon General of the Army, reaches the retiring age of sixty-four years and goes on the retired list, speculation as to the identity of his successor continues. Additional advices from France, where Brigadier General Merritte W. Ireland, National Army (colonel, medical corps, regular army), is serving as chief surgeon on the staff of General Pershing, indicate the practically unanimous desire of the medical people of the service there to have him appointed to the place. Moreover, it develops now that medical officers in this country, particularly those belonging to the regular corps, are almost to a man in accord with this wish.

In the meantime, there has not been much speculation as to who will be appointed to fill the other medical places of high rank authorized by the last army appropriation bill—namely, one assistant surgeon general with the rank of major general and two with the rank of brigadier general, to be appointed from the regular medical corps, and two major generals and four brigadier generals, to be appointed from among the members of the medical reserve corps.

\* \* \* \* \*

Plans for the organization of the volunteer medical service, as prepared by the medical section of the Council of National Defense, have been approved by the President, who has expressed his deep appreciation of the services rendered by the medical profession during the present emergency, and who states that the mobilization of many forces of the country will contain no case of readier response or better service than that which the physicians have rendered.

The volunteer force will have among its members physicians that have not been commissioned in the army or navy. They will aid the government in supplying the war needs of the several localities where they reside. It is proposed that they shall be given proper credit for the services rendered, whether in the army, navy, public health service, or civilian service.

A campaign is being launched by the Council of National Defense for enrolling doctors in the Volunteer Medical Service Corps, as many members of the medical profession not already in the service are anxious to be enrolled as volunteers before the registration under the new draft law, taking men up to and including the age of forty-five years goes into effect.

\* \* \* \* \*

The present health condition in the army, both at home and overseas, has never been surpassed, so far as known. For the week ending July 26th, the combined reports of the expeditionary forces in France, and of troops stationed in the United States, show an annual death rate from disease of 1.9 per 1,000, less than two men per 1,000 per year. The annual death rate from disease of men of military age in civil life is 6.7 per 1,000.

This new rate is based on an approximate strength of 2,500,000 men, and it includes men living under abnormal conditions. The overseas record was made while American soldiers were participating in the heavy fighting in the Marne salient, when they frequently were compelled to sleep and eat under most primitive conditions.

That this record is truly representative of the general health of the troops is shown by the combined reports that indicate the figure of 2.8 per 1,000 as the average death rate for disease during the past two months.

An idea of the progress made in military sanitation is gained by a comparison with the following: During the Mexican War, the annual death rate from disease was 100 per 1,000. During the Civil War, the rate in 1862 was forty per 1,000, while in 1863 it jumped to sixty per 1,000. The disease death rate for the Spanish-American War was twenty-five per 1,000. As far as available records show, the lowest figure heretofore recorded was twenty per 1,000 during the Russo-Japanese War.

\* \* \* \* \*

According to the latest reports received by the Surgeon General of the Navy, the health conditions of the naval service continue to be most satisfactory. The death rate for all causes at the latest compilation was 2.7 per 1,000 per annum; for disease 1.7. Admissions for all causes were 432 per 1,000 per annum, as against a normal peace time rate of 650. Reports of contagious diseases include eight cases of cerebrospinal fever, five of diphtheria, twenty-one of measles, twelve of pneumonia, three of scarlet fever, fourteen of malaria, and one of typhoid, the patient, a recruit who was taken ill within eight days after his enlistment.

While this is a very favorable season of the year in so far as the respiratory diseases are concerned, it is the time when the menace from intestinal and insect borne diseases is the greatest. Intestinal diseases are practically absent from the navy, and the reports for malaria, forty-seven cases in the entire service, are very gratifying, considering the large number of the personnel in the West Indies and other localities where there is likelihood of exposure. The low sickness rate for all causes is considered remarkable, in view of the wide distribution of the forces and the trying conditions under which they are serving.

\* \* \* \* \*

There were four cases of cerebrospinal fever reported, widely scattered, no two being at any one station, three cases of scarlet fever, three of diphtheria, and seventeen of pneumonia. Despite the prevalence of diphtheria in many of the Eastern cities, it has gained no foothold at any naval training camp. As a result of investigations, courses of treatment are being adopted by which, during the present favorable weather, the mortality attendant upon pneumonia has been cut to such a proportion that makes it insignificant. The first idea of the commission is to prevent inception and spread of the disease, a result it accomplishes by means of quarantine and isolation in part and for the rest by means of prophylaxis. If in spite of these efforts empyema appears, the surgeons treat it by operation for drainage of the lung abscesses that form.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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### THE "SPANISH" INFLUENZA.

The epidemic, which has been given the name of Spanish influenza and which seems to have spread over a considerable portion of the European continent, has made its appearance among the passengers on transatlantic steamers arriving in New York. These patients began to arrive some six weeks or two months ago and the Health Officer of the Port has kept in close touch with the situation. Some of the cases which attracted the most attention occurred on the Norwegian liner *Bergensfjord*, which arrived in New York after having had more than 200 cases of sickness and four deaths during the voyage. Eleven sick passengers were transferred immediately to the Norwegian hospital, in Brooklyn, and we print, in another column, the clinical history of these cases as observed by Dr. Edward E. Cornwall in whose service they were placed.

The history of these cases, including as it does the blood count and bacteriological studies, indicates that these particular cases, at least, did not differ materially from the classical influenza already well

known in this country. We also publish a letter from Dr. Fernandez Ybarra, who has recently returned from a nine months' stay in Spain where he had an opportunity to observe the epidemic in Madrid. Doctor Ybarra agrees that the disease does not differ materially from the grippe or epidemic bronchitis and is of the opinion that its spread in Spain was due to the unhygienic conditions found in that country where little attention seems to be paid to the ordinary rules of hygiene.

### LEGAL INTEREST AWAKENED TOWARD THE FEEBLEMINDED.

It is most gratifying to catch the same strong note from the legal world, which has been sounding for a good while among psychiatrists. In *Mental Defectives and the Law*,<sup>1</sup> Francis D. Gallatin, a member of the New York Bar, presents a concise and vigorously stated report of a study made in preparation of a larger report to the Committee of Criminal Courts and Procedure of the New York County Lawyers' Association. The author of this pamphlet attributes to the persistence of psychiatric interest, aided by certain devoted psychologists and teachers, the final overcoming of prejudice against this subject, which until recently prevailed rather extensively among members of the legal profession. He bases his conclusions and confirms his own convictions upon psychiatric experience and study, largely that made public in Doctor Glueck's article noted in our editorial pages, June 22, 1918.

It is the feeble-minded to which Mr. Gallatin devotes his discussion. They constitute a peculiar class under the law, and as such have had no adequate provision made for their treatment as criminals and their relation to society in regard to crime and misdemeanor. Particularly are those of a higher grade of intelligence the ones who need such attention. These have sufficient intelligence to permit them a certain independent freedom and also responsibility, as well as greater choice of opportunity for asocial behavior than the more pronounced feeble-minded, who obviously come under greater restraint and suffer greater individual limitation. For a member of the former class, however, in spite of special classes in schools and in spite of certain charitable aids established for him, the state has sadly fallen short in providing permanently and

<sup>1</sup> Distributed by New York Committee on Feeble-mindedness and the Committee on Mental Hygiene of the State Charities Aid Association.



thus keeping him from being a menace to himself and still more to society.

In these cases it is not a question of criminal responsibility. Technically and actually these individuals are as a rule to be accounted responsible for the commission of their criminal acts. And such being the case, the law under present conditions must commit them to penal institutions regardless of the ultimate social and individual effect. The result has been made very apparent through the psychiatric reports to which reference is made. It is seen in the large proportion of defectives among recidivists, which is as startling and significant as the large proportion of feeble-minded among all criminals.

The feeble-minded are different from the psychopathic or the insane, and therefore their problem for legal consideration is one by itself. They are children in mind whatever they may be in body, and should be accorded the same consideration which the law gives to children, dealing with them from the reformatory and educational rather than the penal side. In this sense of retarded development, while they may have legally complete knowledge of their criminal acts, they are still irresponsible for their general social attitude and inability to make good socially and refrain from repetition of crime. They drift too easily into vagrancy, into ill conditions of life, into vicious environment and influences.

Extracts from the laws enacted in other states and in England give some idea of the trend of thought and action toward a remedy of the condition of the feeble-minded through legal channels. This would provide for the alteration of the sentence otherwise imposed and substitution for it of committal, for life if necessary, to an industrial and reformatory institution which will provide proper care and restraint and at the same time develop latent constructive powers. These powers may be limited, but under proper control they will make of the unfortunate individual a productive member of society rather than one actively disorderly and destructive if at large, or a disturbing element within the prison. There he is being prepared for repetition of crime, if submitted to a limited term of imprisonment, for the feeble-minded can least easily submit to prison life without moral deterioration.

There is a brief presentation of legislation in various states legalizing sterilization, but this is shown to be a very inadequate and unfair method of handling the subject of feeble-mindedness. There is as yet no thoroughly established precedent for such laws, and they are as a rule not

put into effect. It is strongly advocated, however, that there should be established "psychopathic clinics in connection with the criminal courts and penal institutions, and legislation should be enacted for the segregation and detention or proper supervision of delinquents discovered to be defective."

## THE FUNCTIONAL UTILIZATION OF STUMP MUSCLES.

There is no medical topic connected with the war which is claiming greater attention at the present time than that of the restoration of disabled men, and justly so, for the ability to restore our hosts of disabled men to full or partial capacity presents one of the major economic problems of the present and the future. We have had long experience with the education of the blind and the deaf for useful pursuits, but in the realm of the maimed we are treading upon almost virgin soil. Even there, however, much progress has already been made in the fitting of artificial limbs and the vocational training of returned soldiers, but we are yet only at the beginning of the work. Suggestions of new methods, and especially of new broad principles, are therefore more than welcome and merit comment designed to draw attention to them that they may be put to the test upon a large scale and judged upon the basis of practical utility. Some highly promising new principles are those of cinematization of amputation stumps and the preparation and utilization of "plastic motors," as first laid down by the Italian physician Giuliano Vanghetti in 1896, but not seriously considered until the occasion of the present war's product of crippled men. These principles are described briefly, but clearly, by V. Putti, of the Italian Royal Army Medical Corps, in both the *British Medical Journal* and the *Lancet* for June 8, 1918.

The term cinematic plastics or cineplastics is used to include any form of operative or bloodless plastics designed to economize, restore, or substitute those muscular masses in an amputation stump which can be used to impart direct, voluntary motion to an artificial limb. The term plastic motor is applied to the effective moving entity obtained by cineplastics. These plastic motors are of various forms, the commonest and simplest being the *clava*, or peg; the *ansa*, or loop, and those obtained by canalization or tunneling of muscular masses. It would take us too far afield to enter into details regarding the preparation and uses of these several motors, but they may be described briefly. The *clava* motor is

well represented by the production of one or two peglike projections from the distal end of a forearm stump, connected with and moved by the normal extensors and flexors, and capable of producing those movements in the artificial hand to be attached. The ansa type is illustrated by the gathering together of the flexor and extensor tendons of the forearm into a ring or loop, after shortening of the bones, covering this loop with skin, and forming a moving mass at the end of the stump. The canalized motor is well typified by the tunneling of the quadriceps of the thigh, lining the tunnel with healthy skin, and the insertion into the tunnel of a vulcanized rubber rod, which, through proper attachments, is capable of imparting voluntary extension to an artificial, jointed leg. The various essential conditions for the success of these methods are discussed by Putti, and some of the remarkable functional results so far obtained are described and illustrated.

It is, of course, still too soon to wax over enthusiastic about the methods, but we feel that we may be pardoned the expression of a measure of enthusiasm sufficient to direct our readers' attention to these radical principles of plastic orthopedics that some, at least, may be prompted to take part in the efforts which are certain to be made in their development, should they prove only partially successful. The principles certainly seem more than promising, and it is patent that, should their value be confirmed and established, the extent of their application is limited only by human ingenuity and the efforts expended in their study.

#### ON SURGICAL SHOCK AT THE FRONT.

In a recent editorial in the May number of the *Journal of Laboratory and Clinical Medicine*, on Investigations on Surgical Shock at the Front, Dr. J. J. R. MacLeod presents a critical review of some of the recent work on this important and baffling question. At this time the subject of shock needs no external stimulus to engage the attention of either the men at the front or those who are working in the laboratories on the problem, but Doctor MacLeod's editorial has supplied something that is of value, the cool and discriminating judgment of a bystander, one who, though not actually in the game, is looking on with a friendly and critical eye. In the present review he considers the work of W. B. Cannon and his collaborators, which has been published during 1918 in the *Journal of the American Medical Association*. In this article Cannon discusses and dismisses the acapnia hypothesis, as well as the

possibility of suprarenal exhaustion, and nerve cell exhaustion, and the possibility that the low blood pressure in shock is due to cardiac failure. After considering the factors responsible for the blood pressure he arrives at the conclusion that the blood stagnation must occur at a part of the vascular system that is beyond the sphere of vasomotor control, that is, in the capillary area. MacLeod does not find Cannon's explanation of the causal relationship between low blood pressure and capillary stagnation quite clear. To the former the cause of both conditions must be loss of fluid because of leakage through the capillary walls into the tissues—a leakage which is sufficient to impede the free movement of blood in the capillaries because of increasing viscosity. Such a condition will become progressively more pronounced, resulting in the establishment of a so called vicious circle. The question of acidosis and the effects it may bring about are next considered. Cannon found "in general, the lower the blood pressure, the lower the alkaline reserve," and he emphasizes the importance of keeping a threatened person warm and of using measures to prevent the development of acidosis. MacLeod criticises the use of the suggested term "exemia" as a suitable one to designate the shock due to a holding back of blood from normal currency, on the ground that the fundamental cause of the condition is not sufficiently established to justify the coining of such a term, which, he points out, may only, after all, refer to one of the accompanying symptoms. This is a single instance of the careful way in which MacLeod has examined the evidence presented, and the above is but a brief outline of his excellent review.

#### THE CLINICAL LABORATORY IN THE ARMY.

The Surgeon General of the United States Army has adopted a very ambitious program for the clinical laboratories in the service. Every division of troops has or will have a mobile clinical laboratory provided with a bacteriological outfit, where diagnostic examinations can be made. Every base hospital, every general hospital, and every special hospital will also have its clinical laboratory as soon as the personnel and equipment can be provided. In order to unify the methods of examination and the forms of reports, the Division of Infectious Diseases and Laboratories of the Surgeon General's Office has compiled a *Manual of Laboratory Methods* which will undoubtedly prove of great value. This book, which is No. 6 in the Medical War Manu-



als issued by Lea & Febiger, covers the collection and shipment of specimens and materials and gives a description of and standards for solutions and stains to be used in the clinical laboratory, and a summary of the pathological work, of the quantitative analytical methods, and of the bacteriological methods to be followed. There is also a chapter devoted to the sanitary examination of milk and another on the sanitary examination of water and sewage. The work is in no sense a textbook. It assumes a previous knowledge of bacteriology, but furnishes the formulas and technical methods to be followed, giving data which even the most experienced bacteriologist is hardly expected to remember. It will be of great value in securing uniformity in the practices of the army laboratories, though it is not intended to curtail the inventiveness or originality of the laboratory worker.

As is pointed out in the manual the chief function of the army laboratory is to safeguard the health of the troops by making rapid and accurate diagnoses of infectious and other diseases for the guidance of the division surgeon and his staff, both in prophylaxis and treatment.

The high degree of development to which the clinical laboratory is being brought by the Surgeon General and the extent to which the members of the Medical Reserve Corps will come to rely upon laboratory findings in the service, will undoubtedly have a very marked effect upon the practice of medicine in civil life, when the surgeons now in the service return to civilian practice. The clinical laboratory has, it is true, already reached a high stage of development in the larger cities and particularly in connection with hospitals, though the number of private laboratories is increasing. But the practitioner in the smaller towns and even many of those in the cities have not made a general use of laboratory findings. In the army these men will be trained to resort systematically to the clinical laboratory for aid in routine diagnosis, and the advantages of this practice will undoubtedly be so thoroughly proved that, on return to civil life, the surgeons now in the service will demand the assistance of the clinical laboratory in private practice just as they now have it in the army. The laboratory workers who are now being trained by the Surgeon General will therefore find a profitable field open when they return to civil life, in the establishment of private clinical laboratories. Many pharmacists have entered this service and are receiving laboratory training which will be invaluable when the war is over.

## ARMY HOSPITAL PLANS.

Three fully equipped, debarkation hospitals are now ready in New York for the reception of sick and wounded soldiers from overseas, with a capacity of 5,651 patients. Three more debarkation hospitals will be provided in New York and a fourth in Long Beach within a few weeks, doubling the present capacity. Two completely equipped hospital trains are now ready to distribute patients as soon as received. Attached to these hospitals and trains there are 529 officers of the Medical Department, 2,649 trained hospital attendants, ambulance drivers, and enlisted men of the department, 342 graduate army nurses, and sixty-five civilian helpers. All these hospitals are constituent portions of the great medical receiving and clearing station of this port which is under the command of Colonel James K. Kennedy, Medical Corps, U. S. Army, with headquarters at 68 and 70 Hudson street, Hoboken. The big embarkation hospitals at Hoboken, at Secaucus, and at Hoffman's Island are also under the jurisdiction of Colonel Kennedy and six hospital steamers are attached to the service.

Patients arriving from overseas will first be received in the debarkation hospitals, where they will be detained only a very short time. They will then go to the receiving hospitals in or near New York where they will be sorted out according to the character of the injury or disease and then sent to the general hospitals, the reconstruction hospitals, or the special hospitals, as the case may require. Including the army hospitals of all kinds in the United States, there is now, or under construction, hospital accommodation for 90,095 patients under normal conditions or a maximum capacity of 99,343. In addition to these hospitals, a number of private residences have been tendered to the Government and these will be fitted up for the receipt of patients when occasion arises. These statistics are extremely interesting and show that the Surgeon General and his staff have made ample provision for any contingency which might normally be expected and are now prepared to give adequate care to all the sick and wounded returned from Europe.

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## Obituary

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LUTHER HALSEY GULICK, M. D.,  
of New York.

Doctor Gulick died at his camp at South Casco, Me., on August 13th. He was born in Honolulu in 1865 and graduated from Oberlin College, Harvard University, and the University and Bellevue Hospital Medical College, of New York. Doctor Gulick was well known as a lecturer and writer on physical training and was at one time director of physical training for the public schools of New York City. He occupied many prominent positions in this work but latterly has devoted all his time to the Campfire Girls, an organization founded by his wife. Doctor Gulick exercised a far-reaching and salutary influence on the public health by his teachings and his work.

## News Items.

**Flight Surgeons.**—Plans have been elaborated for assigning a corps of surgeons and physical trainers for each aviation field and camp who will supervise the period of rest, recreation, and duty of aviators and candidates so as to get the best results. The surgeon so assigned will be known as flight surgeon.

**New York Headquarters for Nurses.**—The New York County Chapter of the Red Cross announced that on September 1st a headquarters for army nurses who are in New York temporarily will be opened at 120 East Nineteenth Street. At first, there will be dormitory accommodations for only ten or twelve nurses, but it is expected to enlarge the establishment later.

**Grade of Army Nurses.**—The Secretary of War has issued an order amending paragraph 9 in the army regulations by inserting a new grade of nurse next below the grade of cadet and above that of sergeant major. This places the nurses in authority above all the enlisted men in the army but does not meet the views of the nurses who have asked for commissioned rank.

**Colonel Hoff Resigns.**—Colonel J. Van R. Hoff, M. C., U. S. Army, retired, who has been acting editor of *The Military Surgeon* for many years, has resigned and has been succeeded by Colonel Louis A. La Garde, M. C., who is also on the retired list. Colonel Hoff has conducted *The Military Surgeon* in a brilliant manner during his occupancy of the editorial chair, and his resignation will be regretted by the readers of that journal.

**An American Military Hospital Near Southampton, England.**—Cable despatches from London announce that a large American military hospital is to be established at Sarisbury Court, a large country estate near Southampton. The central building of the hospital will be the manor house, and the surrounding grounds comprise 186 acres. This will be the largest American military hospital in Great Britain, and when completed will accommodate nearly three thousand wounded soldiers from the western front.

**Sanitarians to Meet in Chicago.**—A convention of the sanitarians of the United States and Canada will be held in Chicago from October 14th to 17th, under the auspices of the American Public Health Association. Among the speakers who are expected to address the meetings are Surgeon General Gorgas, Colonel Victor C. Vaughan, and Major William H. Welch, of the Medical Department, U. S. Army; George H. Vincent, president of the Rockefeller Foundation; Dr. Charles J. Hastings, president of the American Public Health Association, and Dr. Allan J. McLaughlin, assistant surgeon general of the United States Public Health Service. Among the subjects to be discussed will be the laboratories and laboratory methods, industrial hygiene, vital statistics, sanitary engineering, etc. The mayors of the larger cities and the governors of the States have been requested to send their health officers to the conference as a war measure. Full information regarding the meeting will be furnished by the secretary of the American Public Health Association, A. W. Hedrich, 1041 Boylston Street, Boston, Mass.

**Rockefeller Foundation Disbursements.**—The Rockefeller Foundation spent \$5,944,969 in war work last year and a total of \$11,457,086 in educational and relief work. The disbursements of the foundation during the year were as follows:

War work .....	\$5,944,969
International Health Board .....	557,829
China Medical Board .....	501,422
Rockefeller Institute .....	3,127,914
Founder's designations .....	942,251
Miscellaneous:	
After care of infantile paralysis cases, mental hygiene,	
School of Hygiene, and public health miscellaneous....	277,035
Administration .....	105,666
Total .....	\$11,457,086

Demonstrations such as those which are being made at home and abroad in the field of public health, well organized cooperative undertakings, like the camp and community plan for the welfare of American soldiers, a comprehensive program of inquiry of the sort which the National Committee for Mental Hygiene is carrying out, represent characteristic Foundation policies.

**Animal Tuberculosis Work.**—It is reported by the Department of Agriculture that sixty-four federal employees and fifty-four State employees are engaged this year in fighting animal tuberculosis, that widely distributed disease which causes an annual loss estimated at \$25,000,000. The Bureau of Animal Industry has recently extended operations for the control of this disease to thirty-one States. Headquarters have been established in twelve important centres from which the work will be supervised and directed.

**Red Cross Convalescent Hospital.**—A hospital for convalescent officers of the Army and Navy of the United States and our Allies, and the American Red Cross Society, has been established on Cuttyhunk Island, at the mouth of Buzzard's Bay, Massachusetts. The medical and surgical equipment is complete and all forms of recreation are provided on the hospital grounds. Application for admission to the hospital should be made to Dr. Norman E. Ditman, medical director of the hospital, Cuttyhunk, Mass. The hospital will remain open until October 1st.

**Women Physicians Organize Hospital Unit for Gassed Soldiers.**—A three hundred bed hospital unit for gassed soldiers has been organized by the Women's Overseas Hospitals of the National American Woman Suffrage Association and is now on the way to France. This is the first hospital unit for gas cases exclusively, and it has a personnel of only American women. Dr. Marie Louise Lefort, of New York, is in charge of the unit, and the staff includes four general practitioners, an ophthalmologist, and a laryngologist. Among the members of the staff are Dr. Ada McMahon, of Lafayette, Ind.; Dr. Irene Morse, of Clinton, Mass.; Dr. Elizabeth Pruyn, of Brooklyn, and Dr. Alice M. Flood, of New York.

**Personal.**—Dr. Frank S. Monaghan, secretary of the Department of Health of the City of New York, has been appointed acting Deputy Health Commissioner, succeeding Dr. B. Frank Knause, who has resigned after serving the department for twenty years. Doctor Knause, who is an expert epidemiologist, has received a commission as major in the medical department of the U. S. Army.

Private Kenneth H. Meeker, son of Dr. Herman E. Meeker, of 72 West Fifth Street, New York, has been awarded the Distinguished Service medal for bravery in patrol work at the Battle of the Marne. As a member of Company B, Thirty-eighth Infantry, he was in the thick of the fight and was slightly wounded.

**To Expedite Enrollment of Physicians.**—Dr. Franklin Martin, chairman of the General Medical Board of the Council of National Defense, has arranged for a series of meetings to be held throughout the country as part of the campaign for expediting the enrollment of physicians in the reorganized Volunteer Medical Service Corps. These meetings will be held August 22d and August 29th, at the most central and accessible place in each State. Their purpose is to arrange for enlargement of State executive committees to handle the active campaign for the corps, to arrange for the appointment of a representative in each county, and to acquaint the State and county representatives with the details as to the reorganized Volunteer Medical Service Corps.

**Tuberculosis Conferences.**—Announcement is made by the National Tuberculosis Association that plans are under way for five conferences to be held this fall in various parts of the United States to discuss tuberculosis as a war problem. Means of providing adequate care for the thousands of soldiers and sailors already discharged from the army and navy on account of tuberculosis and the still greater number rejected in the draft for the same reason will be one of the main questions discussed. The closely related question of educating the civilian population more fully regarding tuberculosis during the war and thus combating its further spread in the community at large will also be considered. The programmes for each section will be announced at an early date. The meeting places and dates are as follows: Spokane, Wash., September 27th and 28th; Denver, Colo., October 4th and 5th; Birmingham, Ala., October 11th and 12th; Pittsburgh, Pa., October 17th and 18th; Providence, R. I., October 25th and 26th. New York State workers in the antituberculosis movements will attend the North Atlantic conference to be held in Pittsburgh.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### VICIOUS CIRCLES IN RESPIRATORY DISORDERS AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

The extensive scope and practical significance of vicious circles in disease have not been given sufficient recognition. Granting the truth of the proposition that each function in the body depends for its most perfect expression upon adequacy of every other function with which it is in any way related, the multiplicity of possible interacting disturbances in any given disease is obvious.

In the true vicious circle two or more disturbances so react one upon the other that the patient's condition grows progressively worse, and an affection which would otherwise soon be mastered or wear itself out may continue indefinitely whether its original cause has or has not been removed. From the standpoint of diagnosis, pathogenesis, and prognosis vicious circles are of considerable importance, for through their study light may be thrown upon many otherwise obscure manifestations and processes of disease and our ability to account for steadily progressing morbid conditions augmented. Death is not infrequently the result of the operation of a vicious circle.

In treatment the vicious circle is likewise highly significant. Its serious influence in accelerating the course and in many instances even the fatal termination of disease is reversed and passes into an equally beneficent influence when the circle is artificially interrupted, improvement being all the more rapid and striking the more menacing the preëxisting unfavorable trend. Often the breaking of a vicious circle appears to be the most essential aim in treatment next to actual removal of the cause, and where the cause has already been overcome without eliminating the symptoms, breaking up a vicious circle may remain the most effectual therapeutic measure available.

Interruption of a vicious circle, intentionally or unwittingly, appears sometimes to account for persistent benefit from purely symptomatic treatment which could not otherwise be readily explained. Thus, cough, whatever be its cause, tends to produce congestion of the lower respiratory passages. This congestion, in turn, promotes local irritability and tends to increase the frequency of the cough paroxysms. These, again, augment the congestion, and a vicious circle thereby results which tends to aggravate and perpetuate the disturbance, even though the original cause—usually some form of local irritation—has spontaneously or artificially been eliminated. Administration of a drug, such as codeine, to depress the cough centres in cases of this type, would at first sight appear to constitute merely symptomatic treatment, the beneficial effects of which will disappear when the drug is discontinued, the irritative cause of the cough persisting. As a matter of fact, however, the codeine in addi-

tion breaks into the vicious circle just referred to, preventing the increase of cough due to local congestion, likewise the increase of local irritability due to this cough, and consequently the aggravation and perpetuation of the latter, which would otherwise have occurred through the operation of the vicious circle. If at the same time one has succeeded in removing the irritative cause of the cough, complete recovery will be hastened by the artificial interruption of the vicious circle; even if one has not, the benefit from the remedy will be far more lasting on this account than if the vicious circle had not been present and a purely symptomatic effect alone had been produced. By repeated administration of short courses of codeine treatment the evil effects of the vicious circle can be continuously obviated and, through the consequent removal of an important factor of aggravation, a great reduction of the severity and duration of the disturbance is secured.

According to Jamieson B. Hurry, 1911, with whom rests the great credit of writing the first book upon the subject of vicious circles, these conditions are very frequently dependent upon a failure of the autoprotective mechanisms by which the body is ordinarily enabled to resist disease and repair injury. Thus, cough, a recognized protective act having for its purpose the removal from the respiratory tract of noxious material, is manifestly effectual where the disturbing agent is not too virulent or persistent, but in the opposite event it introduces prejudicial secondary effects—increased congestion and irritability, etc.—which would not be encountered were the protective mechanism wholly removed. Herein lies the physician's opportunity to intervene and attempt to complete artificially Nature's insufficient protective efforts or, at least, to prevent her abortive procedures from becoming maleficent instead of beneficial.

In truth, the occasions presented for artificially breaking up vicious circles are surprisingly frequent. Hurry practically eliminates the treatment of vicious circles from consideration in his book as being "too large a subject for discussion." The subject is nevertheless one of great importance to the practitioner.

#### HEMOPTYSIS.

In the commonest variety of hemoptysis, that arising in pulmonary tuberculosis, several vicious circles are simultaneously operative, and markedly favor continuation of the bleeding. The blood extravasated, by inducing irritation of the tissues, causes cough; this, in turn, by temporarily increasing intrathoracic pressure, as well as by mechanically promoting detachment of clots, tends to increase the hemorrhage and prevents its arrest by clot formation; the additional blood causes further cough, and so a vicious circle is created. Again, the excitement and anxiety of the patient result in quickening of the circulation, which increases the

hemorrhage, and thereby causes further anxiety. The excitement is also likely to increase voluntary movements, again accelerating the circulation, augmenting hemorrhage, and thereby adding to the excitement. Possibly also the excitement may enhance the cough reflex. Whatever increases the hemorrhage also increases the cough. Hence the several vicious circles present become interconnected and reinforce one another, the condition as a whole growing worse until Nature's belated and somewhat risky means of hemostasis—partial exsanguination—comes into play.

Direct treatment would consist in closing down the bleeding vessel. Emetine has been thought by Flandin, 1913, and others to exert some such action, but of late we have heard little of it in this connection. Less direct measures comprise bandaging off the extremities, cupping over the chest (Anders), venesection (Foxwell), etc. While often serviceable, these procedures are hardly as valuable as those which break up the vicious circles. From this standpoint morphine is the first remedy, removing both excessive cough, mental excitement, and motor restlessness; it thus interrupts at least three vicious circles. Verbally allaying the patient's anxiety and enjoining quiet and avoidance of unnecessary coughing act similarly, but as a rule less powerfully. Greer, 1916, and others have reported good results from artificial pneumothorax in hemoptysis. This may be held to act both directly and by interrupting all vicious circles in which undue agitation of lung tissue tends to prevent firm clot deposition.

(To be continued.)

### Surgery of the Gallbladder and Biliary Ducts.

—E. S. Judd (*Journal A. M. A.*, July 13, 1918) discusses the clinical pictures of the several more common types of gallbladder and gall duct affections and lays special stress upon the methods of surgical treatment which should be employed. In the cases of more or less chronic cholecystitis the simple operation of drainage generally relieves the majority for a time, but in a large proportion there is a recurrence of symptoms. The operation which is indicated in this group is the removal of the gallbladder, after which the patient is truly cured. In cases with typical gallstone colic the removal of the gallbladder is the operation of choice, since it both prevents recurrences and removes a chronically inflamed organ which might later become the source of trouble. The third group includes cases with typical cholangitis with stones in the common duct and here the gallbladder should be saved if there is any question about the patency of the common duct. Otherwise recovery is more complete after its removal. The last group includes those cases with atypical cholangitis and painless, or nearly painless, jaundice. A definite diagnosis is difficult before operative exploration and such should generally be undertaken, especially when there is variation in the jaundice or fever and chills. In such cases the operative difficulties are many and specially arise in connection with the fact that the patient is seldom a good surgical risk, and with the liability to oozing and frank hemorrhages from the

mucous membranes within the first eight to ten days after operation. If the coagulation time of the blood is longer than about twelve minutes the patient may generally be regarded as an extremely poor risk for operation, and even when the time is within normal limits the danger from bleeding is considerable. Jaundice is always a source of added risk. Calcium salts, given either before or after operation, have not proved of distinct value and the one means of real value lies in transfusion. This must be done before any oozing has begun. If, in spite of proper transfusion, oozing does occur, the most satisfactory method of attack is either aspiration of the liver through a large trocar and cannula or liberal incision into the liver, both being done to relieve the hepatic congestion. In all cases of this class the drainage tube should be left in the common duct for a long time and the duct should be frequently irrigated with physiological salt solution. The operation for removal of the gallbladder is not one of great danger or technical difficulty, but special caution should be exercised to make a complete separation of the cystic duct down to its junction with the common before even applying a clamp. This is necessary to avoid the risk of damaging the latter.

### Gunshot Wounds of the Chest.—J. F. Dobson

(*British Medical Journal*, June 15, 1918) speaks of some of the features in the surgical treatment of these wounds and emphasizes that the chief cause of failure is sepsis. The best preventive of sepsis is complete closure of the chest after very early and thorough surgical treatment for the purpose of mechanical cleansing. In spite of the adoption of this method some cases will yet become septic and the problem is then to deal with the infection. This must be undertaken at once and one must always be on the lookout to discover its occurrence as early as possible. When sepsis is discovered drainage of the chest cavity must be provided, which can be done either by resection of a short length of rib, or by resection of from four to five inches followed by opening of the chest for inspection and the removal of clots, foreign bodies, bone fragments, etc., and for the repair of damage to the lung or diaphragm. The latter is the better plan. But even such drainage is not sufficient in the majority of cases since the sepsis may not be overcome, or it may become chronic with the formation of dense masses of fibrin on the lung and parietal pleura and the patient will be left with a chronic empyema and a poorly expanded lung. The drainage should be supplemented by sterilization of the pleural cavity with some antiseptic, which is best accomplished by the insertion of a bent silver cannula through an interspace at the upper level of the cavity, where it is fixed to the skin by sutures. The original large incision is then tightly closed and sutured about a drainage tube placed in the dependent portion of the chest. This tube should be long enough to have its outer end dip below the surface of an antiseptic in a bottle. The chest cavity is then irrigated every two hours with eusol or other antiseptic solution. This method gives striking results in the control of the infection and the lung promptly expands leaving the patient with a sound organ.



**Intravenous Injection in Wound Shock.**—W. M. Bayliss (*British Medical Journal*, May 18, 1918) deals only with the condition of secondary shock and points out that the most general and obvious manifestations of the condition are associated with the low blood pressure. The exemia hypothesis, i. e., the accumulation and stasis of blood in capillary areas, seems best to explain the condition, the resulting symptoms being due to an insufficient blood supply as a result of low pressure and decreased blood volume. The chief means of therapeutic attack must include the elevation of the blood pressure and restoration of adequate blood volume. Simple elevation of pressure in the face of continued reduced blood volume has proved of little avail. The most logical method to suggest itself is the transfusion of blood, but this has many disadvantages, especially near the firing line, the chief one being the difficulty of obtaining sufficient suitable donors. The use of whole blood is also not followed by better results than is that of other solutions. Various saline solutions have been suggested and tried, but none of these meets the conditions because they all are too transitory in their effects due to too low viscosity or the absence of a colloid with an osmotic pressure. The one solution which has the proper theoretical characteristics and which gives the desired results clinically is a six per cent. solution of gum acacia in nine tenths per cent. sodium chloride solution. The acacia contains sufficient calcium and potassium salts to render their addition unnecessary. The acacia has the advantages of being colloidal, of having a sufficient osmotic pressure to prevent the solution's prompt passage from the vessels into the tissues, of providing the requisite viscosity, of being nonprotein, of being cheap and easily secured, and of being readily sterilized by boiling. Though acidosis may be present in secondary wound shock, it is not a factor of serious importance, and alkaline injections are not necessary.

**Method of Dealing with Divided Ureters.**—W. Blair Bell (*Lancet*, June 15, 1918) describes a method which deals with the implantation of the ureters when they cannot be inserted into the bladder for one or another reason. The operation is performed in two or three stages. At the first stage the abdomen is opened through a central subumbilical incision. A loop of lower ileum about eighteen inches long is isolated with its mesentery intact, an anastomosis being performed to unite the remaining intestinal tract. The apex of the isolated loop is lightly attached to the fundus of the bladder and the two ends are brought to the surface through stab wounds in the iliac regions, one on either side. The abdomen is then closed. When the attachments of the two ends are firm the lumen of the loop is washed out twice daily with a one thirtieth solution of Milton fluid and within about ten days it will have become practically sterile, when the second stage is undertaken. A selfretaining catheter is placed in the bladder, the abdomen reopened and the intestinal loop detached from the bladder fundus. The ureters, cut at the pelvic brim, are next transplanted into the intestinal loop by Stiles's method. That portion of the bladder which is to be

removed is next excised and the opening closed with two layers of sutures. The apex of the intestinal loop is then anastomosed with the fundus of the bladder and the abdomen closed. The catheter is left in place for a week. The open ends of the intestinal loop are closed at the time of the second stage, or they may be left open for the purpose of lavage and closed later. This operation is especially suitable for cases of cancer of the cervix, which can then be treated by complete cleaning out of the whole pelvis during the second stage of the operation, for ectopia, and other conditions. Its great advantage lies in the safety secured by implanting the ureters into a sterilized, isolated intestinal loop, thus obviating the dangers of infection.

**Temporary Cecostomy in Resection of the Distal Portion of the Colon.**—Gordon Taylor (*British Medical Journal*, June 15, 1918), strongly recommends the performance of a temporary cecostomy in cases in which part of the distal portion of the colon is to be resected for some nonobstructive condition. The procedure is simple and is a measure of decided safety in the operation of resection. Among the classes of cases in which it proves specially valuable are those of resection for carcinoma, for the closure of a proximal inguinal colostomy and for excision for gunshot wound of the large intestine. The cecostomy is made through a grid-iron incision and the drainage tube is inserted in a way similar to that followed in Senn's gastrostomy. The cecum is usually not opened until the chief operation has been completed. The application of a collodion or mastisol dressing prevents material danger of infection of the laparotomy wound from the cecostomy.

**Organic Basis and Surgical Care of Neurasthenia.**—H. W. Riggs (*Northwest Medicine*, May, 1918) contends that many cases of so called neurasthenia are found to be due to ptosis of one or more of the abdominal or pelvic viscera. The traction of the ptosed organs upon the nerves of the mesentery or the nerves accompanying their vascular supply produces reflex effects through the sympathetic plexuses with resulting symptoms of delayed peristalsis, gastric and intestinal digestive disturbances, headache, and other neurasthenic symptoms. Careful examination will show among the commonest conditions some degree of increased motility of the kidney or kidneys, the liver, the small and large intestines, the stomach, and often some displacement of the uterus. Most of such patients will be found to have very lax abdominal walls with loss of fat tissue and poor musculature. Medical treatment by rest in bed, the prescription of a fattening diet, etc., to restore tone to the muscles and increase the deposition of abdominal fat often relieves the symptoms, but the relief lasts only so long as the fat deposit can be maintained. More permanent relief can be secured in all cases by proper surgical intervention, which consists in replacement of the ptosed organs. The kidney is fastened, the liver supported by means of its round ligament, the uterus replaced by a suitable operation, and the ptosed parts of the intestines elevated and retained by one of the methods which has proved satisfactory.

**Treatment of Colds.**—D. C. Dennett (*Boston Medical and Surgical Journal*, July 11, 1918) makes a plea for the early, careful treatment of colds. He begins by treating the conjunctival sac, as he thinks some colds start there and work down, placing a fifty per cent. solution of argyrol on the everted lids. The argyrol will pass through the lacrymal duct and trickle down the posterior pharyngeal wall. He also syringes out the pharynx with the solution. The patient is given a twenty-five per cent. solution for use in the eyes and nose. Medicated cotton and sprays should not be used. Aspirin is not given except for pain, and quinine and whiskey are not used. Sulphate of atropine and aconite are given in the first stage of "head colds," steam and oil inhalations for "loss of voice colds," Dover's powder early for "cold on the chest."

**Cautery Excision of Gastric Ulcer.**—D. C. Bal-four (*Annals of Surgery*, June, 1918) points out that the apparent advantages of the above method may be thus summarized: 1. The cautery efficiently destroys the focus of infection in gastric ulcer without the sacrifice of Nature's protective induration surrounding the ulcer centre. 2. It may be applied in a large percentage of gastric ulcers. 3. It entails a minimum of operative risk. 4. Clinical and röntgenologic evidence shows better mobility and function than follow knife excision and gastroenterostomy. 5. It has a particular efficiency in obviating early and late postoperative hemorrhage. 6. The late results are better than those obtained with any other method. 7. It can be used in cases in which no other means of direct attack on the ulcer is justifiable. 8. It is probable that gastric ulcer cautery, like knife excision, should always be combined with gastroenterostomy.

**Idiopathic Epilepsy a Sympathicopathy.**—Edward A. Tracy (*Boston Medical and Surgical Journal*, June 6, 13, 20, and 27, 1918) had established the fact, by previous research work, that the normal reaction of the skin to a gentle stroke with a wooden tongue depressor is a brief vasodilatation followed by a vasoconstriction in the stroked area lasting a couple of minutes. One day, on testing a patient with idiopathic epilepsy, he was struck by the intensity in color and the very long duration of the vasoconstriction reaction. Later he found the variation at different times in the intensity and duration of the vasoconstriction very striking, as well as the irregularity in time of its appearance, in this patient, sometimes appearing within six seconds, at other times not until after thirty. This case was studied carefully during a period of two and a half years, together with ninety other cases of idiopathic epilepsy. The chronic vasoconstriction spots discovered, with their intensifying and fading while under observation—even while the patient slept—seem to demonstrate a diseased condition of the sympathetic neurones. The many abnormalities of the reaction at times likewise seem to show a diseased condition of the sympathetic neurones. Certain spots appear to be related to an outburst of convulsions, and the increased irritability frequently demonstrated in sympathetic neurones, preceding convulsions, reveals a relation between the diseased sympathetic neurones and the seizures.

**The Action of "Female Remedies" on Intact Uteri of Animals.**—J. D. Pilcher (*Surgery, Gynecology, and Obstetrics*, July, 1918) states that experiments demonstrate conclusively that the entire list of female remedies is quite void of action on the uterus in situ, thus confirming the interpretation of the results of the work on the excised uterus and intestine. They cannot therefore influence the tone or contractions of the uterus through any central innervation or through the blood stream, no matter whether the uterus is in a state of normal, increased or decreased tone.

**The Multiple Myelomata and Their Ability to Metastasize.**—Douglas Symmers (*Annals of Surgery*, June, 1918) concludes as to the multiple myelomata and their ability to metastasize as follows: 1. The so called multiple myelomata represent neoplastic growths which spring from myeloblasts. 2. Since the term multiple myelomata is broadly inclusive, the designation of the neoplastic disease under consideration, Symmers thinks, might be appropriately changed to that of multiple myeloblastomata. 3. The multiple myeloblastomata are capable of originating growths in the extra medullary hemopoietic viscera by hyperplasia of preexisting myeloblastic foci, and in certain other tissues by the process of metastasis by cell transplantation.

**Cranial Surgery.**—Robert T. Morris (*American Journal of Surgery*, June, 1918) asks how, in cases of brain injury in which drainage of the cranial fluid is to be continual, is a good protection of the brain area to be obtained? If there are several layers of gauze immediately protecting the area and dressings are changed frequently outside of a first layer of iodoform gauze, the entrance of sepsis will be avoided. One or two layers of iodoform gauze should be employed. The first layer need not be changed; it may remain for two, or three, or four days at a time, while the outer dressing of gauze may be changed very frequently, and in this way the menace of the traveling of infection through the dressings to the brain area is avoided fairly well.

**Fluctuations in the Growth of Malignant Tumors.**—G. L. Rohdenburg (*Journal of Cancer Research*, April, 1918) has collected from the literature 302 cases (including three of his own) in which either temporary or permanent recession of a malignant tumor has occurred. The fact that spontaneous recession undoubtedly does occur should make one very wary of hailing a new cancer "cure," for the beneficial effect may be entirely due to processes of nature concerning the workings of which man is profoundly ignorant at the present time. Rohdenburg states that the causes of recession most frequently found in this series are heat and an incomplete operation. The heat may either be artificially supplied, or may be the result of an acute febrile infection, such as erysipelas, tuberculosis, or pneumonia. Nutritional factors, and in a few cases, fibrosis, are described as the cause of the absorption. The knowledge that spontaneous regression does occur offers some hope that the cancer research worker may find some method of inducing it in time.



# Miscellany from Home and Foreign Journals

**Heat Stroke and Malignant Malaria.**—C. E. H. Milner (*British Medical Journal*, June 8, 1918) says that it is admitted that a close relation exists between heat stroke and malignant malaria, but that he is convinced that heat stroke does not exist as a clinical entity, being only a symptom, on a hot day, of malignant tertian malaria. He supports this opinion, which he admits to be radical, by the results of his observations during the recent hot periods in Mesopotamia. From a routine examination of the blood of the cases admitted as heat stroke during the second hot spell it was found that a very large proportion of the cases showed the presence of malignant tertian malaria. The routine administration of a dose of eight or nine grains of the bihydrochloride of quinine intramuscularly even before the results of the blood examination had been reported reduced the mortality from over twenty-five per cent. to less than twelve per cent. It is suggested that infection with the malignant tertian malaria parasite produces an intoxication of the heat regulatory centre, upsetting its functions so that the temperature of the body tends to approach that of the surrounding atmosphere, hence the occurrence of so called heat stroke in these infected patients.

**Dilatation of the Duodenum.**—V. Pauchet (*Paris médical*, May 18, 1918) notes that the surgeon operating in the upper abdomen frequently finds both the duodenum and the last loop of the ileum greatly dilated. Below the ileal dilatation and a few centimetres from the cecum a kink is found. A bismuth meal and the use of the x ray soon reveal the duodenal enlargement, while the ileal disturbance is shown by markedly delayed evacuation of the bismuth from the terminal portion of this section of the bowel. As Lane has pointed out, the sequence of events in such cases is visceroptosis, formation of defensive ligaments, and finally an ileal kink. The mesentery attempting to hold up the ileum reacts upon the duodenum above and narrows it at one point by traction on the mesenteric artery; or, the duodenum may be blocked through accentuation of the duodenojejunal angle. Patients with chronic duodenal occlusion suffer from habitual indigestion with nausea and vomiting, the latter often bilious. The stomach artificially emptied at night is found again filled with bile the next morning. There is frequently vague pain in the right side, sometimes relieved by ingestion of food as in duodenal ulcer. Constipation is the rule. The stools are light in color. Persistent headache and general lassitude of toxic origin are complained of. The abdominal wall is flaccid, the x rays show sagging of the stomach and colon, and examination of the blood and urine often reveals acidosis due to progressive inanition. The medical treatment consists in recumbency after meals, a supporting belt before rising, abdominal gymnastic exercises, and measures to promote fat deposition. Such treatment failing, ileosigmoidostomy, with or without right colectomy, is indicated. Acute gastroduodenal dilatation is a condition occurring after opera-

tions and manifested in vomiting of black material caustic to the oral mucosa; marked abdominal distention from gastric and duodenal dilatation, with thready pulse and collapse. These patients have been suffering preoperatively from chronic duodenal occlusion, with beginning acidosis; swallowing of saliva to neutralize the gastric contents resulted in aerophagia, followed by acute gaseous distention and mechanical obstruction of the duodenum. The treatment comprises gastric lavage, or better, permanent gastric siphonage; the ventral, or better, the genupectoral position; and continuous proctoclysis with sugar and alkaline solution to supply pabulum and overcome the acidosis.

**Effect of Convection Currents on Agglutination.**—W. W. C. Topley and S. G. Platts (*Lancet*, June 8, 1918) present the results of a number of experiments which show that the occurrence of active convection currents in the tubes increases the rapidity of agglutination materially, especially in the case of bacterial suspensions which agglutinate rather poorly. The presence of the convection currents does not seem to alter the maximum titre of the serum to be tested. The quality of the agglutination is also altered favorably, the flocculi being large and very readily seen with the naked eye. Often the titre obtained after two hours of incubation with convection currents is not equalled in twenty-four hours with the same serum and suspension in the absence of such currents. The production of convection currents is best secured by immersion of the agglutination tubes in the waterbath at 55° C. to such a point that the water rises to only 1/6 to 1/4 the height of the column of fluid to be tested. The adoption of such a technic gives uniform results and materially shortens the required time of incubation.

**Throat Smears in Measles, Rubella, and Scarlet Fever.**—Ruth Tunnicliff (*Journal A. M. A.*, July 13, 1918) previously described grampositive diplococci which she isolated in anaerobic cultures from the blood of measles and rubella patients. The diplococcus of measles is small and round, while that of rubella is larger, has pointed ends, and is elongated and encapsulated. From a study of smears taken from the throats of patients having measles, rubella or scarlet fever and from normal persons the features of the smears were found to be of decided diagnostic value. The smears were taken from the most highly inflamed portions of the throat. In measles there were generally some polynuclear and epithelial cells and many of the small, round diplococci. Rubella throat smears showed few polynuclears, many epithelial cells, and many of the typical, elongated cocci, often showing capsules about the pairs and frequently appearing within the epithelial cells. Smears from scarlet fever throats showed many polynuclears and a variable number of cocci in pairs or short chains and having a wide capsule. None of the diplococci found in the throats in these three diseases were found in smears from normal throats, except in four persons recently in close association with rubella cases.

**Trench Fever.**—W. Byam, J. H. Carroll, and associates (*Journal A. M. A.*, July 20, 1918), in the third instalment of their report of investigations into the subject of trench fever, present the results of research upon the mode of transmission of the disease. They summarize the evidence which they have been able to secure. Intravenous injection of the whole blood, drawn up to the fifty-first day of the disease, can reproduce the disease. In such transmissions the incubation period varies from five to twenty days. The addition of large amounts of distilled water to the whole blood seems to destroy the virus. Lice are capable of transmitting the disease, but the bites alone of infected lice do not transmit it. On the other hand, the excreta of infected lice readily produce the disease when applied to an abraded surface, the incubation period then being very constant with an average of eight days. These excreta do not become infective until at least a week after the lice have fed upon infected persons, suggesting a developmental cycle or the multiplication of the organisms in this host. Having become infective, lice remain so for at least twenty-three days from the time of their infection. The virus of the disease contained in louse excreta resists drying at room temperature, exposure to sunlight, and heating to 56° C. for twenty minutes, but it is destroyed in ten minutes by a temperature of 80° C., showing that it is not spore bearing. Certainly infective blood from trench fever cases equivalent to the content of eleven lice is not infective through the broken skin. The mouth and respiratory tract are probably not channels of infection. Normal lice do not harbor the virus of trench fever and when infected they do not transmit it to their young. Immunity resulting from an attack of the disease is not permanent and may last only so long as the person shows evidence of the disease. Lice may be infected from the blood of a patient as late as the seventy-ninth day of the disease if there is a febrile attack. Finally, the different clinical varieties of trench fever depend upon differences in the persons infected rather than upon the source of the infection.

**Notes on Pulmonary Tuberculosis.**—Prosper Merklen (*Presse médicale*, May 23, 1918) divides soldiers examined for tuberculosis into four groups. In the first, the typical general and functional disturbances and physical signs coexist, and a positive diagnosis is made after due pains have been taken to exclude nontuberculous pulmonary lesions and nonbacillary general disturbances in patients whose physical signs suggest an arrested tuberculosis. In the second group the general signs of tuberculosis exist in the absence of or with but slight objective indications of the disease. If these indications are wholly absent, and radiology is negative, tuberculosis is eliminated; if there are slight indications, decision is deferred until after repeated examinations. In the third group, definite local manifestations occur in the complete or almost complete absence of general symptoms. Here an actual, but healed, fibrous, or calcified tuberculous process is suggested, but rather prolonged confirmatory observation is necessary. In the last two groups are placed the numerous cases, emphasized by Bezançon, of tuberculosis running its course in repeated small exacer-

bations; the latter may awaken toxemic symptoms without much local change or, on the contrary, pulmonary manifestations with but slight general disturbance. In the fourth group are placed atypical cases characterized by repeated attacks of bronchitis, persistent pulmonary congestion, chronic bronchitis with emphysema, or periods of fever. In some of these cases a very probable diagnosis of tuberculous infection can be made at the first examination, but confirmation is generally required. Absence of bacilli should not prevent a positive diagnosis supported by other signs. A type of case now frequently met with is that of a fatigued, thin, languid soldier, with little or no cough or expectoration, but complaining of diffuse pains in the trunk and extremities, breathlessness on exertion, and anorexia. Pulse and temperature are normal or slightly variable. The apices show slight impairment of resonance, obscure respiratory sounds, and an almost or quite normal radioscopic appearance. Rest greatly improves the condition, which recurs, however, upon exertion or fatigue. These are probably very torpid tuberculous cases, indistinguishable in civil life; or, old, healed processes may have been restored to activity by military conditions. Fatigue states, exhaustion, asthenia due to adrenal insufficiency, or psychic depression occurring in subjects with slight or healed tuberculosis are also to be thought of.

#### Blood Pressure Studies in Five Hundred Men.

—Bernard Smith (*Journal A. M. A.*, July 20, 1918) records his observations made upon 500 applicants for the aviation service. The readings were made with the men in the recumbent position, in the standing position, and standing after having done an average of 1,600 foot pounds of work in five seconds. The pressures were taken by the auscultatory method and the diastolic was read at the point of change from the third to the fourth phase. The time required for the blood pressure to return to normal after the exercise test was also recorded in 200 of the men and called the recovery time. Four hundred of the men stood all of the tests as good normals. The average age of this series was 24.2 years and the average readings in the recumbent position were: pulse rate, 85.4; systolic pressure, 127.7 diastolic, 84.1; pulse pressure, 42.2; and the lengths of the several phases averaged: first, twelve; second, 24.5; third, 6.2, and fourth, 5.1 mm. of mercury. Several of the suggested formulas were applied to the readings; thus the Tigerstedt formula of  $\frac{PP \times PR}{SP \times PR}$  gave an average of thirty-three per cent. as compared with the estimated normal value of thirty to thirty-five per cent. Stone's formula of  $\frac{PP}{DP}$  gave an average of 50.2

per cent. as compared to the normal of fifty per cent. Goodman and Howell gave a cardiac strength figure of 55.4 and the present series showed an average of 55.8. In none of this series was any tonal arrhythmia observed. In this same series of patients after measured exercise the averages showed characteristic and normal responses. The pulse rate averaged 112, the systolic pressure 145.4, diastolic 90.6, pulse pressure 54.1, the first phase



thirteen, the second 33.5, the third eleven, the fourth, seven millimetres of mercury, and the average recovery time was 4.4 minutes with a maximum range of 3.1 to 7.6 minutes. The area of cardiac dullness was never found to have been increased by the exercise, while sixty-nine per cent. of the men showed an apparent decrease in the area. One hundred of the men showed some variation from the normal. Five had a cardiac murmur and all of these showed an increase in cardiac dullness after exercise, labored breathing, and three showed some tonal arrhythmia. The ratio of the second phase to the pulse pressure was low after exercise and the cardiac strength values were somewhat reduced. These tests gave some indication of myocardial weakness, but this was better shown by the change in the cardiac area after exercise, the dyspnea and the prolongation of recovery time to from ten to fifteen minutes. Similar findings were noted in five cases with palpable radial arteries. A number of men with abnormal findings were encountered, these findings being due to fatigue or to the beginning of some acute infection and in all the findings returned to normal after rest or recovery. Tonal arrhythmia persisted throughout all of the phases in seven men and all seven responded poorly to the exercise test. The conclusions reached were that the various blood pressure findings alone were of relatively little importance in determining physical fitness, but that the added information given by some form of measured exercise was of definite value. The increase in the pulse rate after exercise was not found to be of any value.

**Indurative or Rheumatic Headache.**—Hugh T. Patrick (*Journal A. M. A.*, July 13, 1918) says that our knowledge of this form of headache remains at much the same point as thirty years ago, when it was first described very inadequately, and that much nonsense has been perpetrated and perpetuated concerning it. Since there is very little of value on the subject in the literature, Patrick draws largely upon his own careful observations. The headache may be acute, though most cases are sub-acute or chronic and last for weeks, months, or years. The condition is slightly more common in women than men and it occurs very rarely below the age of twenty, not uncommonly below thirty, but most commonly above forty years of age. The pain is real and may be constant, or fairly steady with remissions, intermissions, and exacerbations. It does not occur in instantaneous shoots or brief excruciating paroxysms, nor does it come in definite attacks. Nausea and vomiting are not present with it. The course of the pain closely resembles that of chronic arthritis, with bad days, better days, and good days, but with more or less pain or soreness always present. The pain is apt to be worse in the latter part of the day or the evening. The pain is never frontal or vertical alone and rarely temporal. It is characteristically occipital or suboccipital and may radiate from these areas to the other parts of the head, down the neck and to the shoulders or back. It is usually bilateral. The painful region is tender to deep pressure but not to surface pressure. The presence of the so called indurative nodules may be ignored for they are seldom to be

found. This form of headache is really a rheumatic affection and various other evidences of past or present rheumatic involvement elsewhere are almost always to be found. Specially noticeable is pain upon movement of the neck. The condition is also prone to be worse after exposure to cold and dampness and cold applications aggravate the pain. In the majority of the acute and many of the sub-acute cases there is slight fever up to 100° F. and a mild leucocytosis and these manifestations of the infectious nature of the condition can often be elicited even in the chronic cases when the pain is very severe. The exact pathology of the condition is obscure, as is its etiology, but the evidence is very strong in favor of the idea that the headache is a manifestation of an infection with either actual microbic invasion of the tissues of the affected region, or the selective action upon them of toxins produced by the organisms elsewhere. In a very large proportion of the cases foci of chronic infection can be found in the cranial sinuses or about the mouth or nose and their cure often removes the headache. Symptomatic treatment consists in the prolonged, repeated application of heat and the employment of persistent massage of the affected region.

**Bacteriological Examination for Meningococcus Carriers.**—L. D. Bushnell (*Journal of Medical Research*, March, 1918) brings out some very well known, but often neglected, points of interest to the general practitioner which may make the difference between success and failure in identifying meningococcus carriers. As soon as the swab is taken it should be planted on the media on which it is to be cultivated, and not carried around for any longer time than is absolutely necessary before being taken to the laboratory. The use of the West swab was discontinued, as the swab itself was considered unsatisfactory. The streaking method is particularly helpful in the isolation of the microorganism. The media used was a two per cent. meat infusion agar to which had been added one per cent. peptone, 0.5 per cent. glucose, and five per cent. defibrinated sheep's blood. Full directions are given for its preparation, and for that of the stains used. The plates may be examined in about twenty hours, and better results are obtained when they are warmed before use. The type of colony, the method of staining, and the agglutination reactions are described in detail. The organization of an ordinary laboratory staff so that 500 examinations are made in a day is something of a problem, which was solved by the following assignment of work: two helpers washed and sterilized glassware and made and sterilized swabs; one person made media, poured plates and made stains of colonies; one examined plates, studied microscopic preparations and made the agglutination tests; one took swabs and smeared them on the plates; another streaked the plates with the needle, and still another took the names and numbered the plates with the corresponding number. The carriers were isolated and treated with a spray of an oil solution of dichloramine-T. Of the persons examined, 2.52 per cent. of the normal population were found to be carriers.

# Proceedings of National and Local Societies

## THE AMERICAN GYNECOLOGICAL SOCIETY.

*Forty-third Annual Meeting, Held in Philadelphia, May 16, 17, and 18, 1918.*

The President, Dr. JOHN G. CLARK, Philadelphia, in the Chair.

*(Continued from page 311.)*

**Tubal and Ovarian Hemorrhage.**—Dr. J. WESLEY BOVEE, of Washington, D. C., said that trauma played a part in producing these hemorrhages, as in cases reported by Freeman, Primrose, and many others. Hemorrhage from the Fallopian tube might occur from general conditions that similarly affected other tissues. Venous stasis from circulatory disturbances or pressure from tumors might be reasonably included in a list of its causes. Ovarian hemorrhage might be confined within the ovary, forming hematomata, or it might take place into the peritoneal cavity producing, if abundant, an hematocoele.

No other organ of the body was so frequently the seat of hemorrhage as was the ovary, and a large amount of literature had been written on the pathology of the ovary in ovarian hemorrhage. Stromal hemorrhage was commonly preceded by infection of the ovary.

In but few cases had correct diagnoses been made before operation or autopsy.

As to treatment, in the milder forms of the condition rest and anodynes might meet all indications. In the severer forms the same rules applied as were employed in the treatment of ectopic gestation.

**The Results of the Conserved Ovary.**—Dr. JOHN O. POLAK, of Brooklyn, N. Y., from a study of seventy-three reoperations on patients in whom one or both ovaries were conserved, drew the following conclusions: 1. Routine conservation without due consideration of the ovarian and contiguous pathology as it exists in the individual case, is not good practice. 2. Regeneration of the conserved ovary, depends largely on the type and duration of the existing infection and the condition of the tunica of the individual ovary. 3. Even where the most detailed technic is observed, the ovarian circulation is impaired. 4. The retained ovary, without the uterus, is always a focus for possible trouble. 5. The life history of the retained ovary is of short duration and the trophic influence of the diseased ovary has been overestimated. Finally, a cured patient has few nervous symptoms.

**The Effect of Hysterectomy upon Ovarian Function.**—Dr. EDWARD H. RICHARDSON, of Baltimore, Md., drew the following conclusions: 1. The ovary is a glandular organ of complex function, our knowledge of which is at present far from complete. 2. The uterus is not essential to a continuation of ovarian function, except as regards menstruation and reproduction. 3. The advocates of total ablation have not furnished convincing evidence of the correctness of their contention. 4. The disturbances of ovarian function attributed to hysterectomy are partly those associated with normal menstruation

and partly those arising from damage to the ovary through operative trauma or disease. 5. The weight of evidence furnished by anatomical, experimental and clinical investigations is overwhelmingly in favor of retention of sound ovaries both before and after the menopause age.

**Discussion.**—Dr. HOWARD A. KELLY, of Baltimore, believed in practice it was best to conserve the ovaries or as much of healthy structures as might be retained in women who were under forty, and in women of forty or forty-two it was best not to be so conservative. In the past we had decidedly overdone conservatism. If we could conserve either ovary and a portion of the uterus and keep up menstruation, if only for a year or two, it was a great advantage.

Dr. WALTER W. CHIPMAN, of Montreal, Canada, said that every effort should be made to care for the circulation of the ovary that was left behind. Within the past he had not been sufficiently careful in this respect. He certainly was conservative in the matter of the ovary. If a woman could be told after an operation that the sexual organs were preserved, it was a great psychological comfort to her. It went without saying that where the ovaries were diseased they should be removed. He had given up the resection of diseased ovaries.

Dr. HENRY T. BYFORD, of Chicago, stated that so much attention should not be given to the symptoms of the menopause. It was well not to enumerate these symptoms to patients, but give them ovarian substance or extract, and when they knew they were getting it, the psychological condition would be kept up, which was so necessary in these cases, and there would be less operating. With a little treatment and advice along the line of mental suggestion, we would not have to do quite so much surgery.

**Prolapsus Uteri.**—Dr. WALTER W. CHIPMAN, Montreal, Can., gave a short description of the true pelvic floor, in order to identify the essential supports of the uterus and to get a correct understanding of the treatment of its prolapse.

In the treatment of prolapsus uteri, he stated that in selected cases, especially during the child bearing period, vaginal pessaries, properly fitted and cared for, had a distinct use. It was, however, of the surgical treatment of this condition that he desired to speak. In all essentials, cystocele, prolapsus uteri, and rectocele were hernias. The diaphragm of the true pelvic floor had yielded. Its two halves had been pushed aside or torn asunder, and between them the bladder, the uterus, and anterior rectal wall were dislocated and descended. These organs slid downward, and in their descent gradually inverted the vagina. This surgical treatment, as in all hernias, aimed at a radical cure. Here the discarding of the terms anterior and posterior colpoperaphy was urged, since these names no longer accurately expressed the surgical measures that were undertaken. A much more adequate and expressive term was a radical cure of the cystocele or rectocele.



**A Vaginal Hysterectomy Technic.**—Dr. DOUGLAS BISSELL, of New York City, stated that the usual curved incisions were made about the cervix at the vaginal mucosa junction and the mucosa freed. Anteriorly the bladder was completely freed from the vaginal wall and the cervix, the peritoneal cavity was opened, the corpus delivered anteriorly and the uterus removed from above down. Throughout the operation the posterior tissues formed a barrier, and prevented the intestines from protruding into the vagina and the blood from entering the peritoneal cavity. They were cut last.

The two anterior vaginal wall flaps were trimmed longitudinally to the extent required and that to the left of the operator was completely denuded of its mucous membrane. The free cut margin of the denuded flap was now anchored under the undenuded flap by four mattress sutures to the stable portion of the vagina on the opposite side. The undenuded flap was anchored by three or more interrupted and continuous sutures to the stable portion of the vagina along the opposite sulcus.

A chromic gut suture, number two, penetrated and was tied about each cut cardinal ligament, leaving two free strands. One strand of each suture was utilized as a running stitch along the cut surface of the posterior vaginal wall, and the other was tied to approximate the cut ends of the cardinal ligaments. The latter sutures were again made to penetrate the lower margin of the newly constructed anterior vaginal wall and tied to the sutures penetrating the posterior vaginal wall.

When in cases of procidentia uteri it was found advisable to retain the uterine body and amputate the cervix, the initial technic was identical to the above, as was the lapping of the fascia. The sutures anchoring the mucosa over the cervical stump were placed so as to make the mucous edges approach each other in a vertical direction instead of a horizontal direction according to Emmet.

To correct a rectocele, a transverse incision was made through the rectovaginal fascia into the cellular area between the rectum and the vagina. The tissues were freed laterally and longitudinally and as the freeing was continued longitudinally a median incision was made through the fascia and mucosa, extending to within a short distance of the cervix. The vaginal flaps were prepared for lapping and were anchored in practically the same way as described above in lapping the flaps of the anterior vaginal wall.

One of the great advantages of the fascial lapping technic here described, whether dealing with a cystocele or rectocele, was that the finding and following of only one line of fascial cleavage was necessary. When this line of cleavage only was followed, a minimum amount of bleeding resulted, but when both lines of fascial cleavage were followed a maximum amount of bleeding occurred, which under certain conditions might terminate seriously. Another important advantage in thus utilizing the fascia without disturbing its continuity was that a minimum amount of disturbance in its circulation was occasioned and when the flaps were anchored the circulation in them remained practically unimpaired.

Too much emphasis could not be laid on the desirability of trimming the vaginal flaps to apparently an excessive degree. Failure would occur if the effect produced after the completion of the operation was not that of overcorrection.

**Cystocele.**—Dr. REGINALD M. RAWLS, of New York City, said that from the time of the Egyptians (1550 B. C.) to the Arabian School, the ancients possessed a considerable knowledge of the mechanical and local medicinal treatment of prolapsus uteri. However, Hippocrates and Soranus referred to successful vaginal hysterectomies when the uterus could not be replaced or had become gangrenous. The treatment in early modern gynecology, up to the first quarter of the last century, was also principally medicinal and orthopedic until 1828 when Diffenbach performed anterior colporrhaphy for prolapsus. He was followed in 1833 by Fricke and in 1849 by Hugier.

In 1853 Baker Brown utilized in addition for his denudation the vulva and perineum. In 1856 Sims devised an improved method of anterior colporrhaphy by his oval, V, and trowel denudations. Emmet in 1862 made the V into a triangle and in 1869 devised his prolapse operations by utilizing the fascia to support the uterus and bladder.

In 1874 Simon and Hegar simultaneously devised an operation on the posterior wall, claiming this would not only support the uterus but also the anterior wall and bladder. They were followed by other operators some of whom also utilized both anterior and posterior wall and LeFort made a longitudinal septum in the vagina.

In 1887 Hadra made a decided advance when he used flap splitting and elevation of the bladder. Saenger in 1888 used a similar method and was followed in 1892 by Mackenrodt and Ouhssen who devised vaginal fixation. In 1895 Freund first delivered the uterus into the vagina, and was followed in 1890 by Watkins, Wertheim, and Schauta who reported the operation of transposition of uterus and bladder. Various other vaginal operations had been devised by Doleris, Reynolds, Hirst, Alexandroff, Tweedy, Dudley, Jelett, and others; and among abdominal operations for cystocele might be mentioned those of Byford, Stone, Lawson, Dickinson, Polk, and DuBose. In 1902 Goffe devised a vaginal operation for mobilizing the bladder and elevating and supporting the bladder by suturing it to the uterus and broad ligaments.

In the early part of the present century various operations had been reported based on anatomical studies. Operators who attempted to restore the fascial sling of the anterior wall were Kreutzmann, Sippel, Petersom, Violet, Martin, and Frank.

Martin demonstrated by his recent anatomical investigation that cystocele was due to a lack of fascia and connective tissue at the base of the bladder and showed that by dissection of the anterior wall the fascia could be demonstrated, and by suturing the edges in the midline the cystocele would be obliterated.

In the *American Journal of Obstetrics*, March, 1918, Doctor Rawls reported a technic devised independently by him of overlapping the fascia and re-attaching it to the uterus by transverse mattress

sutures, which were so applied as to carry the underlapped fascia smoothly under the overlapped fascia. His first operation was performed June 5, 1917, and it was therefore too early to make a final report. However, in nineteen operations done by this method he had always been able to demonstrate a strong fascia that could be overlapped and the primary results had been most satisfactory.

**Prevention of Venereal Diseases.**—Dr. J. MONTGOMERY BALDY, of Philadelphia, stated that legislation in the line of prohibition had proven a failure. All methods, single and combined, used in the past had driven victims of the diseases to drug store clerks and quacks. Education of the type so far carried out had proven a failure. The holier than thou attitude of the community had been most disastrous. The method of control which gave any promise whatever of success was the open treatment of the whole subject on the basis of sanitation, dealing with these venereal diseases as with any other class of diseases.

The community must be taught that their old attitude in regard to these matters was erroneous. Hospitals must be forced to the position of repealing any rules that they might have prohibiting the admission of these cases freely to their wards. Superintendents assuming the attitude of fear of these diseases must be taught to change their attitude in these matters, or be driven out of the business. Hospital staffs must have full liberty of admission of such patients as in their judgment needed hospital treatment. Hospitals running dispensaries must open special dispensaries for the treatment of these diseases. All advertisements in public places of a quack nature must be abolished and in their places proper types of notices of legitimate clinics at which such sufferers might apply must be substituted. This class of patients must be taught that their confidences would be kept just as secretly as would their confidence in any other class of disease, and they were perfectly safe in applying to hospitals for treatment. Hospitals must gradually provide free treatment for those suffering with these diseases who were unable to pay for treatment. The question of registration by physicians of patients at public boards of health, excepting in an extremely limited way, the name of the patient being not involved, was most indiscreet if results were to be obtained.

**The Perineum in Primiparae.**—Dr. RALPH H. POMEROY, of Brooklyn, N. Y., said that rending an orifice to enlarge its calibre was strictly unsurgical. He had condemned such a procedure in conditions calling for prompt and large approach to the uterine cavity through the cervix; he cut in the median line and reconstructed. The typical perineal laceration associated with spontaneous first time expulsion of a fully rotated occiput anterior position was median in principle, crudely attained in fact. A median perineotomy, preceded by thorough stretching of the sphincter ani and executed with definite technic, shortened the second stage more fortunately than pituitrin or forceps. Even though the median incision by intent or error extended through the relaxed sphincter, symmetrical repair was so simple that failure of reconstruction was not to be ex-

pected. Repair of median perineotomy might be easily done with buried and subcuticular catgut stitching so effectively as to reproduce conditions suggesting a nullipara. Such conditions, while cosmetically commendable, did not presage the conversion of the patient into a competent multipara, potentially capable of spontaneous rapid delivery without fresh wounds. He described a tentative technic for an expanding perineorrhaphy.

**The Conservation of Infant Life.**—Dr. COLLIN FOULKROD, of Philadelphia, stated that the investigations of the Children's Bureau of the Department of Labor of Wisconsin, of Massachusetts, of New York and of Newark, had been productive of no definite programme to make this question a national one, to propose laws fitted to our country and the needs. Such investigations had so far stopped short of basic causes. We must pay, as a nation, our families for producing effectives, and guarantee them the right to develop by a system of government which would be truly democratic. We must insure our mothers. We must awaken women to their responsibility. Advanced prenatal work would in time eliminate preventable diseases, and would bring the application of modern methods to non-preventable diseases. In France the pregnant woman was becoming a state care and ward. In time we should have enough hospitals in each district to scientifically care for all children born.

**Why the Midwife?**—Dr. J. CLIFTON EDGAR, of New York, said that hospital records bore out the fact that foreign born women, after their first confinement under the care of the midwife, subsequently turned to the maternity hospital or a physician for obstetric aid. After a short residence in this country, the foreign born woman did not usually persist in the employment of a midwife. Her ambition was eventually to be in a financial position enabling her to employ the services of a regular practitioner.

During the existence of the Midwife Bellevue School, 235 midwives had been graduated; 5,125 confinements had been conducted by the pupils, 1,755 in the school, and 3,370 in the patients' homes, with a maternal mortality of 0.7 per cent. Only three cases died in the school itself, a mortality of 0.05 per cent. Six others died after being transferred to Bellevue for operation. The 5,125 cases cared for by the midwives at the Midwife School and the patients' homes were practically all normal labor cases, as fetal and maternal dystocia, and bleeding cases, severe toxemia, and other abnormalities were sent to the Bellevue Obstetric Service for treatment. As far as the handling of strictly normal labor cases by the midwives went, the result had been excellent. The records indicated that little septic infection had resulted.

A plan for better and safer obstetrics in the outlying rural districts must recognize two main problems: 1, the best practical care of normal cases, and 2, the detection of abnormal cases and their care.

By education and supervision the midwife might be rendered reasonably safe for strictly normal labor, safe even for a minimum of sepsis, or for the prevention of ophthalmia neonatorum. But no amount of education could fit the material, which



the physicians had been brought in contact with, for the early care of prenatal complications, and maternal and fetal dystocia, which caused most of the infant and maternal mortality. Who should determine what was a strictly normal labor? The midwife? She was incompetent to do so; only the trained obstetrician could accomplish this. The midwife could never stand upon her own responsibility. For safe obstetrics the obstetrician must ever perform the prenatal examination and care. He must ever be at hand for the maternal and fetal dystocia of labor and the complications of the post-natal period.

#### **Pernicious Anemia Complicating Pregnancy.**

—Dr. PALMER FINDLEY, of Omaha, Neb., said that while pernicious anemia was not a disease peculiar to pregnancy, it was nevertheless true that the disease occurred with unusual frequency in the course of pregnancy and the puerperium. Eichhorst in a series of fifty cases of pernicious anemia in women found twenty-nine were associated with pregnancy and labor. Clibio, Caruso, and Bertino found 0.15 per cent. pernicious anemia in all pregnancies, while Lebert and Myerrugg estimated the frequency at 0.22 per cent. We were told that pernicious anemia was more common in women than in men, but excluding all cases arising in the period of gestation the percentage of frequency was higher in men. Just what the predisposing factors were in pregnancy was not known. Prolonged lactation, frequent child bearing, the toxemias of pregnancy, and unfavorable hygienic surroundings were factors to be reckoned, but were not conclusive. Neither post-partum hemorrhages nor puerperal infection tended to develop pernicious anemia if we were to judge from case records. With few exceptions, pernicious anemia rarely developed in a primipara, and was more frequently observed in a pregnancy which had been preceded by the birth of several children in rapid succession.

The blood findings in the mother were characteristic. The red cells were decreased in number, even to 250,000. The blood did not show a proportionate decrease in its hemoglobin content, but there was a marked alteration in the shape, size, and staining of the individual cells. Macrocytes and microcytes abounded and megaloblasts were occasionally present. Nucleated red cells did not as a rule appear until the disease was well advanced; they tended to appear in showers, and in some cases had failed to appear or at least had not been found even in the last stages of the disease. Poikilocytosis was a marked feature; fibrin and blood platelets were diminished and the leucocytes were lessened in number.

In every frank case of pernicious anemia complicating pregnancy the maternal mortality was practically 100 per cent., although in exceptional cases death might be deferred for a period of weeks, months, and even a year or more following childbirth. There might be periods in which improvement might be great, but the end result was always the same. The earlier in pregnancy the disease appeared, the more rapid its course and the graver the prognosis.

The management of these cases might be said to

be in the interest of the mother in the early stages of the disease and of the child in the late stages of the disease. Where the disease was well advanced, the fetus developing and approaching the period of viability, pregnancy should be allowed to proceed to term, if possible, in the hope of delivering a healthy child. The case of the mother was hopeless and no good could come from sacrificing the child by the interruption of pregnancy.

Two cases of pernicious anemia complicating pregnancy were reported, with one death.

**The Treatment of Puerperal Blood Stream Infection by Means of Arsenobenzol.**—Dr. H. A. MILLER and Dr. S. A. CHALFANT, of Pittsburgh, stated that no form of intravenous medication up to the present time had been entirely satisfactory, although many had been tried. Puerperal bacteremia had always been a very serious condition with a high mortality.

The treatment as used in these cases was followed up by experimental work by Allison. He found that arsenobenzol, together with similar preparations, could be given frequently in large doses without injury to animals, that the mortality was less in treated than in untreated animals, and that the injection of arsenobenzol would usually rid the blood stream of streptococci in twenty-four hours.

He also showed that there was a fall in the leucocyte count before the blood culture again became positive.

The authors had treated eleven cases of puerperal infection by means of arsenobenzol given intravenously usually in six gram doses as frequently as three or four day intervals, giving from one to four doses. There were no toxic effects other than a mild albuminuria.

Seven patients had a streptococcus in the blood stream with two deaths; two a Gram negative bacillus, with no deaths; and two had a negative blood culture but were both clinically bacteremic and both died.

Two patients had intrauterine irrigations at two hour intervals with Dakin's solution, of whom one recovered and one died. In the fatal case autopsy showed the uterus free from infection. Death was due to multiple abscesses of both kidneys.

Conclusions: 1. With the use of intravenous injections of arsenobenzol, we have been able in every instance to rid the blood stream of its invading organism. 2. All varieties of organisms so far encountered seem to be equally influenced. 3. Cultures from localized abscesses are usually identical with cultures from the blood stream. Cultures from the uterus, although this organism predominates, are rarely pure cultures. 4. Reinfections from focal infections may and do occur, but are as readily influenced by arsenobenzol as the original infections. 5. The leucocyte count is usually low in comparison with the temperature and pulse. After arsenobenzol has been given there is a marked increase in the count. If, after this time, there is a decided decrease in the leucocytes with a corresponding improvement in the patient, including the pulse and temperature, it is very possible that the patient has reinfected herself, and arsenobenzol should be given without waiting for confirmation of this culture report. 6. The

blood stream is usually found to be sterile in twenty-four hours, always in forty-eight hours, except in one case where but four grams of arsenobenzol was given. 7. Rabbit experiments made by Dr. C. S. Allison would indicate that a dose of six milligrams is necessary to secure prompt results. 8. In suspected blood stream infections arsenobenzol may be given immediately after a culture has been taken in order to avoid the delay incident to waiting for a laboratory report.

**Pathological Conditions Associated with Myomata Uteri.**—Dr. LE ROY BROUN, of New York said that he had reviewed all of the myomata operated on at the Woman's Hospital during the past eight years, ending with September, 1917. There were 1,500 such cases. All of these had some form of hysterectomy or myomectomy. As a result of the operations, twenty-eight patients died. Of these, seven died from embolus, chiefly between the eighth and twentieth day. Seven died from peritonitis, and the remainder from various causes. The percentage rate of 1.86 could be taken as a fair estimate of the mortality of operations for this condition, since it represented the results of the combined operative work of a large attending and junior attending staff, together with that of a large corps of surgeons, who were given the privilege of sending their patients to the private rooms of the hospital. This compared favorably with 1.73 per cent. reported by Deaver in 759 cases covering a period of eleven years and with 1.75 per cent. reported by Frank in 400 cases operated on by Brettauer and himself. Associated with the total number of cases (1,500) sixty-six malignant conditions were found, twenty-nine of which could be unquestionably determined before operation. It was doubtful whether all of the seven cases of sarcoma could have been determined, and it was certain that the nature of the remaining twenty-one cases of malignancy, ovarian carcinoma, four, and papillomatous cyst, seventeen, could not have been previously diagnosed before opening the abdomen.

Of the ovarian pathology associated, fifty-eight cases occurred. The previous recognition of any of these conditions before operation, excluding the four instances of abscess of the ovary, would depend entirely on the size and character of the myoma present, also on the size of the pathological ovarian conditions associated. There were 265 cases of associated tubal disease, the majority of which would have required at some time surgical interference. To what extent the circulatory disturbance as a result of the presence of the tumor was the cause of the predominating presence of salpingitis, could not be stated. No tube was, however, reported as the seat of inflammatory changes, unless positive pathological examination and evidence showed such a condition. A large number of uterine appendages were removed in connection with hysterectomies in patients about the menopause, in whom only minor pathological changes were found. None of these were included among the 150 cases of salpingitis cited. One hundred and sixty-seven chronic or subacute appendices were found. There were nine instances of associated extrauterine pregnancy and fifty-one of normal

pregnancy. Three hundred and fifty-five cases, 23.7 per cent. of the 1,500 consecutive myomatas operated on, contraindicated the use of radium and the x ray. He was convinced from a review of these cases that the symptoms, on account of which the majority of patients entered the hospital, were due in the greatest measure to conditions outside of the uterus and not to the presence of the tumor itself, unless it was from hemorrhage.

**Two Hundred and Ten Fibroid Tumors Treated by Radium.**—Dr. HOWARD KELLY, of Baltimore, Md., said that the only effective method of treating fibroid tumors of the uterus up to the present time had been the surgical, developed with such care through two generations that the operation had become in skilled hands one of the safest of our major procedures.

The author had operated in this way upon 2,000 women but felt now that the radium treatment, which was without danger and which was found effective in ninety-three per cent. of the cases, should be preferred to the operation, which was, after all, a major operation of mutilating character offering considerable risk to life and health.

He stated his thesis with regard to the accomplishments of radium in this class of cases as follows: 1. Control of hemorrhage and checking of menstruation. 2. The shrinkage of the tumors. 3. In many instances the disappearance of the tumors. 4. In some cases, even after two years, the return of menstruation either normal or scanty. There had been no mortality associated with the treatment of 210 consecutive cases.

Between the dates of March 23, 1913, and January 8, 1918, 210 cases of uterine fibroids were treated with radium by the author and by Dr. Curtis F. Burnam, and forty-five cases were operated on either because there was some contraindication to treatment or because operation was preferred.

In twenty-eight of these 210 cases, the data was insufficient; six did not complete treatment, although four of these were markedly benefited; seven had been lost sight of; two died of causes unconnected with the treatment; thirteen were too early for results to be reported with certainty.

There were, therefore, 182 cases in which the results were known. In 171, or all but eleven cases, radium alone was sufficient to relieve the patient. In these 171 cases (93 per cent.) the tumor was either gone or markedly diminished, or the patient was symptomatically well. In five of the eleven cases, some complicating condition was present (ovarian cyst, gallstones, calcified uterus); in two cases operation was preferred to further treatment; in three cases operation was found not to have been necessary as the tumor had decreased under treatment; one case proved resistant to prolonged treatment. Nine of the eleven cases were operated on.

The fact should be emphasized that if radium failed, the operation has simply been postponed without detriment to the patient.

The technic of the treatment included a preliminary curettage both to rule out malignancy and to remove any small polypi which might be found to exist. The average inside application was for three hours with 500 mc. of emanation. A small glass



bulb was placed in the end of a metal tube, sufficiently thick to screen off all but the gamma rays. This tube was screwed on to a uterine sound and was then covered by a rubber cot. The cervix was dilated and the sound introduced to the top of the uterine cavity. The applicator was gradually withdrawn, not being allowed to remain longer than one half hour on each spot. In the external treatments to shorten the time, four to five grams of radium were being used and the entire treatment could be given in from five to six hours. In any one case the treatment, internal and external, could be given individually or combined in any desired method. At least seven weeks should be allowed to elapse before a second treatment was given and it should not be given if an amenorrhea was already obtained. Usually the second should be an external one. Some tumors reduced rapidly; others slowly over a year or more.

Menopausal symptoms were usually not severe. In fifty per cent. of the cases, no menopausal symptoms were complained of; in slightly more than twenty-five per cent. they were moderate and in slightly less than twenty-five per cent. they were marked.

(To be concluded.)

## Letters to the Editors.

### SPANISH INFLUENZA.

NEW YORK, August 18, 1918.

#### To the Editors:

I have recently arrived in this city from Spain, where I travelled extensively during the last nine months. When I was at Madrid, in April, the so called Spanish influenza broke out in that city, the very first place in Spain that suffered from it. I took the trouble to investigate the cause of the epidemic, its symptoms and complications, and afterwards studied its spread to Barcelona, Valencia and other cities, which I also visited.

On July 19, 1918, I published a letter in *The New York Herald* contradicting the opinion of a nonprofessional person, also just arrived from Spain, who had informed that journal "that Spanish influenza was caused by the infected air blown into Spain from the western front of the present war." And I personally gave to the editor of a medical journal my opinion of the cause and nature of that epidemic disease, its symptoms and complications, because he had published that very week an editorial note about it; but he has not thought it worth while to say anything in his journal concerning my personal opinion and observations in Spain of that epidemic.

Having read in today's *Herald* that five sailors of a large Dutch steamer arrived last Friday at this port of New York from Rotterdam died on board of pneumonia as a sequela of Spanish influenza; that a large number of the cabin passengers were down with the mysterious disease during the voyage, and that several third class passengers had been removed to Saint Vincent's Hospital for treatment; also that the health officials of New York City were taking vigorous steps to safeguard it from the spread of Spanish influenza, I address this letter to you with the desire to help solve the problem.

The nonprofessional opinion of the person informing *The Herald* that the infected air blown into Spain from the western front of the war in France was the cause of the epidemic disease in Spain, is of course pure nonsense, simply because Madrid is situated almost in the centre of that country, and Madrid was the very first place where the outbreak occurred. My own conviction is that the disease in question is neither new nor extraordinary, but solely and

alone grippé or epidemic bronchitis, which is at present attacking the inhabitants of Havana, Cuba, and is well known there with the Spanish name of *trancazo*, that is to say, a blow with a heavy stick. Some of its symptoms resemble those of dengue fever.

In Spain the epidemic was caused and was easily spread by the unhygienic conditions of the cities, particularly of Madrid, the capital. Before the outbreak of the epidemic I attended in Madrid several meetings of the Spanish Society of Hygiene, read in one of them a paper of mine, and became convinced from what I heard there of the need of precautionary measures of public health. And the unmistakable practical proof of that necessity was the presence of an extraordinary abundance of flies all over the country.

I was present, by special invitation of the operating surgeon, Professor Enrique López, at the ovariectomy performed by him in the Hospital Provincial, in Valencia, and the flies in the operating room were so numerous that they posed on the naked arm of the surgeon while he was doing the operation, and on the faces, heads and necks of all the physicians who were in that room, including myself.

I am preparing a paper to be read before some one of the medical societies of this city, which I shall entitle "Hygienic Misconceptions in Spain."

A. M. FERNANDEZ-YBARRA, A. B., M. D.,

Corresponding Member of the Spanish Society of Hygiene of Madrid in the United States.

## Births, Marriages, and Deaths.

### Married.

FREUNDLICH-GRONER.—In New York, on Monday, August 12th, Dr. M. L. Freundlich and Miss Ruth Groner.

### Died.

BUTCHER.—In Heislerville, N. J., on Saturday, August 3d, Dr. Joseph Butcher, aged fifty-nine years.

CALDER.—In Claysville, Pa., on Monday, July 22d, Dr. George Calder, aged eighty-three years.

CALLAGHAN.—In New Haven, Conn., on Thursday, August 8th, Dr. Patrick J. Callaghan, aged fifty-four years.

COLE.—In Fort Sam Houston, Texas, on Thursday, August 8th, Lieutenant Colonel Clarence Le R. Cole, Medical Corps, U. S. Army, aged forty-one years.

FALGE.—In Manitowoc, Wis., on Sunday, August 4th, Dr. Louis Falge, aged fifty-seven years.

GILLARD.—In Sandusky, Ohio, on Sunday, August 11th, Dr. Edwin E. Gillard, aged seventy-three years.

GULICK.—In South Casco, Me., on Tuesday, August 10th, Dr. Luther H. Gulick, of New York, aged fifty-three years.

HELM.—In Columbus, Ohio, on Wednesday, August 7th, Dr. William M. Helm, aged seventy-one years.

HOWELL.—In Camden, N. J., on Friday, August 9th, Dr. Mary Anna Howell, aged seventy-one years.

LEONARD.—In Detroit, Mich., on Sunday, August 11th, Dr. James A. Leonard, aged sixty-four years.

MANN.—In Bridgeport, Pa., on Saturday, August 3d, Dr. Charles H. Mann, aged sixty-five years.

MORROW.—In Kalispell, Mont., on Thursday, August 1st, Dr. Arthur Morrow, aged fifty-four years.

NEAFIE.—In Jersey City, N. J., on Wednesday, August 7th, Dr. Harry Neafie, of Freehold.

OSBORNE.—In Lawrenceville, Va., on Friday, August 9th, Dr. Andrew J. Osborne, aged forty-nine years.

ROBINSON.—In West Newton, Mass., on Saturday, August 10th, Dr. Francis E. Robinson, aged seventy-three years.

ROSS.—In Brooklyn, New York, on Monday, August 12th, Dr. Frank Harper Ross, aged sixty-two years.

STOWE.—In Salina, Kan., on Friday, July 19th, Dr. Charles W. Stowe.

WHITLEY.—In Webster City, Ia., on Sunday, July 21st, Dr. Frank E. Whitley, aged sixty-one years.

VAN DEUSEN.—In Philadelphia, Pa., on Friday, August 9th, Dr. Isaac Van Deusen, aged eighty-nine years.

# New York Medical Journal

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## Original Communications

### PASTEUR'S RELATION TO MEDICINE AND SURGERY.\*

By W. C. BORDEN, M. D., F. A. C. S.,  
Washington, D. C.,

Lieutenant Colonel, M. C.; Professor of Surgery, George Washington University; Chief of the Surgical Service at the Walter Reed General Hospital.

On Friday, December 27, 1822, in the small town of Dôle, in western France, was born of humble parents, Louis Pasteur, one of the greatest original investigators of all time. This eminent scientist was to disprove beyond question the doctrine of spontaneous generation, was to establish the basic facts of the causative relation of microorganisms to fermentation, decomposition, and disease; by the practical application of his findings he was to rescue from bankruptcy several of the most important agricultural activities of France, and lay the foundation for our modern concept of the transmission of communicable diseases and the treatment of infections by vaccines and serums.

To understand the conditions which surrounded Pasteur at the time he did his work it will be well to briefly review the status of medicine and surgery in the first half of the nineteenth century when he began his researches.

The teachings of Galenic medicine had persisted up to the first half of the sixteenth century, when, coincident with the religious reformation begun by Luther, a medical new birth took place under the initiative of Vesalius in anatomy, Paré in surgery, and Paracelsus in medicine. Dogmas and introspective thinking along all lines gradually gave way to original investigations into the facts of nature and deductions therefrom. The scalpel explored the mysteries of normal human anatomy and Benivieni and Fernel laid the foundation of pathology by pointing out the value of the examination of the dead body for discovering the causes of disease.

In the seventeenth century this new spirit of research spread throughout all the centres of learning in Europe, especially in England, the Netherlands, and France. The progress of science in Germany and Central Europe was delayed by the Thirty Years' War with its resulting devastation, loss of life, and pestilence, but in all directions other than the war smitten areas, there was a breaking away from old beaten paths with the result that progress in knowledge was decided and material.

In the favored countries medicine brought forward the names of Harvey, Van Helmont, Sylvius, Borelli, and Sydenham; Descartes, Bacon, Hobbes, and Locke produced their works on philosophy; Galileo confirmed the truth of the revolution of the earth about the sun, enunciated in the previous century by Copernicus; Newton made his wonderful discovery of the law of gravitation; Römer calculated the velocity of light, and Huygens discovered the polarization of light, a physical phenomenon which Pasteur later used in making his first contribution to science—namely, the discovery of the isomeric forms of tartaric acid.

The greatest physiological discovery of this century was that of the circulation of the blood by Harvey, published by him in 1628. Forty years later Malpighi completed the demonstration by showing the capillary circulation and Leuwenhoek described the blood corpuscles and their movements in the small vessels of the larva of the frog.

In the next century (eighteenth), that preceding the birth of Pasteur, Haller proved the existence of the irritability of the muscles and extended the knowledge of the intimate structure of the heart, the brain, and the lymphatic system. Morgagni, by his wonderful work, *De Sedibus et Causis Morborum*, founded pathological anatomy as a science. Avenbrugger discovered percussion and Laennec was the first to teach and practice auscultation. The father of English surgery, John Hunter, made many researches and so memorable was his work in human and comparative anatomy and in surgery that to commemorate him a Hunterian oration is still given annually at the Royal College of Surgeons in London, and his operation for aneurysm is used in appropriate cases.

The one piece of work in the eighteenth century which was of greatest benefit to mankind and which was most closely related to that afterward done by Pasteur, was the establishment of vaccination for smallpox by Jenner, who in consequence is known as the father of vaccination.

Parenthetically we may say that of the men who by their discoveries have done the most for preventive medicine, Jenner was the first; Pasteur the second; and Ross and Walter Reed, by establishing the causative factors of malaria and yellow fever, the third and fourth. Also, it is safe to say that the work of these four men has been of more economic value and has more influenced the commerce and

\*Read before the Medical History Club of Washington, D. C.



welfare of mankind, than have the findings of any other investigators up to the present time.

When Pasteur was born, researches had already been made which were closely related to the work he was to inaugurate and carry to successful accomplishment.

Two centuries before Pasteur's time, Hárvey published his treatise on generation, notable in that it entered a field almost untrodden from the days of Aristotle, but which was overshadowed by the greater importance of his work on the circulation of the blood. In it, Harvey brought forward the original dictum that almost all animal ova are produced from eggs usually quoted *Omne vivum ex ova* and which was to be followed more than 200 years later by Virchow's celebrated dictum, *Omnis cellula e cellula*. Thus Harvey's treatise declared against spontaneous generation, a doctrine whose death blow was to be dealt by Pasteur. This theory which included such absurd ideas as that frogs were generated from the mud of the Nile and that maggots were formed from decaying cheese, lost ground following the publication of Harvey's work, but belief in it was renewed at the end of the seventeenth century, when the improvement of the microscope by Leuwenhoek brought to view the minute forms (bacteria) found in all dead vegetable and animal matter, whose existence was explained only by the supposition that they were spontaneously generated therein.

Ehrenberg published an imperfect grouping of bacteria in 1830 which covered practically all that was known of these minute forms of life up to and during Pasteur's researches, but not until Cohn published his work between 1853 and 1872 was there any accurate knowledge of them.

In the early part of the nineteenth century our modern concept of the minute structure of the human body was just being formed. In 1838 Schleiden enunciated the cellular theory of the construction of the tissues of plants, and Schwann, in the following year, extended the same idea to animals. The original work of Schleiden and Schwann ideated the cell, as the word cell implies, as an inclosure the wall of which was a vital part. They supposed new cells to arise by a sort of crystallization from a mother liquid or cytoblastema. In 1861 Max Schultze presented the fact that the cell is "a small mass of protoplasm endowed with the attributes of life." Virchow's cellular pathology was published in 1858, then establishing for the first time the great truth that all cells, whether animal or vegetable, originate from preexisting cells.

When Pasteur began his researches in fermentation and decomposition the greatest authority in chemistry was Liebig, who held that these processes were the result of chemical activities and long opposed Pasteur's discovery that they were in reality due to the action of microorganisms.

In the sixteenth century the alchemists of the fifteenth century had been succeeded by the iatrochemists, who held that chemistry is the art of preparing medicine. This school, in turn, had succumbed to the arguments of Boyle, who taught that chemistry is the science of the com-

position of substances. Later, Lavoisier formulated the law of the conservation of mass, Dalton and Berzelius, the law of chemical combination, the notation of atoms, and equivalents, and these discoveries were followed by the brilliant researches of Avogadro, Ampère, and others, and by Frankland's conception of valency and the periodic law.

The belief that the formation of organic compounds was conditioned by a vital force and the supposed impossibility of synthesizing organic compounds had been shaken by Wöhler's synthesis of urea in 1828; and Demas and Liebig about 1837, by defining organic chemistry as the chemistry of carbon radicals, laid the foundation of modern organic chemistry.

Pasteur was educated as a chemist, but most of his research work was done with the microscope; even his detection of the two forms of tartaric acid was made by the aid of that instrument. The first real improvement in the microscope objective dates from 1830, only eight years after Pasteur's birth, when V. and C. Chevalier produced objectives, consisting of several achromatic systems arranged one above the other. It is an interesting coincidence that Joseph Jackson Lister did important work in improving the microscope—the instrument which in the hands of Pasteur was to assist in laying the foundation upon which Lister's distinguished son Joseph, afterward Lord Lister, was to place his superstructure of antiseptic and aseptic surgery.

From the foregoing it will be seen that when Pasteur began his invasion into the realm of science practically nothing was really known of the vast world of microorganisms; the cell theory of organic structure had just been enunciated, the theory of spontaneous generation had been revived, and the foundation of chemistry had but recently been laid.

Following this very general view of the condition of medicine and its allied sciences at the time of the beginning of Pasteur's researches, it will be well to particularize the surgical conditions which then obtained.

In surgery there was no accepted concept of the idea that the conditions which we now know as septic were communicable. Semmelweis, in advance of his time, was teaching in Vienna those facts relative to the transmission of puerperal fever which have given him an eminent place in the history of medicine, but his opinions met with such bitter opposition by Klein and other reactionary teachers that his work was buried, forgotten, and not resurrected until after the antiseptic researches of Lister.

In 1846 Morton introduced the use of ether as a general anesthetic and the first operation under general anesthesia was done in the Massachusetts General Hospital. The following year Sir James Simpson introduced the use of chloroform in England.

Apparently through anesthesia a new era was opened in surgery. The doing away with the dreadful pain which had prevented the performance of large surgical operations, except in direct

necessity, allowed operations to be undertaken in great number. But the use of anesthetics, by permitting more operations to be done, instead of being a blessing, proved to be the reverse of beneficial. The great number of operations performed under the septic conditions which then obtained caused septicemia, pyemia, and gangrene to sweep through the wards of hospitals with redoubled fury, and the greater number of operations meant a greater number of deaths. In consequence anesthesia, while it ameliorated pain, was indirectly the cause of increased mortality in both hospital and general surgery, and did not reach its complete efficiency until it was combined with asepsis and antiseptics.

The surgeon of that day had neither felt the need of nor practised cleanliness. To wash his hands before an operation was, in his opinion, unnecessary, as they would soon be soiled by the blood of the patient. When the formal frock coat of the time was too old for ordinary use, the surgeon kept it in the operating room to wear instead of his better coat when he operated, and that his ligatures might be ready, they hung in the buttonholes and his needles were thrust into the lapel. His only preparation was to don his old coat and roll up his sleeves; and during an operation he often found his lips a convenient place to hold his instruments. The same professional hand, often unwashed, dealt with wounds, abscesses, obstetrical cases, and not infrequently with post mortems. In the hospital wards, a single basin and a single sponge were carried from patient to patient and used indiscriminately upon all.

With our present knowledge it is easy to account for the dreadful results in surgery under such conditions. In the hospitals of Edinburgh, Glasgow, and London, two in every five amputations, including those of the smallest members, ended in death.

The high death rate was not the only disaster. No statistics can give the unspeakable suffering of patients affected with hospital gangrene, pyemia, virulent septicemia and other pathological conditions incident to these afflictions.

In some hospitals the pathogenic microorganisms were so disseminated and had been raised to such a degree of virulence that practically every patient whose skin was broken either by accident or by the smallest surgical operation died, for fatal wound diseases and complications were never absent.

Sir Hector Cameron, who worked under Lister when the latter made his first attempts in the direction of antiseptics, draws a vivid picture of the surgical horrors then existing:

"Every wound discharged pus freely and putrefactive changes occurred in the discharges of all, producing in the atmosphere of every ward no matter how well ventilated, a fetid, sickening odor which tried the student on his first introduction to surgical work just as much as the unaccustomed sights of the operating theatre."

Writing of hospital gangrene in 1801, John Bell says: "When it rages in a great hospital, it is like a plague; few who are seized with it can escape. There is no hospital, however small, airy, or well

regulated where this epidemic ulcer is not to be found at times; and then no operation dare be performed. Every cure stands still—every wound becomes a sore, and every sore is apt to run into gangrene, but in great hospitals especially it prevails at all times and is a real gangrene. It has been named the hospital gangrene, and such were its ravages in the Hôtel Dieu of Paris (that great storehouse of corruption and disease) that the surgeons did not dare to call it by its true name; they called it the rottenness, foulness, sloughing of the sore. The word, hospital gangrene, they durst not dare pronounce, for it sounds like a death bell; at the hearing of that ominous word, the patients give themselves up for lost. In the Hôtel Dieu this gangrene raged without intermission for two hundred years, till of late under the new government of France, the hospital has been reformed."

"A young surgeon" says a French author of that time, "who is bred in the Hôtel Dieu, may learn the various forms of incisions, operations too, and the manner of dressing wounds, but the way of curing wounds he cannot learn. Every patient he takes in hand, do what he will, must die of gangrene."

In Volkmann's clinic at Halle, the mortality in complicated fractures as late as 1872 was forty per cent. Lindpainter from Nussbaum's clinics in Munich wrote "eighty per cent. of all wounds were attacked with hospital gangrene. Erysipelas was so frequent with us that we might have regarded it as almost an expected occurrence. Out of seventeen cases of amputation in one year eleven died of pyemia alone."

Those were the times in which wound fever, inflammation, and suppuration were regarded as inseparable and were thought to be the natural reaction of an injured organism, hence the expression "laudable pus" which was then so universally used.

Even with those patients who were fortunate enough to recover, convalescence was always extremely protracted. Nussbaum in 1875, complained of the hospital regulations which limited the treatment of persons of the lower class to nine weeks, stating that for many this period was insufficient; for, by reason of inflammation, even in trivial wounds, the healing process was not completed until after a much longer time. Union, after amputation of the breast, then required from one fourth to one half a year and healing of amputations often occupied months. So late as 1872, aside from Casarean section, the only intraabdominal operation described in textbooks was that of ovariectomy, first performed by McDowell, of Kentucky, in 1809; and considered by most authorities as an unwarrantable operation on account of the high mortality. Outside the gates of Paris stood a small residence known as the house of death for the reason that sixteen patients had been taken there for ovariectomy and all had been brought away in their coffins.

It was then that Pirogoff, one of the greatest surgeons of his day, wrote his dissertation upon "Fortune in Surgery" wherein, after enumerating and discussing all the then known etiological factors of post operative and post traumatic conditions, such as age, sex, environment, and diathesis, and



realizing that all causative conditions then known could not and did not explain the untoward effect of trauma, gave expression to the overwhelming feeling of powerlessness then present in surgery by saying: "The influence of the physician, the therapeutic resources and mechanical dexterity are of no importance; the results of an operation are dependent entirely upon chance."

Sir James Simpson, in an address delivered in Edinburgh in 1853 said: "I believe that, at the present moment, any individual in the profession who in surgery or in midwifery could point out some means of curing—or some prophylactic means of averting by antecedent treatment—the liability to these analogous or identical diseases, would, I say, make, in relation to surgery and midwifery, a greater and more important discovery than could possibly be attained by any other subject of investigation. Nor does such a result seem hopelessly unattainable." Little did Simpson think that at that very time in France those studies were beginning which would lead within his own generation to a realization of the hope which he expressed.

The dawn of light in the darkness of medicine and surgery was to be ushered in by the work of Pasteur.

Pasteur's father, Jean Joseph Pasteur, after serving in Napoleon's armies, where he rose to the grade of sergeant and was decorated with the cross of the Legion of Honor, upon the dissolution of the Empire, took up his family trade of tanner, married Elennette Roquie, the daughter of prosperous peasants, and in their humble home Louis was born.

Pasteur first attended the *ecole primaire* attached to the college of Arbois, to which town his parents had moved from Dôle. He received the degree of *bachelier des lettres* from the college of Benascon. In 1842 he passed his examination (*baccalauréat des sciences*) before the Dijon Faculty being put down in chemistry, the science he was later to adorn, as mediocre.

After occupying several teaching positions, during which time he published his findings regarding tartaric and other acids, Pasteur, in 1854, when thirty-two years of age, was made dean of the *Faculté des Sciences* at Lille.

In his inaugural address, Dean Pasteur said: "In the fields of observation chance only favors the mind that is prepared." He was shortly to exemplify the truth of his own statement by the matter which almost by chance was to be brought to his hand.

M. Bigo, whose son was one of Pasteur's pupils, had trouble with the production of beetroot alcohol in the manufacture of which he was engaged. His son advised him to come to Pasteur for advice and thereupon Pasteur began a series of investigations in regard to fermentation, putrefaction, and spontaneous generation which, together with succeeding researches, was to have the most profound influence upon surgery and medicine.

In 1836, Lateur had published experiments by which he claimed to prove that minute specks which he saw in yeast were alive. Schwann, the author of the cell theory, also came to the conclusion that

these minute particles were alive and that as a result of their growth, sugar was changed into alcohol in the process known as fermentation.

Both Lateur and Schwann held also that putrefaction of vegetable and animal substance, like fermentation, was due to the action of microorganisms. The great chemist, Liebig, resisted this doctrine in the most strenuous manner. He would have nothing to do with microorganisms as a cause of fermentation or putrefaction. He wrote, "As to the opinion which explains the putrefaction of animal substances by the presence of microscopic animalculæ, it may be compared to that of a child, who would explain the rapidity of the Rhine current by attributing it to the violent movement of the mill-wheels at Mainz."

When Pasteur began his researches, the work of Lateur and Schwann had been practically forgotten, and Liebig's view everywhere prevailed that fermentation was an alterable organic substance acting by a catalytic force.

The young dean, with the purpose of doing a kindness to the father of one of his students, visited Bigo's factory frequently and in his laboratory, where he had only a student's microscope, examined the globules in the fermented juice. In continuation, he took up a general study of fermentation, including that of sour milk.

In sour milk he found globules, much smaller than those of yeast, which heretofore had escaped the observation of chemists and naturalists. He isolated these, scattered them in a liquid and the characteristic lactic fermentation appeared.

Following this observation on lactic fermentation, he studied another known as butyric fermentation. He determined that this fermentation, also, was due to an infusory and that this infusory lives without free oxygen. This led to his important discovery of the influence of the presence or absence of oxygen upon bacterial growth, and the consequent differentiation of bacteria into aerobes and anaerobes, so elucidating for the first time these basic conditions of bacterial life, later to be extended into the discovery of the facultative aerobes and anaerobes.

Now came the problem, whence come these ferments, these microorganisms, these agents which, while weak in appearance, are in reality so powerful.

The time for Pasteur's attack upon the doctrine of spontaneous generation was at hand.

He placed putrescible liquid in flasks, boiled the flasks and sealed their mouths while the liquid was boiling. He set the flasks aside for observation and although the material was present which originally putrefied, no putrefaction took place. When examined microscopically no microorganisms could be found.

He thereupon concluded that fermentation and putrefaction were due to microorganisms introduced into the putrescible matter from without, probably from the air. He plugged a glass tube with cotton wool, drew air through it and placed a part of the dust blackened cotton in one of the flasks. Very promptly putrefaction resulted.

Now came the battle between Pasteur and the advocates of spontaneous generation which was to

result in the complete overthrow of the theory of spontaneous generation and the establishment of conclusive proof that the microorganisms present in putrefaction, fermentation, and disease are not caused by but are the cause of these processes.

In 1862 Pasteur had been elected a member of the Académie des Sciences and before this body was laid from time to time his experiments and arguments and those of his adversaries—the believers in spontaneous generation. Pasteur's lectures before the Académie and the discussions thereon were published in the *Comptes Rendus Hebdomadaires* for 1860, '61 and '63, and it was through the readings of these papers in the early part of 1865 that Lister was led to the conclusion that the septic processes in man may be due to microorganisms in the same way that fermentation and putrefaction are caused by them.

Thus the direct connection was made between Pasteur's work and the antiseptic researches instituted by Lister.

Pasteur, in relating his experiments to the Académie, wrote: "It seems to me that it can be affirmed that the dusts suspended in atmospheric air are the exclusive origin, the necessary condition of life in infusion"; and, also, clearly pointed out a hope that he had in view by saying, "What would be most desirable would be to push these studies far enough to prepare the road for serious research into the origin of various diseases."

In this latter sentence is seen the practical side to which Pasteur's mind turned in all his investigations and which, so far as surgical infections are concerned, was brought into use by Lister; and by Pasteur himself was applied to the prevention and cure of the abnormal conditions in beer and wine manufacture, of silkworm disease, chicken cholera, anthrax, and hydrophobia. In regard to beer and wine, he not only discovered the minute parasitic vegetations which are the causes of the abnormal conditions, but he demonstrated how they could be eliminated and by the application of his researches to the various grades of beer and wine, showed how these could be maintained in purity; a finding of the greatest value in the making of these beverages.

While in the midst of these investigations he was called upon to attempt to save the nearly destroyed silkworm industry of France. This had reached a value of nearly 100,000,000 francs annually, when suddenly a mysterious disease appeared in the cocoons of the silkworm. So fast did the infection travel that it rapidly invaded Europe and Asia, and it was only in Japan that healthy cocoons could be found.

When the French Government chose Pasteur to investigate this cocoon disease the silkworm cultivators almost unanimously expressed regret that a mere chemist was chosen for the work, instead of some zoologist or silkworm cultivator, but Pasteur's reply to these criticisms was: "Have patience." It is not possible, in the limits of this paper, to go into the details of his silkworm researches. It is only necessary to say that he not only discovered the cause of the disease, but pointed out exactly the method by which the industry could be restored. This practical research work was of such impor-

tance in monetary value to the industries of France as to be beyond calculation. It was the first of Pasteur's victories in the application of his experimental methods as a chemist to biological problems and it placed his name among the most illustrious benefactors of the practical industries.

This work was to be immediately followed by other brilliant triumphs of the same sort.

Two diseases, chicken cholera and anthrax, were ravaging the agricultural industries of France; ten per cent. of the fowls and cattle were being killed by these scourges. Pasteur undertook the task of finding the causes of these diseases and methods to prevent them. Step by step, with remarkable acumen he overcame all difficulties and finally determined beyond question their causative factors and established methods of prevention.

During the course of these investigations, his work met with strong criticism and opposition and the means by which he proved the truth of his findings were often dramatic in the extreme, as for instance, when on one occasion, in order to demonstrate the efficiency of anthrax vaccination, he inoculated a large number of animals in the presence of agricultural observers, then gave one half of these animals his anthrax vaccine, predicting not only the death but the exact hour when the symptoms of the disease would begin to appear in the unvaccinated animals. In the presence of the observers he showed the vaccinated animals entirely healthy and all unvaccinated animals stricken as predicted and later dead from anthrax (as proven by post mortem).

The acuity of his observation and the practical character of his findings are shown in the way by which he determined how anthrax is transmitted from animals buried beneath the surface to those grazing above. It was known that when an animal died of anthrax, even when deeply buried, another animal eating grass above the buried place would contract the disease. The deep burial was used by Pasteur's critics as an argument against transmission by microorganisms. Pasteur, in studying this problem, noted little cylinders of earth in an infected pasture and his active mind at once jumped to the thought that they came from the intestines of earthworms and that these hitherto unconsidered worms, by bringing the anthrax from the dead bodies below to the surface, were the intermediaries of the transmission of the disease. He thereupon examined the bodies of earthworms in infected localities and found their intestines teeming with anthrax. He at once recommended that infected animals be buried in quicklime so that the microorganisms would be destroyed and thus by one of his characteristic practical applications of his findings, closed another gate against anthrax transmission.

In the course of his investigations of chicken cholera and anthrax he made the discovery, now recognized as being of major importance in the etiology and progress of infections, that the virulence of microorganisms can be diminished or increased and that weakened cultures of many of the disease producing bacteria can confer immunity upon susceptible animals.



On these brilliant findings rest all later investigations in regard to variation in virulence of bacteria and all our present knowledge of serum therapy and vaccination.

Pasteur's discoveries on chicken cholera and anthrax were made shortly after the Franco-Prussian war, and Huxley, speaking of them, gave it as his opinion that their value was more than sufficient to cover the cost of the war indemnities paid by France to Germany. This estimate we now know was far too low, for the saving of life in fowl and cattle and the value of the estimation of vaccine therapy is entirely beyond any possible calculation or comparison.

His conclusions in regard to transmission of disease, the control of the virulence of bacteria and vaccination by attenuated cultures were so original that, far from being welcome, they met with much opposition and criticism.

At this time Doctor Koch, in Germany, had risen to prominence in bacteriology and he and his pupils started a vigorous campaign against Pasteur, claiming that though he had discovered the septic bacteria, he could not recognize them or cultivate them in a state of purity. They argued that many of his experiments regarding the variability in virulence of microorganisms signified nothing and that his claim that earthworms were carriers of anthrax was laughable.

This attitude of Pasteur's opponents is presented only to illustrate the opposition and criticism to which he was subjected, a condition common to all original investigators.

While his researches on anthrax and chicken cholera were in progress, Pasteur began and carried forward his attempts to determine the cause and prevention of hydrophobia. Although he did not discover the cause, nor for that matter has the specific cause of this disease been ascertained up to the present time, he did succeed in accurately determining the location of the virus in animals affected, the means of attenuating the virus and a method of preventive inoculation—a method since unimproved and still a recognized practice.

Pasteur first used his antirabic vaccine upon animals. He found that the virus was in its most concentrated form in the medulla and that he could raise its virulence by passing it through the brains of rabbits and decrease its virulence by gradually drying the medulla of animals containing it, until at the end of fourteen days the virulence was absolutely extinguished; and further, that the resistance of animals to the virus could be increased by inoculating them with the dried medulla, beginning with a medulla of low virulence and gradually increasing to a higher.

The first patient treated by his method was a little Alsatian boy who had been bitten in fourteen places by a rabid dog. Pasteur undertook this, his first human inoculation, with great perturbation of mind. He kept the child under his own care and with the greatest anxiety watched the result of the treatment. Regarding this, Madame Pasteur wrote to their children: "Your father has had another bad night; he is dreading the last inoculation of the child." The result was happy and the patient at no

time presented any untoward symptoms. Following this success, a great number of persons bitten by rabid animals were brought to Pasteur for treatment and this in connection with the great importance of his other researches led to the establishment of the Pasteur Institute, the work of which has since become so famous.

Pasteur's attachment to this institute was very great and he visited it daily until his last illness.

On Saturday, September 28, 1895, he passed away, "full of years and honors."

The interrelation of the different branches of science is illustrated by Pasteur's work and his connection with the scientific societies in France. Although educated as a chemist, much of his work was done along lines pertaining to medicine.

He was first elected as a mineralogist to the Academy of Science, next as a free associate of the Académie de Médecine, and finally a member of the Académie Française.

His strongest supporters, as well as his greatest critics, were medical men.

It was his controversy with Doctor Bastian in the Académie de Médecine which led to his important discovery of the great resistance of the spores of bacteria. Bastian claimed that urine treated by Pasteur's sterilization method would still decompose, but Pasteur showed that this was due to a fault in Bastian's technic by which the spores of bacillus subtilis, on account of their great resistance, gained access to the urine.

The custom of raising liquids to a temperature of 65° C. (pasteurization) dates from this conflict with Bastian.

Pasteur's mind constantly turned toward the relation which microorganisms bear to disease. By virtue of his research he was, in 1873, elected to the Académie de Médecine and before that body of men, eminent in medicine and surgery, he often presented and defended his new and startling findings which so absolutely controverted the theories of transmission and causation of disease then held by the medical world. As a member of the Académie, when addressing that body, he often expressed regret that he had not been graduated in medicine; and, as has been stated by a biographer, when Pasteur first took his seat in the Académie de Médecine, no one among his colleagues suspected that this quiet and unassuming new member would become the greatest revolutionist ever known in medicine. The year of his election to this Académie he wrote: "How I wish I had enough health and sufficient knowledge to throw myself, body and soul, into the experimental study of one of our infectious diseases."

Of the healing of wounds, when addressing the Académie in 1874, he said: "In order to demonstrate the evil influence of ferments and protoorganisms in the suppuration of wounds, I would make two identical wounds on the two symmetrical limbs of an animal under chloroform; on one of these wounds, I would apply a cotton wool dressing with every possible precaution; on the other, on the contrary, I would cultivate, so to speak, microorganisms abstracted from a strange sore and offering more or less a septic character. Finally, I should like to cut open a wound on an animal under chloro-

form, in a very carefully selected part of the body, for the experiment would be a delicate one, and in absolutely pure air, that is, air absolutely devoid of any kind of germs, afterward maintaining a pure atmosphere around the wound and having recourse to no dressing whatever. I am inclined to think that perfect healing would ensue under such conditions, for there would be nothing to hinder the work of repair and reorganization which must be accomplished on the surface of a wound, if it is to heal."

Had Pasteur been a surgeon, how he would have proceeded with experiments which, no doubt, would have founded antiseptic and aseptic surgery, is shown in an address before the Académie of Science when he said: "The water, the sponge, the charpie with which you wash or dress a wound, lay on its surface germs which, as you see, have an extreme facility of propagating within the tissues, and which would infallibly bring about the death of the patient within a very short time, if life in their limbs did not oppose the multiplication of germs. But how often, alas, is that vital resistance powerless, how often do the patient's constitution, his weakness, his moral condition, the unhealthy dressings, oppose but an insufficient barrier to the invasion of the infinitesimally small with which you have covered the injured part. If I had the honor of being a surgeon, convinced as I am of the dangers caused by the germs of microbes scattered on the surface of every object, particularly in the hospitals, not only would I use absolutely clean instruments, but, after cleansing my hands with the greatest care and putting them quickly through a flame (an easy thing to do with a little practice), I would make use of charpie, bandages, and sponges which had previously been raised to a heat of 130° C. to 150° C.; I would only employ water which had been heated to a temperature of 110° C. to 120° C. All this is easy in practice, and in that way I should still have to fear the germs suspended in the atmosphere surrounding the bed of the patient. But observation shows us every day that the number of those germs is almost insignificant compared to that of those which lie scattered on the surface of objects, or in the cleanest ordinary water."

The debt which medicine and surgery owes to Pasteur was voiced in the great medical and surgical congresses which he attended in the later years of his life, where he was received with enthusiasm and accorded the highest honors.

Lister, as early as 1874, wrote him: "Allow me to take this opportunity to render you my most cordial thanks for having, by your brilliant researches, demonstrated to me the truth of the germ theory of putrefaction and thus furnished me with the principle upon which alone the antiseptic system can be carried out."

Pasteur's closing words in his oration at the inauguration of the Pasteur Institute are of particular significance at this time, when France, the country which he so much loved and for which he did so much, is engaged in a mighty war and when we, ourselves, are facing the conditions of this international struggle:

"Two opposing laws seem to me now in contest. The one, a law of blood and death, opening out each

day new modes of destruction, forces nations to be always ready for battle. The other, a law of peace, work and health, whose only aim is to deliver man from the calamities which beset him. The one seeks violent conquests, the other the relief of mankind. The one places a single life above all victories, the other sacrifices hundreds of thousands of lives to the ambition of a single individual. The law of which we are the instruments, strives even through the carnage to cure the wounds due to the law of war. Treatment by our antiseptic methods may preserve the lives of thousands of soldiers. Which of these two laws will prevail, God only knows. But of this we may be sure, that science, in obeying the law of humanity, will always labor to enlarge the frontiers of life."

In closing this brief summary of the obligations of medicine and surgery to this master mind, we may appropriately repeat the eulogy of Renan, president of the Académie Française, when in welcoming Pasteur to that body, he said: "That common basis which inspires science, literature, and art—we have found it in you, sir, it is genius. No one has walked so surely through the circles of elemental nature; your scientific life is like unto a luminous tract in the great night of the infinitesimally small, in that last abyss where life is born."

2306 TRACY PLACE.

## FRACTURE DEPRESSION OF LAMINÆ OF FIFTH AND SIXTH CERVICAL VERTEBRÆ.\*

*With Serious Involvement of the Spinal Cord: Operation: Recovery.*

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The following is an interesting case of depression of the laminae of the fifth and sixth cervical vertebrae, causing contusion of the cord, especially in the left posterior column, and the right spinothalamic tract, and contusion of the eighth cervical and first thoracic nerve roots on the left side. The case was characterized by the flexor flexion movements, indicative of incomplete transverse lesions of the spinal cord below the bulb.

CASE.—J. T., eighteen years old, while playing football attempted to tackle the runner by diving for the latter's ankles. Failing to stop his man the patient's head was carried forward, the runner's weight ultimately coming down upon the neck in a state of dorsal hyperextension and left lateral hyperflexion.

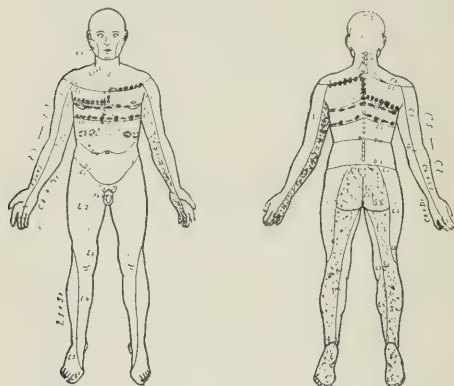
Before operation examination showed: Motor. Voluntary motion lost in lower limbs and trunk and impaired in arms, especially in the left; retention of urine and feces; flexor flexion movements in the legs; priapism. Sensory. 1. Spontaneous phenomena: no pain unless body moved; sense of absence of body weight. 2. Elicited phenomena: loss for touch, pain, and temperature of all grades up to the third thoracic segment (inclusive) on the right and to the second thoracic segment on the left. Reflexes. Knee jerks equally exaggerated; plantar gave extensor response on both sides accompanied by marked

\*Case shown at the combined meeting of the New York Neurological Society and the Neurological Section of the Academy of Medicine, January 8, 1918.



flexor flexion movements. Pupils, R. 6.5, L. 5.0 mm.; otherwise normal.

The picture was one of almost complete functional transverse lesion. An operation was carried out by Doctor McGrath twenty-two hours after injury. The laminae of the fifth and sixth cervical vertebrae were found depressed and were removed. The dura was not opened. After operation flexor flexion movements of the legs as well as voluntary motion in both arms and hands were completely suspended. Power returned in the right arm in two or three days, followed two weeks later by the return of power in the left arm. After operation, control appeared in the abdominal muscles and bladder in two weeks; in the right leg in five weeks; in the left leg in six weeks; marked involuntary flexor flexion movements reappeared in both legs in four weeks and occurred from time to time with diminishing force and frequency for some months. Eight weeks after operation these movements were preceded by a spontaneous pricking sensation over the



Sensory examination on June 11, 1916, seven months after operation. Sensibility lost for:

Prick, algometer at two to four grams pressure up to heavily dotted line; heat, at 55° C. up to interrupted line; cold (ice), up to line of dots and dashes.

Shaded areas represent impairment for prick and gross heat and cold.

The dotted circles in the hypochondria represent areas in which sensibility was preserved for 38° C.

inner aspect of the thighs four inches above the upper border of the patella. Six weeks after operation, sensibility for gross affective stimuli (prick, pressure pain, 55° C. and ice) returned in the right leg and foot, and a short time later in the left leg and foot. Sensibility for these stimuli was never more than temporarily disturbed in the hands and arms. For a few weeks after operation priapism was a feature; occasional seminal ejaculations without psychic equivalent.

On June 11, 1916, seven months after operation, examination showed the following:

Motor. Station, normal; gait, in walking there is a slight catch in the left leg consisting of involuntary extension of the knee and foot (extensor thrust), slight spasticity of both legs; left forearm and hand atrophied with movements correspondingly impaired; left calf larger than right, partly due to edema.

Sensory. 1, Spontaneous phenomena: None. 2, Elicited phenomena: Touch—no loss or appreciable diminution for

cotton (parts unshaved); for the finer von Frey hairs impairment on feet, legs and thighs, especially on left side; no impairment on trunk; pressure touch (unweighted esthesiometer), slight impairment on left foot, leg, and thigh compared with the right; localization—impaired.

Pain. For prick, algometer at four grams pressure, sensibility impaired on right up to fourth thoracic segment inclusive, and on left up to second thoracic. Pressure pain, average threshold on ball of great toe, right and left, at four kilos; right calf, four kilos; left calf, 3.5 kilos.

Temperature. Heat—for 55° C., sensibility absent from level of fourth lumbar, right and left, up to the fourth thoracic segment on right and to the second thoracic (inclusive) on left. On the remainder of the limbs (L V to S V, inclusive) and on the ulnar half of the left arm, forearm and hand, sensibility was impaired; over the hypochondria on both sides sensibility was preserved for 38° C. in a few small scattered patches.

Cold. For ice, sensibility absent and impaired over exactly the same areas as in the case of heat but the level of loss upon the trunk reached only as far up as the seventh thoracic segment on both sides.

Compass tests, points simultaneously applied, showed impairment over ulnar aspect of left hand.

Reflexes. Epigastric, abdominal and cremasteric diminished on left; knee and ankle jerks equally exaggerated on both sides; trace of ankle clonus on both sides; plantar showed extensor response in all toes on left, while on the right the hallux was stationary, as the small toes fanned; flexor-flexion movements generally accompanied the extensor response of the toes.

Myotatic irritability absent in first interosseous muscle of left hand.

On July 20, 1916, examination showed the following:

Motor. Left leg, forearm and hand had improved but there was still much awkwardness and weakness; atrophy of forearm and hand still marked.

Sensory. 1, Spontaneous: heaviness and awkwardness of left leg; 2, Elicited: the most striking defect was for vibration in the left leg; no appreciable defect in left hand or arm except for the compass points simultaneously applied.

Reflexes. As on June 11th; the plantar showed frank extensor response on both sides and was accompanied by marked flexor flexion movements, the leg and thigh being lifted high off the table.

On August 5, 1917, examination showed:

Motor. As on July 20th.

Sensory. As on July 11th and in addition:

Pain. Prick, at two grams pressure, impaired, especially on left leg and foot with marked overreaction on anterior aspects of the thighs, especially on the left, threshold for pressure pain lowered on inner aspect of left thigh, the average of the algometer readings being, right thigh, seven kilos; left thigh, five kilos; overreaction, subjective (pain) and objective (flexor flexion movements), especially on the left side when the threshold was reached.

Heat. Marked impairment for 38° C. on dorsum of left foot and on outer aspect of left leg to knee; felt 55° C. as "cold-hurt-sting" on left side up to level of fourth thoracic segment, sensation for this stimulus being normal on the left over the gluteal region, and over the posterior aspect of the thigh, knee, and upper calf (sacral segments).

Cold. Impairment for ice and for 23° to 27° C. on dorsum and sole of left foot; threshold (subjective) on these parts found at 27° C., objective threshold (reflex movements) for all stimuli even for 27° C. on left sole carefully applied.

Tests for vibration and for weights (limb supported and unsupported) showed no appreciable relative defect. Tests for posture and passive movement showed some impairment on the left at the hip, knee, and toe joints.

Compass tests, points simultaneously applied, showed some defect on the dorsum of each foot; more marked on the right. Thus with the points 1½ inches apart in ten trials the answers were: for "ones" ten right on right and left, and for "twos" ten right on right and eight right on

left. With the points one inch apart for "ones" ten right on right and left foot and for "twos" seven right on left foot and none right on right. Too much reliance must not be placed on the findings in these tests as the patient was slightly fatigued when they were made. On the ulnar aspect of the left hand there was marked inability to appreciate two points simultaneously applied. Thus at half an inch apart the answers were: for "ones" eight right on right and ten on left hand and for "twos" nine right on right and none right on left hand. No relative defect was found on left hand for compass points consecutively applied. In the hand no appreciable relative defect was found for size, shape, and form. On the soles marked defect was encountered on both feet.

Reflexes. As on July 20th.

On January 5, 1918, examination showed:

Motor. As on July 20, 1917, but the muscles were not so easily fatigued; there was still some atrophy of left forearm and marked atrophy of left hand.

Sensory. 1. Spontaneous; none.

2. Elicited; touch, relative impairment for finer von Frey hairs and for the unweighted esthesiometer (pressure-touch) over left leg, back and front, to level of the middle of the buttock; localization also impaired.

Pain. For prick (algometer at two to twelve grams pressure), impairment for single and rapidly repeated stimuli over an area roughly corresponding to the area of impairment for light touch. No subjective overreaction although the flexor flexion movements were readily induced. On the calves the average threshold for pressure pain was found with the algometer to be: right, six kilos; left, four kilos; for this stimulus there was, on the left leg, marked objective (flexor flexion) and subjective overreaction with radiation and sudden entry into consciousness. For hair pulling and superficial pinching of skin, over the left leg from foot to knee, there was, as in the case of prick, impairment without subjective overreaction or spreading although the flexor flexion reflex was readily elicited.

Temperature. Impairment for 38° C., 55° C., 26° C., and ice on left leg from foot to knee; sensibility well preserved elsewhere; for 55° C. impairment; at times a trace of subjective overreaction on left calf for 55° C. For massive applications of heat at 55° C. and cold (ice), sensibility was found impaired on left calf without subjective or objective overreaction for 55° C., whereas in the case of ice, flexor flexion movements were readily elicited from each calf, the subjective overreaction being overshadowed by the limb movements.

Posture and Passive Movement. Tests showed slight impairment on the left side at the knee and marked impairment in the ankle and toes.

Vibration. Impaired on left foot and leg up to crest of ilium (inclusive), the rate of vibration of the tuning fork appearing to be faster on the right than on the left leg.

Compasses. Marked relative impairment on dorsum of left foot for two points simultaneously and consecutively applied. Thus in ten trials with the points five eighths of an inch apart and simultaneously applied the answers were: for "ones" ten right on right, and six right on left; for "twos" ten right on right, and five right on left. For the points consecutively applied at five eighths of an inch apart there were in repeated trials often as many as ten errors in ten trials.

Reflexes. Epigastric and abdominal relatively impaired on left; cremasteric response brisker on left than right with slight subjective overreaction on left; knee jerks exaggerated and equal; ankle jerks, slightly exaggerated and equal, with a trace of ankle clonus in both feet, but no true sustained clonus with the foot at right angles to the tibia. Plantar response: on right at first hallux showed no movement, while the small toes fanned; later all toes showed extensor response; on left all toes showed extensor response for the first stimulus, the outer two fanning slightly.

In attempting to map out the limits of the receptive field for the flexor flexion reflex of which the Babinski phenomenon is, according to some observers, the minimal residue (though Babinski himself main-

tains that the phenomenon is an independent reflex), it was found that potentially noxious stimuli entering the cord above the third sacral and below the twelfth thoracic segment (in some instances below the eighth), elicited the flexor flexion response. In making these tests it was found that when the stimulus was carefully applied, as the upper boundary of the receptive field was approached or entered, areas were found, e. g., at levels ranging from the eighth thoracic to second lumbar segments and especially a small area one inch above and slightly posterior to the great trochanter of the femur, in which homolateral plantar flexion of the distal phalanx of the great toe was readily elicited. When the stimulus was applied forcibly or in frequent sequence the regular flexor flexion reflex was elicited.

Summary of examination of January 5, 1918: 1. Atrophy and weakness of left forearm and of the interossei, thenar, and hypothenar muscles of hand; slight motor impairment, stiffness and awkwardness in left leg and foot which are made worse by cold weather. 2. Sensibility impaired in the left foot and leg for superficial critical stimulation (light touch, compass points simultaneously applied, etc.), as well as for deep critical stimulation (posture passive movement, compass points consecutively applied); and for superficial and deep affective stimulation (prick, hair pulling, pinching, heat, cold, vibration, etc.), with one exception, viz., deep pressure pain for which the threshold was lowered on the left calf with an occasional trace of subjective overreaction. 3. Absence of subjective overreaction for affective stimuli excepting on the left calf.

Diagnosis.—1, Crushing in of laminæ of fifth and sixth cervical vertebrae; 2, contusion of the cord, the brunt of the permanent lesion being borne by the posterior column on the left (defect in left leg for compasses and for posture and passive movement) and by the spinothalamic tract and adjacent regions on the right (defect in left leg for affective stimuli, superficial and deep, without subjective overreaction); 3, contusion or stretching of the eighth cervical and first thoracic nerve roots on the left side.

Dorsal hyperextension accompanied by lateral hyperflexion accounts for the crushing in of the laminæ and for the direct contusion of the posterior column on the left with *contre coup* of the antero-lateral column on the right. The nerve roots on both sides were contused or stretched directly by bony displacements, these latter being apparently more extensive on the left side.

The presence of flexor flexion movements (flexion of thigh on abdomen, leg on thigh, foot on leg, and toes on foot, dorsal flexion) before and after operation, showed serious interference with cord function, which in large part must have been anatomical since these movements even now, twenty-six months after injury, can be readily elicited. Flexor flexion movements are the characteristic accompaniments of lesions of the cord below the bulb that are almost, but not quite, complete transverse lesions. Such lesions give the clinical picture of *paraplegia in flexion*, first described by Babinski (1), whereas bilateral lesions, that merely involve the pyramidal tracts in the brain, brainstem, or cord give the clinical picture of *para-*



*plegia in extension.* Compare the spastic extension of the lower limb in ordinary cases of hemiplegia. Bilateral lesions involving only the pyramidal tracts give a picture closely resembling the decerebrate rigidity seen in animals after section of the brain-stem just posterior to the optic thalami. Sherrington (2) has shown that this extensor rigidity is a postural tonic reflex with its centre located in the bulb. This prespinal centre is served by afferent paths from the cerebellum, otic labyrinths, and other sources including the musculature, via the posterior spinal roots. The site of the efferent pathway is not known, but it is extra pyramidal. In gradually increasing compressive lesions of the cord before the stage of complete interruption with its abolition of reflexes is reached, there may be observed a reversion to the simpler type of phasic reflex, viz., the flexor flexion. In the present case it is evident that the efferent paths from the bulbospinal centre were injured, presumably in the vicinity of the median fissure on both sides.

The flexor movement of the hallux, elicited on stimulation above the great trochanter, represents presumably the minimal residue of the extensor thrust, another reflex that is simpler and more primitive in type than the postural extensor tonic reflex of decerebrate rigidity.

The sensory findings in the left leg indicate severance of, or marked interference with the spinothalamic pathway on the right side of the cord. The absence of subjective overreaction for superficial affective stimuli (prick, hair pulling, superficial pinching, heat, cold, etc.), clearly indicates such interference, whereas the lowered threshold and the subjective overreaction for pressure pain stimuli show that some of the pain paths escaped. The paths mediating these forms of stimulation are the last to yield to lesions, gradually abolishing function, as the author has recently pointed out. The fact that impairment for touch (superficial and deep) is more complete and extensive than for pain, emphasizes the mechanism and site of the lesion, viz., injury of the posterior column on the left, and of the anterolateral column on the right. It is only such a lesion, when small and situated at any distance below the sensory decussation in the medulla, that can give complete loss for touch in any area at the periphery. In the present instance the path for touch has been partially interrupted before and after crossing in the cord. Such an interference with the paths for touch would undoubtedly be accompanied by subjective overreaction for affective stimulation were it not for the fact that the affective paths (spinothalamic) were themselves interrupted.

Opening the dura in spinal operations is regarded by neurological surgeons as not only a harmless procedure, but in most instances a necessary one. In fact it is done practically at every operation as a routine procedure. It is claimed that in this way decompression of the cord is effected. From what we have seen of cord operations performed soon (two to forty-eight hours) after injury we have come to the conclusion that opening the dura in early operations, where the cord is seriously injured, is extremely hazardous to life. Almost without exception the patients die in two or three days. The

cause of death in these cases must not be laid to infection, but rather to some change probably of an anaphylactic nature taking place in the cord, as the result of the accession of air or of other foreign substance to the damaged cord tissue. It seems that the experiments of Allen (3) have misled the surgeons. Allen, after measured traumatization of the cord, found that if the dura were immediately opened and the posterior median septum incised the animals recovered, whereas control animals, in which the dura had not been opened, invariably died.

#### CONCLUSIONS:

1. In spinal injuries with serious cord involvement, other than that accompanied by rapidly progressing symptoms (intradural hemorrhage), early operation may be indicated provided the dura is not opened.

2. In later operations, e. g., one or two weeks after injury, the dura may be opened with safety and even benefit.

3. Opening the dura may help certain cord lesions, but it does not seem to do so by the relief of edema of the cord.

4. Death occurring a short time (twenty-four to seventy-two hours) after early operation in which the dura has been opened is not the result of infection.

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## RHYTHMICAL BREATHING.

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In a recent paper on breathing I called attention to the great value of deep breathing and to the fact that the adult or child be taught the voluntary control of the diaphragm and the internal muscles of respiration; that the volumes or currents of air may be directed through the nares over its floor or into the attic, and that at will the currents of air can expand the lower or the upper portions of the thorax. The use of the term deep breathing suggests the attainment of one end, a full expansion of the chest, which result may be attained by various forms of breathing exercises. This is undoubtedly true, but unless the proper relation in the timing of the respiratory act is also taught and mastered much energy is wasted and lack of coordination of the breathing with muscular motion may be observed; hence fatigue of not only the muscles but of the nerves results as expressed by rapid heart action and breathing, the end being the derangement of the functioning power of other organs. The dynamo of life is breathing. Powerful as is the dynamo when constructed perfectly, how useless it would be if the timing of the interruptions of the electrical current were made in a haphazard manner; it must work rhythmically always to attain its greatest efficiency. By analogy the greatest human efficiency can be secured by rhythmical breathing, the depth of the breathing being gauged by the demands made upon the body: it must always be rhythmical, however. If walking is done slowly, no discord in the

rhythm is apparent, but in running, unless trained to move rapidly, irregular rhythm gives way to shortness of breath and inability to continue such rapid motions. The shortness of breath is nature's method of restoring proper rhythm and prevents resulting injury to the lungs and heart. In other words breathing should be timed, like the dynamo, to respond rhythmically to the demands made upon it; this can only be learned by practice and training. The usual way is to train the various groups of muscles by setting up exercises and to let breathing take care of itself. Were we to begin the instruction with rhythmical breathing and develop the breathing first, all setting up exercise would not only increase muscular power more rapidly, but also the general efficiency of the whole man, brain, nerves, and internal organs. Efficiency in man represents the proper functioning of all the organs and glands of the body; this is dependent upon the proper distribution of the oxygen content of the blood and the elimination of the carbon dioxide through the lungs, which is best secured by proper breathing. This is generally ignored, the few are taught to breathe properly, the many are left uninstructed. Whereas nearly all seek, of themselves, to develop all other groups of muscles.

To breathe rhythmically one must secure absolute control of the diaphragm and the internal muscles of respiration; to learn this the cycle of the respiratory act, inspiration—pause—expiration, must be kept clearly in view concentrating upon the whole action. The length of the cycle must be short, at first, to avoid using or straining other external muscles. The advance from one type of breathing to the next must be gradual. For convenience the writer distinguishes three types of breathing: abdominal, diaphragmatic, and thoracic. These terms are arbitrarily used, founded partly on the physiological definitions of breathing and partly on the assumption that the power of directing at will currents of air into different sections of the lung is demonstrable. Abdominal breathing must be learned first; it gives control of the diaphragm and makes for more rapid progress in learning diaphragmatic and thoracic breathing.

Abdominal breathing, as its name indicates, is evidenced by the expansion of the abdominal walls; the air fills the lungs from below upward and there is a greater distention of the lower half of the thorax than the upper.

Diaphragmatic breathing begins as in abdominal, then by a stepping up process the air is directed from the lower into the middle, finally into the upper portions of the thorax, an even symmetrical expansion of the chest resulting; in this type one is prone to strain by bringing into action some of the so called external muscles of respiration.

Thoracic breathing is evidenced by the expansion, first, of the upper chest and, lastly by the filling of the lower half, the abdominal wall protruding but slightly at its termination. Spirometer tests show that the lung capacity is greater in this than in abdominal or diaphragmatic breathing.

Sitting in a chair or standing adjust the body to the erect posture, spine straight, shoulders elevated without any tension on back or pectoral muscles,

head so fixed that no strain of any of the neck muscles is felt, chin very slightly depressed, teeth a little apart; all body muscles are thereby in a state of relaxation: only thus can one give undivided attention to the group of muscles which alone are to be trained and brought into action. The relaxed recumbent posture in bed enables one morning and night to test the progress made, since some persons thus grasp the idea better and appreciate more clearly the simple movement of the diaphragm.

Each respiratory act must be timed, inspiration and expiration being of same length, the pause or interval of rest at times somewhat shorter. It may be represented as follows: Inspiration, three; pause, two; expiration, three. Count silently 3—2—3 in about eight seconds. The timed cycle will range in all breathing from 2—2—2 to 8—8—8. In learning abdominal breathing pay no attention to the amount of visible expansion of chest. The lower portion of the thorax alone rises and falls during these earlier efforts when the excursion of the diaphragm is so short. To begin, the cycle is 3—2—3, expiration being purely passive. By concentrating the mind upon each act of respiration and avoiding all upper chest breathing one will appreciate after a few days' practice what the motion of the diaphragm, when called upon to act voluntarily, implies; all efforts to exceed this small movement of the diaphragm in its downward and upward excursion will produce tension and strain of other muscles resulting in a visible expansion of the upper chest, which must be avoided. In drawing the air into the nose one will learn by practice how to roll the currents of air over the floor of the nose, producing thereby a nasal resonance. This sound is a proof that the nasal and throat muscles are in a state of complete relaxation. Nasal resonance of abdominal breathing differs from the resonance produced by thoracic breathing. Three minutes devoted to these earlier efforts four or five times daily suffice; later, more time is required when breathing exercises are added; too prolonged effort produces fatigue and diminished concentration and tends to discouragement. The next step shortens the cycle to 2—2—2. By this quicker and shorter breathing one more fully appreciates that the diaphragm possesses the power like all other muscles of voluntary responding to separate stimulus. By successive steps the cycle is lengthened to 3—3—3, 4—3—4, 4—4—4, and so on up to 8—8—8. When one reaches 6—6—6 it is proper to begin to learn diaphragmatic breathing.

Pumping with the diaphragm is practised in abdominal breathing and carried out by the quick forcible contraction of this muscle during inspiration.

The rhythm of diaphragmatic breathing differs from that of abdominal breathing. To secure this rhythm begin as in abdominal, counting two, then by a stepping up process expand the middle and upper chest, counting two at each step, pause counting three—expiration of same length counting six; passive throughout without using abdominal muscles. When fully carried out the result gives the best example of full deep chest breathing. The currents of air are directed into the lower, then the middle, and



lastly the upper portions of the lung, until the chest is wholly expanded; in other words diaphragmatic breathing in a sense combines both abdominal and thoracic at the beginning and ending of the respiratory cycle. Great care must be taken not to use the external chest muscles in the middle and upper chest expansion. Rhythm of second cycle corresponds to a count of two as in abdominal breathing, three for middle, three for upper chest expansion—pause and expiration of same duration, namely, six. In all subsequent cycles count two as in abdominal and progress to 4—4, then to 5—5. The currents of air pass chiefly over the floor of nares as in abdominal breathing.

With the full understanding and mastery of diaphragmatic breathing one should be able, after complete full expansion of the lungs, to perform short abdominal breathing while keeping the upper chest fully expanded.

Rhythmical thoracic breathing can now be easily understood and carried out since it is the natural effort of every one, when asked to take a full deep breath, invariably to use this type of breathing. In performing it one first notices the difference in which the air passes into and up through the attic of the nose; the louder nasal resonance produced by the other types of breathing is changed to one of a lower softer tone, i. e., one cannot produce the same volumes of nasal sound with this method as with the others.

Many teachers begin their instruction in deep breathing with the thoracic type of breathing. Better results can be attained by following the method above described; pupils make slower progress in their earlier instruction, yet when fully comprehended, the power, the uses and control of the diaphragm are more readily applied.

The cycle can begin with 4—4—4 and be very quickly lengthened until 8—8—8 is counted and it is only at the very close of a full deep thoracic breath that a slight abdominal effort is made causing a slight protrusion of the epigastrium. For rapid quick filling of the lungs thoracic breathing is best. Spirometer readings show that a larger volume of air is always expired after a deep thoracic breath than after the other types. Abdominal breathing records the smallest—diaphragmatic somewhat less than thoracic.

Breathing exercises should be begun when one has attained an abdominal breath cycle of 4—4—4; these must always be rhythmical, all the movements of the extremities or trunk being timed to correspond to the breath cycle. Each exercise begins with the inspiratory act, during the pause the muscles remain in their extended position, resuming the original position at the end of expiration. The pause may be shortened, if desired, to one half of the duration of inspiration.

Until proper rhythm is secured all exercises must be timed slowly. Later when they are done rapidly the value of this method is shown by the ability of the pupil to exercise harder and longer with less fatigue and by the effect upon the heart, which often shows a lower pulse rate. When one is in perfect physical condition one can perform the same motion almost indefinitely without fatigue.

Many years ago the writer read a statement that in climbing a hill or going upstairs dyspnea could be avoided or lessened by breathing in on advancing the right foot and breathing out when the left foot is advanced. He tried it and it worked not only with himself but especially with delicate patients. This is simply rapid rhythm of breathing. For a longer rhythm breathe in when advancing the right foot for the third step.

Besides the beneficial influence of rhythmical breathing upon the musculature and the cardiovascular system, all patients have noted that their mental powers of concentration were increased; the effect upon the neurasthenic has been to increase his powers of self control and several have stated that in using a certain type of relaxing breath sleep could be induced in a short period of time. All these patients had previously relied upon veronal.

The effect upon these patients and upon the asthmatic has enabled the writer to dispense with the use of those drugs which physicians oft times dread to administer because of their habit forming tendency. Two asthmatic patients, of whom each used daily six to eight hypodermics of adrenalin, stopped using any, one in a few weeks' time and one in a few months. Other patients have been enabled to ward off the spasm of asthma by the muscular use of the diaphragm.

From personal use and the application of the above described method and his observation upon the results secured by others during the past four years the writer has concluded that physicians can do much for the betterment of the health and also the efficiency of individuals by directing their attention to the great need of physical training of the respiratory muscles at all ages. For the neurasthenic when inspired by your personality to faithfully learn and carry out the method, not only has his general well being improved but also regains his self control by doing light and easy daily tasks. To the asthmatic you give the power of voluntarily overcoming the tetanic spasm of the diaphragm, which x ray pictures reveal is nearly motionless. This power also enables him to abort the spasm. Having witnessed these results I have thought it worth while to place before you in detail a full description of the method of rhythmical breathing.

421 SECOND STREET.

## SOME PHASES OF MEDICAL INSPECTION IN PUBLIC SCHOOLS.

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At no time in the history of civilization has the development of the growing generation assumed the importance that it has today. The wholesale slaughter on European battle grounds makes it imperative that we train a body of healthy and vigorous children to take their places. The need of expert supervision of the physical health and development of children was recognized before the war; in fact, a law was enacted and has been in force for four years making this supervision compulsory. A good

law, but the reaction to and practice of the law by our profession are deplorable.

We face with alarm the percentage of rejections among army and navy recruits. The figures run all the way from forty to seventy-seven per cent., and the majority of these men are between the ages of twenty-one and thirty-one, the height of physical vigor. The causes of rejection show that between sixty and seventy per cent. are from preventable diseases. We have all read that the percentage of rejections was higher from the country districts.

Prior to obtaining this data, much had been learned by the writer from personal inquiry and discussion with teachers and physicians from different parts of the state, but, in order to determine as nearly as possible the present *status quo* of medical school inspection throughout the state of New York, a questionnaire was sent to all the school superintendents of New York State by our superintendent, Mr. Roy B. Kelley, of Solvay. The questions asked and results obtained are included in this report:

Does the school doctor make the chest examinations of the children with the clothing removed from their chests and backs?

Answers: Yes ..... 15      Remarks: In many  
No ..... 47 cases, "Clothing is re-  
In part..... 5 moved only after par-  
In suspected cases.. 11 ents' consent."

Is the weight of each child recorded?

Answers: Yes ..... 59      Remarks: "Is it of  
No ..... 13 value to record  
In part (estimated). 6 weight?"

Is the height of each pupil recorded?

Answers: Yes ..... 63  
No ..... 12  
In part (estimated). 3

Is the community convinced that the results obtained are worth while?

Answers: Yes ..... 30  
No ..... 14  
In part..... 25

Is the work of the doctor followed up by the nurses?

Answers: Yes ..... 55      Practically all an-  
No ..... 22 swers in the negative  
In part..... 1 are followed by the  
comment, "No school  
nurses are employed  
and the follow-up  
work is done by the  
doctor, with the as-  
sistance of the fac-  
ulty."

Is this follow up work securing satisfactory results?

Answers: Yes ..... 48      Remarks: Where  
No ..... 17 answer is "No," the  
In part..... 13 reason given is either  
"No nurses are em-  
ployed" or "Insuffi-  
cient force of nurses."

Do the school nurses visit the homes in doing follow up work?

Answers: Yes ..... 56  
No ..... 17  
In part..... 5

#### General Remarks.

"Need of more nurses to make follow up work effective."  
"Follow up work is the most important branch of medical inspection."

"Much medical inspection is largely formal."  
"Much medical inspection work is done only to cover requirements of the law."

No data were obtained from New York city for

the reason that the writer enjoyed the privilege of a visit to the schools in that city and watched the examinations. Mention will be made of their methods later. The seventy-eight answers received do not come from that number of schools, but from seventy-eight school systems under the supervision of these superintendents, and includes the majority of the schools of the state. It is therefore comprehensive and, I believe, of value.

The first question asked: Does the doctor make the chest examinations of the children with the clothing removed from their chests and backs? The answers show unwarranted neglect. Of course, there is no object in making an examination of a child's lungs and heart with the child partly undressed. All manner of confusing sounds are elicited by the rubbing of the stethoscope on the clothing, and again by the rubbing of the clothing on the chest wall. Therefore, the five cases may be classed with the forty-seven making a total of fifty-two school systems (not fifty-two schools) where no examinations of the lungs and heart are made. The eleven cases where examination is made in suspected cases is a little better, but still far from satisfactory. One examiner who is a full time man and does only school work, makes the claim that he can pick out the cases in a schoolroom that require chest examination. This is absurd. He can pick out cases of malnutrition by inspecting a schoolroom, but tuberculosis does not produce emaciation in children in the early stages of the disease. True, the malnourished child is more liable to any infection, but the incipient tuberculous child is often not malnourished.

The hectic flush cannot be used to pick these cases, and will only give the child a more complete picture of perfect health. I have repeatedly been surprised both in school, dispensary, and private practice to find active tuberculous cases well nourished and of healthy appearance. This will apply equally in cases of heart disease. Of course, the cases with broken compensation will complain of fatigue, vertigo, etc., and will frequently lean over their seats in the schoolroom. These cases may therefore be found, but is it not just as important to find these cases of valvular disease before the compensation is broken; acquaint the parents with the true condition and have the family doctor teach the parents how the child should live to avoid using up the heart reserve. I, therefore, feel justified in placing the eleven with the fifty-two school systems, making a total of sixty-three school systems or sixty-six per cent. of the schools in the State in which the children are allowed to attend school from year to year without an examination of lungs and heart.

There are three excuses offered: None of these will stand the test of experience. That it is against the law; that there is not sufficient time; that the time required for a competent chest examination is too great to make the procedure practicable.

A quotation from the school law will clear up the first objection, "A health certificate shall be furnished by each pupil in the public schools upon his entrance in such a school, and thereafter at the opening of such schools at the beginning of each



school year. Each certificate shall be signed by a duly licensed physician who is authorized to practise medicine in this State, and shall describe the condition of the pupil when the examination is made which shall not be more than thirty days, etc. . . . If the pupil does not present a health certificate as herein required, the principal or teacher in charge of the school shall cause a notice to be sent to the parents of such pupil that if the required health certificate is not furnished within thirty days from the date of such notice, an examination will be made of such pupil as provided herein."

A prescribed form of certificate is contained in the law requiring a recorded examination of the following: age, sex, height, weight, lungs, heart, glands, hernia, digestion, nose, throat and teeth. This makes the duty of the examining physician and the scope of the law quite plain. It also shows that it is lawful to make an examination of the lungs and heart. Of course it follows that no examination of the lungs and heart of a child can be made without the clothing removed.

The excuse that the parents will object is largely hypothetical and presents no serious trouble in practice. A hypersensitive parent will occasionally be encountered, but these have recourse to their family doctor or they may be present at the school while the examination is made. This occurred in several instances during the first year that I made the examinations. When the parents see the manner in which the examination is made and the object is explained to them, they will be pleased and will go away to boost for the work. The next year no trouble will be encountered from them, and they will have their children examined at the school.

Systematic routine is the answer to the next objection. In our work we regularly examine children in time ranging from a minute and a half to three minutes. More time than three minutes is rarely taken. This includes an examination of all the organs mentioned above, with the exception of the eyes. The eyes are examined separately, to save time. Now I hear critics saying that an examination cannot be made in that time, and that it requires half an hour at least for a competent examination of the lungs alone. That is partially true. An internist will spend more than an hour in many cases in making a chest examination. But I believe that the man who makes the above objection has the wrong conception of the duties of the medical inspector and a wrong version of the object of the law. We are not working in the school building as internists, nor as expert diagnosticians. If we did, we would overstep the boundaries of our requirements and we would do an injustice to the medical profession as a whole and to the family doctor in particular.

The internist will spend time on chest examination, in inspection palpation, percussion, auscultation, sputum tests, von Pirquet, x ray, family history, etc. These tests may be necessary in order to reach a correct conclusion. To expect the school doctor to make these examinations is absurd. All he has to say is that this child has some trouble with his lungs and the parents are advised to consult the family physician. We are in the school for just one

purpose, and that to separate normal children from abnormal and to see that the family is acquainted with defects found. The rest of the work lies between the parents and the family doctor. We do not examine a chest to determine whether the lungs are affected with chronic bronchopneumonia or tuberculosis, nor are we to differentiate asthma from bronchitis. That is none of our affair unless the disease is of a contagious nature.

There is much difference of opinion in the matter of weight. This is difficult to understand, since the weight of the child and its variance from year to year is a valuable means of determining the condition of his health and his rate of development. In sending out our notice to the parents, weight of the child is always considered. If a child is normal in other respects as far as could be determined by the examination, but the child's weight has remained stationary, or has decreased from the previous year, we know that he is not normal, and the family is notified.

This is very valuable in keeping the children well, and acts as a check on our examination work. It is illuminating to see the reaction of the family to this notice. They will often take the child to a doctor for a careful physical examination, and in case nothing is found will begin feeding and tonic treatment, with the result that the child will soon show improvement. In the light of these results obtained by so small an effort on the part of the examiner, it is difficult to understand the attitude of the physician who says that weight records are of no value, that they consume valuable time, or that scales are too expensive.

Out of the seventy-eight school systems, in fifty-nine the weights were taken, in thirteen they were not taken and in six taken in selected cases. In these cases, I believe that it is possible to select the children that require weighing for malnutrition, but, if routine weighing is not carried out, the objection that there is no data for comparison from year to year is too serious to neglect a procedure demanding so little effort.

In some cases, notably in New York City, the nutrition of the children is recorded by the Dunfermline scale which places all children in the following classes as regards nutrition: The normally or excellently nourished; the passably nourished; those needing careful supervision; those needing actual medical attention. This system of grading children is good but has several objectionable features. There is no exact record of weight and it is impossible to tell whether a child has made a normal gain from the preceding year. Moreover, the individual variance of opinion of different examiners is too great. Furthermore, any examiner will find that his judgment will vary from day to day depending on whether he is feeling buoyant or whether he is "down in the mouth." I have checked my daily opinions from day to day by weighing, and found this to be true. I believe that the nutritional data are as valuable as data concerning the condition of the tonsils and adenoids. The tonsil data are never neglected, especially if the examining physician is skillful in removing them. I am an advocate of tonsil removal in selected cases but I feel that too

much energy is expended in these cases in proportion to the consideration of the child's nutrition and his physical growth and development. The height being a measure of development should be taken for the same reasons as the weight.

In fifty-five school systems, the work of the doctor is followed by the nurse. This means in fifty-two per cent. of the schools. It should be done in 100 per cent. There is little accomplished in school inspections if the cases are not followed to the homes. Of course, no doctor can give the time this work requires and the faculty is, not qualified to do it.

The answer to the next question depended on whether a sufficient corps of nurses is employed to care for local conditions.

In order to develop a competent and effectual school inspection system, it is necessary to have a sufficient force to handle the local problems. It has been estimated that one physician should be employed to every 3,000 pupils. No physician should be asked to examine more than 2,000. Too much work encourages and makes necessary slipshod methods. He should be compelled to do his work well; he should also have supervision over the work of the nurses, dentists, and other working forces employed and should be responsible to the school superintendent. It will be found that a physician who confines his efforts to pediatrics or, at any rate, to medicine, would be the man best qualified for this work. I believe that surgeons are liable to over-estimate the importance of surgical conditions to the neglect of medical diseases.

I have allowed five minutes as the estimated time for examination, since there is much difference in the rapidity of movement of different men, and some might fail to systematize their work sufficiently to save time. However, I repeat that five minutes is more time than is necessary if the work is properly systematized. One nurse would be kept very busy taking care of the follow up work and class room inspections for this number of pupils, and two should be employed. However, one would be able to procure excellent results. A dentist should be employed, with his office in the building. Working a limited number of hours at the building each day, wonderful results will be secured.

Our medical inspection work is conducted in the schools of Solvay, N. Y. There are registered 1,450 children ranging from the kindergarten through the high school. We have an unusually complete equipment and a strong working force. This has been made possible because the system is financed in a large part by the Solvay Process Company. We have one physician working five days each week; two dentists working respectively fifteen and eighteen hours each week; a dentist assistant working thirty-three hours each week; one ophthalmologist who takes care of all refraction work in the school; two nurses doing school work, and one nurse who has charge of the baby welfare work done through the schools. These nurses give full time. We are therefore able to take the best care of our children.

We use the following routine in making examinations. Each pupil is received with the chest un-

dressed down to the waistline. The age and grade are taken, the child then passes before a measuring stick placed on the wall. The child is weighed. The mouth is inspected, examining the pharynx first and then the teeth. A wooden tongue depressor is used to depress the tongue. The hands are now passed along the sternomastoid muscle to determine the condition of these glands and along the back of the neck for the same purpose. The hearing is tested by the whispering method. The watch was discarded for this purpose because of the habit of all children to answer questions in the affirmative. Any number or word may be used, and the pupil will answer promptly, providing his hearing is acute.

The examination of the lungs consists of at least six auscultations in the front. These are made in the supraclavicular spaces at the region of the third ribs and in the axillæ. As the auscultation is made, the examiner will take a long breath which will immediately be imitated by the pupil. One of the proclivities of childhood is imitation, and it is rarely necessary to tell the child to follow the example. Percussion was used as an aid in examining the lungs. After making 2,000 examinations, it was abandoned, since auscultation was found more valuable and the results of percussion were too doubtful to be relied upon. Each valvular area of the heart is then auscultated and the child is reversed. Auscultation of the lungs is repeated in the back in the same manner. The same number and relative examinations are made as in front.

As stated above the time required for this examination varies between a minute and a half to three minutes. Much time may be saved by following a given routine of examination as outlined above and by having your subjects ready with the chests bare, thereby saving any waiting between the examinations.

At the close of each day's work, cards are sent home to the parents acquainting them with the condition of the pupil. In cases where the examination reveals no abnormality, this fact is stated. I believe this is of equal importance, for parental pride will react toward the correction of defects where comparison is made with a normal sister, a brother, or a neighbor's child.

If nothing is done by the parents toward the correction of these troubles within two weeks, the school nurse visits the home to discuss the case. The result of the conference is recorded on the card under its date for future reference. The parent is always advised to consult the family doctor, and, if he cooperate, little difficulty is experienced in correcting the defect.

Much time may be saved the doctor if the details of this examination work are done by some assistant. In our system, the nurse acts as the assistant. She organizes the order of examination, aids the children in undressing, marks the record cards and sends the reports to the family. A teacher or one of the older pupils could be used for this work or the physician could do this himself. However, the physician's time can be used to better advantage than in detail work. Of course, it is necessary that some woman be present while the



girls above the age of adolescence are examined. If possible, it is much better that the nurse be employed, for the physician can give her valuable instructions in selected cases which will greatly aid her in following the case to the home.

Special cases have been treated in the following manner. In refractive errors in vision, notice has been sent the family and advice to consult an eye specialist. In the vast majority of cases this has not been done, generally for financial reasons. In case the family could not afford to have this done, the eyes have been refracted at the school building. Dr. Roy Moore has been employed for this work by the Solvay Process Company. In the majority of cases the parents furnish the glasses. In this manner, we have been able to place 108 pairs of glasses in 112 cases in need of refractive correction. This is ninety-six per cent. efficiency.

Of equal interest is the care and treatment of teeth. When the dental clinic was first installed, only those were treated which were discovered by the examining physician to be serious. With the addition of a second dentist, it was possible to take care of these cases and also devote more attention to the prevention of dental trouble.

To this end, a careful examination by the dentists of all the children in Boyd School from the 2-2 to 7-1 grades inclusive was recently made. The conditions found were astonishing; particularly so, since there is no reason to suppose that children in this school differ from children everywhere.

The results shown by the examination were:

Number examined.....	476
Number needing dental attention.....	460—97%
Number with serious molar defects.....	120—25%
Number with other serious defects.....	75—15%
Total with serious defects in one elementary school .....	40%

Certainly, the need of careful dental examination and treatment of school children is imperative.

The cases of enlarged tonsils presented our most difficult problem. There were 274 cases in 1,378 examinations which is about one case out of every five children; ninety-two have been operated, a percentage of thirty-three.

In making daily examinations of the chest, numerous children have been found presenting areas of bronchial breathing and râles of varying character. In order to save time and to prevent unjustified alarm, we have instructed the nurses to take the temperature of each of these cases every afternoon and record them. The chest is then reexamined in a week's time and if these signs persist or if the temperature is found to be above normal, the child is sent home with instruction to consult the family doctor. In this manner, we have been able to find fourteen cases of pulmonary disease, the majority of which I believed to be tuberculous. Three of this number were proven to be tuberculous by sputum examination. In none was there any suspicion of the child's condition in the minds of the parents. The importance of this phase of the work cannot be overestimated not only in the future of an afflicted child, but also in guarding other children from infection. The result of the close association of normal children with tubercu-

lous ones having a positive sputum is obvious. It is surprising to learn the number of children who have had valvular heart disease and still more of a surprise to find the number of parents who are unaware of it. Of course, it is important in these cases not to mistake functional murmurs with those of an organic nature, but, having decided that a given murmur is organic, surely the parents should be notified. In these cases, we have not sent the notices to the home, but have sent the nurse to personally notify the parents. We have done this in order not to cause undue alarm. We have told them that there is no active heart disease and have asked them to consult their doctor for advice in protecting the child's heart reserve. We have also advised these children concerning their choice of occupation, a matter of great importance.

Malnutrition in the absence of an evident cause is considered a defect. The parents are advised that their child is undernourished. They are also advised to procure a more extensive examination than that given in the school and to give the child a nourishing diet, excluding coffee and other stimulants. In case that he should not respond to the parents' efforts, the case is placed in the nutrition class of the school. Each child in this class is given a bowl of oat meal and milk at 10:00 a. m. and a glass of milk at 3:00 p. m. We take weekly weighings of these cases and chart them. These children belong to the group called the pretuberculous group. They are badly nourished, with lowered resistance to disease, and the work done is very valuable in lowering mortality figures. After reaching normal weight, they are taken from the class and the weekly weighings continued. Many will continue to gain after they have been taken from the class.

The school work in New York City is very good. The examination work is nearly the same as described above with the exception that the height and weight records are not kept. I believe that the examination work would be better systematized, and that the height and weight could then be taken without the expenditure of more time than is now used. The nutrition is judged by means of the Dunfermline scale. However, the work there is much better than in any other place in the States of which I have personal knowledge.

The following conclusion may be drawn: First, the medical school work as practised in the State of New York at present, in the majority of schools, is of little benefit; second, that positive harm may be done by a slipshod method of examination, since parents will rest assured that their child is in normal health, having been examined by the physician and no defects reported; third, that no child should be allowed to attend school without an examination of heart and lungs with the chest undressed; fourth, that there should be a uniform method of examination adopted throughout the State following explicit directions; fifth, that a dental clinic should be attached to every school; sixth, that school nurses should be employed and, seventh, that the same record cards should be used throughout the State in order that the data may be used for statistical purposes.

131 SOUTH AVENUE.

## CAN FLAT FOOT BE CURED?

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Personal experience would lead me to say yes; certainly I have seen patients with impaired arches restored to normal. Perhaps certain lamed individuals may not have become as sound and enduring in their feet as some others. If taken early enough and adequately trained, all weak arches could be made strong arches. Young men with dropped arches can certainly be vastly improved. Weak arches in older sufferers may be much ameliorated.

The whole subject seems to focus itself on the biological fact that the foot was and can become again a prehensile organ, and defective arches be made to disappear in proportion as the foot can be restored to its prehensile capabilities. Hence curative measures should be chiefly means of reacquiring the primal power of prehension and flexion.

The use of some support may be desirable, even necessary for a time, but only until the foot becomes strong enough to need no artificial pediment and to perform its own natural function, i. e., to hold the full impending weight of the body. Do surgeons put a splint on a sprained wrist or ankle and keep it there indefinitely? Certainly not; nor do orthopedists use braces except to enable the weakened parts to do normal work and by constant exercise regain tone, power, and neuromuscular competence.

Most arch supports ordinarily employed simply render the plantar structures weak, even useless; soon or late they become atrophied. The last state then becomes worse than the first. Note those old men who tinker with diverse foot props. They hobble along as if they had ingrowing heels, with toes turned up, treading on a solid peg foot; the normal action lost. In addition, they turn their toes widely apart. It may be funny while the foot can still do fair work, but it is anything but funny when it no longer can carry a man wherever he desires to go.

The only form of artificial adjustment I have ever found safe and really capable of aiding repair is that "elevation" described by me in the *NEW YORK MEDICAL JOURNAL*, November 10, 1917. I am inclined to believe this hollow heel with a slight elevation just anterior to the calcaneum is a desirable addition to any shoe. It permits the os calcis to rest comfortably in its normal position, leaving the whole foot free to function normally, and holding it back from the compressing action of the front part of the shoe on the toes.

The following are some recommendations derived from thirty years' experience in repairing arch anomalies: On examining the foot one of the first points often observed is that the metatarsophalangeal joints are abnormally rigid. This rigidity must be overcome by persistent and skillful manipulation, bending the toes down till gradually the normal flexor action can be performed. At the same time the toes should be forcefully widened, i. e., separated and stretched apart, until with the foot resting on a step or raised surface the toes can be bent

at an angle of ninety degrees, i. e., from the horizontal to the vertical. On standing on a step the toes should be made to touch the upright (vertical) surface below them. This facility, passive though it be, is only acquired after months of careful molding and mobilizing.

At the same time the patient should make voluntary efforts to perform flexion acts, i. e., to bend down or flex the toes as nearly as possible to an angle of ninety degrees. This movement is a normal but long lost flexor function. When flexion can be readily performed daily, the arch has become practically normal. Power will be increased by performance. There are in addition many other accessory movements of equal importance. Among these are placing the bare foot on the floor about twenty inches in advance and then pressing down with the toes, drawing the foot toward one at the same time rotating it inward, describing the quadrant of a circle. Of course this involves work, hard work, but the price of emancipation from any protracted motor disability is vigilant and persistent correction of faulty action.

In reading the voluminous literature on flat foot there will be found, along with trivial, confusing, and misleading suggestions, many valuable hints. The weakness of the presentation lies chiefly in the general failure to appreciate the obvious biological fact already emphasized and which is the basis of remediation.

The foot is by original conformation closely analogous to the hand. Through ages of disuse civilized man has lost pedal flexor function which under any circumstances is very much worth regaining; as I have demonstrated to my own satisfaction. Many Indians (especially the Stoney of Alberta), have excited my admiration by their prehensile action in climbing mountains. They quietly and lazily lounge ahead of the sturdiest and cockiest white guide, while the degenerate city sportsman is left far behind or is patiently waited for.

The modern shoe splints, immobilize and weaken this basis of locomotion until the foot is wholly out of function. To regain this primal function is worth effort. The road to success is persistency and consistency in treatment, with an earnest and cordial cooperation between adviser and patient.

1504 PINE STREET.

**Fractures of the Elbow.**—Jacob Grossman (*Interstate Medical Journal*, June, 1918) advises an anesthetic where possible for reduction of fractures of the elbow. The reduction is accomplished by flexing the elbow at a right angle and making extension with one hand while the fragments are manipulated into position with the other. Acute flexion is the only position likely to maintain the fragments in good position. The forearm should be fully supinated and the elbow flexed as far as it will go. This flexed position is maintained by adhesive strips and flannel bandages, then the arm is placed so that the hand rests on the opposite shoulder, and the elbow is carried forward on the chest. Passive movements are begun on the tenth to the twelfth day.



## THE SYSTEMATIC DEVELOPMENT OF X RAY PLATES AND FILMS.

BY MILLARD B. HODGSON,  
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If the delicate nature and extreme sensitiveness of photographic materials were better understood, there would probably be fewer poor negatives in all branches of photography. In average amateur photography of the better class the operator is usually an enthusiast who has gone to considerable trouble to inform himself of the nature and possibilities of the materials with which he is working. With him it is a recreation. In the case of professional work, the photographer is usually one who has spent years in photographic practice.

With the average radiographer, however, photographic processes are but a means to an end and are very seldom considered as they should be. He fully understands the technic of taking the picture and he is able to interpret radiographs correctly, but too often he loses the efficiency that this knowledge should give him by faulty photographic work.

Few average radiographers have proper darkrooms. Any small cupboard or room may be made into a proper darkroom by observing a few simple rules. First, all cracks and holes for the entrance of outside light should be carefully plugged up. This done, the room should be illuminated by light of photographically safe quality. For a safelight of very moderate cost the Brownie safelight lamp is ideal for a small darkroom. For larger rooms, the Kodak safelight lamp or the Wratten safelight lamp may be used. Any of these lamps will provide illumination of safe quality. A convenient bench should be at hand for the manipulation of trays or tanks containing developer, wash water and fixing bath, and, if possible running water should be accessible.

Development is rarely considered as the chemical reaction that it is. The reduction of the photographic image to a silver deposit giving the finished image is a process of extreme delicacy. There is the utmost need of cleanliness, as with any other delicate chemical reaction. There should be a constant condition of temperature, purity of chemicals, and precision of timing. To eliminate difficulties in development so that the operator does not have to be a trained chemist to obtain good results the Eastman Kodak Company has prepared certain kinds of developing powders which are of the proper purity and have been precisely weighed. These may be mixed properly by any one if a simple direction sheet is followed.

After the completion of the development of the image, which is one chemical process, another chemical process must take place before the negative is complete, that is, the plate must be fixed, to remove unused and undesired materials. Before using an apparatus in any chemical operation, it is good practice to wash it thoroughly. The same rule holds good in the case of the photographic plate, which should be washed after the first chemical process (develop-

ing) and before the second chemical process (fixing) is performed. Now the finished image consists of a metallic silver deposit, the image, in gelatin. These materials in a dry state are relatively permanent. It is to render them so that all the chemicals which would affect this condition of permanency should be removed by thoroughly washing after fixing. The negative should then be dried in a place where there is no dust.

If these rules are adhered to, that is, 1, development under standard conditions for a fixed time, 2, proper rinsing between development and fixing, 3, thorough washing, 4, careful drying, all negatives that are reasonably exposed should be good negatives. A comparison of the work of individuals using this system, with others using haphazard methods, will be sufficient to prove the point.

## THROMBOSIS AND EMBOLISM.\*

BY H. R. COSTON, M. D.,  
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Thrombosis is the coagulation of blood, usually in a vein or artery. Embolism is the obstruction of, or presence in, a bloodvessel of a foreign body, a clot, a vegetation from a valve of the heart, or any floating or adventitious material in the blood stream. Thus a thrombus becomes an embolus after its detachment.

The following three cases illustrate the formation of thrombi. In Case I a patient with thrombosis of the ovarian vein was operated upon and resection was performed, but the patient died of septic pneumonia one month after delivery. Case II illustrates a thrombosis of the mesenteric vein. The patient died in twelve hours. Case III shows a venous embolus occurring in a patient after labor.

CASE I.—Mrs. H. G. H., aged twenty-eight years, has had premature labors at six and eight months. This, the third pregnancy, went to full term. The labor was short and easy; only a few minutes after I entered the room the child was born, in the left occipitoanterior position. The woman gave a history of severe pain in the right iliac region for the past five months. Four hours after delivery I visited her again and found her suffering severely with what she supposed were after pains. But she had a temperature of 102° F. The temperature continued to fluctuate; sometimes it was as high as 106° F., sometimes normal. The uterus was movable. I made a diagnosis of appendicitis which was concurred in by Doctor Prince with the suggestion that possibly we would find a thrombus of the vein. This suggestion was found to be correct upon operation and the tuboovarian vein was removed up to the vena cava. The abdominal walls were very thick; the woman weighed over 200 pounds. She was profoundly septic.

I began the use of sodium cacodylate in large doses—as much as fifteen grains daily. The patient died of septic pneumonia one month after delivery.

CASE II.—J. E. A., male, aged sixty-two years, had been an active man all his life, with no illness until six weeks ago, when his heart began acting badly. Under strychnia and digitalis he had been much better recently. On the afternoon of the 24th he took calomel and followed this with sal hepatica. The following morning he had several very loose movements of the bowels but had no pain or

\*Paper read before the Jefferson County Medical Society, May 10, 1918.

vomiting. At 5 p. m. he had a "tarry" stool with exceedingly great pain in the abdomen and was almost in a state of collapse. Doctor Love, who saw him at this time, said he looked like a dead man. He had at that time one fifteenth grain of atropine, and between that time and 8 p. m. of the 26th, one and one half grain of morphine. I saw him with Doctor Love at 8 p. m. on the 26th. He was rolling from side to side in agony but there had been no movement of the bowels since the tarry stool the preceding evening. The abdomen was tender all over and but slightly distended. Vomiting had occurred during the past twenty-four hours, at first of a bilious character, but now with a distinctly fecal odor. Rectal temperature 101.5° F. Pulse 130. Pain was intense. There was occasional vomiting. A large quantity of urine was voided but the specimen looked to the unaided eye as if it contained blood. Pain was worse around the umbilicus and in the lower abdomen. The man was manifestly in a very serious condition. Dr. Cunningham Wilson was called in consultation. All agreed that there was intestinal obstruction of some kind. I expressed the opinion that it was thrombosis of the mesenteric veins. At the operation by Doctor Wilson, this was found to be the case. He removed some five feet or more of collapsed, black, small intestine. The patient died twelve hours later.

My diagnosis of thrombosis was based on the following data: Intense pain, all over the abdomen, a single tarry stool, and collapse. The history of perfect health, and particularly no history of indigestion, and vomitus free from blood, eliminated gastric and duodenal ulcer. The history of the case, with no previous infection, the character of the pain, and the tarry stool excluded gallstone. Bands and adhesions were ruled out because there had been no illness to produce them. Appendicitis should have given an entirely different history and no hemorrhage. As regards Meckel's diverticulum, there had been no previous attacks of colic. Concealed hernia would scarcely have produced such violent pain so abruptly; would not have had so serious a hemorrhage, with no further movement of the bowels; and there probably would have been a tumor, detectable somewhere in the abdomen.

CASE III.—Patient, Mrs. W. H. B., aged thirty-six years. She had had five children. Sextipara. Unusually large and tortuous varicose veins of each leg. The child was born after a very easy and quick labor at 6:15 p. m., September 20th. On September 21st, 8 a. m., the patient was sitting up in bed, and was warned to lie down and remain still. On the morning of September 22d the patient was found sitting on a chair and was again warned of the danger of being up and particularly that the legs were liable to give her trouble as the veins would not return to their natural size with her in the upright position. On September 26th she walked to the door, warned in the presence of her husband that she was liable to have an embolus with death as a result. She said that she never felt better in her life and that it was a punishment to make her remain in bed. Hard nodules could now be easily felt in the veins of the legs.

September 28th, 8 a. m., the patient had no fever and begged to be allowed to get up. Permission was refused. At 2 p. m. of the same day I was called hurriedly and reached her in a very few minutes (certainly not over ten minutes) and found her *in articulo mortis*. Death resulted in five minutes.

There were no symptoms indicating that the embolus had passed through the chambers of the heart to the lungs, the heart was simply wearing itself out on an obstruction. This obstruction came either from a uterine sinus or from the varicose veins of the leg. There had been no indication of disturbance in the uterus; but hard nodules had been detected in the varicose veins two days previously.

## MILK AS A GALACTAGOGUE.

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Some months ago our attention was called to an article in this journal entitled, *A New and Powerful Galactagogue* (1), in which a certain amount of indirect evidence was presented to show that milk from a newly parturient person or animal when injected into itself acted as a powerful galactagogue. We were interested especially in that portion of the article which recommended that such a treatment, "be brought to the attention of the cattle raisers, stockmen, farmers, dairymen, etc.," and also that, "practically every cow be thus treated to insure her doing her duty toward supplying milk." To this end it was suggested, "to inject each cow with a half ounce or more of her own milk on the third, fifth, and tenth day after delivery." The statements were also made that, "We never know whether a cow is supplying her full quota of milk until after the treatment is given," and that, "If she is not, this treatment will speed up quickly the supply of milk until it reaches the maximum capacity."

If milk is indeed such a powerful galactagogue as these statements indicate it is patent that a discovery has been made, the practical value of which can hardly be estimated. Many investigators have sought for such a substance. It is apparent, however, to any one who has had occasion to follow closely the normal milk production records of dairy cows that the method suggested in the article for judging the galactopoietic powers of milk is open to serious criticism. Not only is it impossible to predict with certainty in advance of parturition what the maximum milk producing capacity of an individual cow is going to be, but it is well known that even under normal conditions this maximum is never reached until a number of days, frequently several weeks after parturition. When these well known facts are taken into account it is readily seen that any data, taken with the view of ascertaining whether milk itself exerts any galactopoietic action on the mammary gland when injected into a cow immediately following parturition, would be very difficult to interpret.

In the many investigations which have been carried out to determine the influence of numerous substances, body fluids, and extracts of body tissues upon the secretion of milk, which extensive literature it is not our purpose to review at this time, we are not aware of any previous attempts to study milk itself as a galactagogue. Doctor Duncan's article has led us to carry out several experiments on this question. Our method of attacking the problem, however, appears to us a much more rational one than that suggested by Doctor Duncan.

It seemed to us, that if milk is as powerful a galactagogue as has been suggested, a more logical way to determine this would be to inject the milk of a fresh, heavy milking cow into the body of another cow of the same breed, whose milk production had also been rather heavy when she was fresh but which had decreased greatly due to a more advanced



stage in her lactation period. This method was suggested by the experiments of Gaines (2), who sought for a galactagogue in the blood stream by the transfusion of blood from a fresh, heavy milking goat into a low milking one.

Two experiments were performed to determine the effect of injecting the milk of the fresh cow upon the daily milk flow of the cow more advanced in lactation. One experiment was also carried out to determine whether milk has an immediate action upon the mammary secretion when injected from a heavy milking cow which had recently freshened into one which had lost some of the natural stimulus due to advanced lactation. A description of the three experiments is set forth below.

Experiment 1.—Twenty c. c. of the milk of Jersey cow 96, fresh June 22, 1917, and giving about forty pounds of milk per day, was injected subcutaneously into each shoulder of Jersey cow 64, fresh August 25, 1916. Cow 64 gave thirty-five pounds of milk per day as her maximum after freshening. Injections were made at 7.30 o'clock on the mornings of June 30, July 2, and July 4, 1917. The daily milk flow per day of cow 64 prior to and following the injections is given in Table I.

EXPERIMENT 1, Cow 64.		EXPERIMENT 2, Cow 102.	
Date	Milk flow per day. Pounds.	Date	Milk flow per day. Pounds.
June 1917.		July 1917.	
June 27	10.4	July 4	12.1
" 28	10.9	" 5	13.1
" 29	10.8	" 6	14.4
" 30 (injection)	9.9	" 7 (injection)	12.4
July 1	10.6	" 8	10.8
" 2 (injection)	10.0	" 9 (injection)	15.3
" 3	9.4	" 10	14.7
" 4 (injection)	9.9	" 11 (injection)	14.4
" 5	9.3	" 12	14.3
" 6	10.3	" 13	14.4
" 8	9.6	" 15	11.4
" 10	11.0	" 17	13.3
" 15	8.9	" 20	12.1
" 20	9.7	" 25	11.0
" 25	8.7	" "	11.2
" 30	8.7		

TABLE I.—Milk flow of cows 64 and 102 prior to and following subcutaneous injections of milk from cow 96.

Experiment 2.—Twenty c. c. of the milk of Jersey cow 96, described above, was injected subcutaneously into each shoulder of Jersey cow 102, fresh May 17, 1916. Cow 102 gave twenty-seven pounds of milk per day as her maximum production when fresh. Injections were made at 7:30 o'clock on the mornings of July 7 and July 9, and at four o'clock on the afternoon of July 11, 1917. The daily milk flow of cow 102 prior to and following the injections is given in Table I.

Experiment 3.—On the afternoon of July 10th, cow 102 was milked out completely by the herdsman at four o'clock, and at five o'clock the cow was milked again for a period of five minutes. Two hundred grams of milk were obtained.

On the following day, the experiment was repeated under as nearly identical conditions as possible, except that immediately after the first milking twenty c. c. of the milk of cow 96 was injected subcutaneously into each shoulder of cow 102. At the end of the hour when the five minutes' milking was carried out all the injected milk apparently had been absorbed, since the slight swelling caused by the injection had completely disappeared. The milk secured amounted to only eighty-five grams. As far as any immediate stimulating effect of the injected milk was concerned the results were entirely

negative as compared with the test carried out without the injection of milk. The results actually suggest an inhibitory effect on the milk flow, but the differences noted may have been entirely normal.

#### CONCLUSIONS.

The conclusion which the authors are forced to draw from these experiments is obvious. Even granting that our method of attacking this interesting question may have shortcomings, it seems extremely doubtful whether cow's milk could under any circumstances be made to exert the function of a galactagogue toward the milk secretory system of the cow. Unfortunately it appears that no "new and powerful galactagogue" is found in cow's milk which would be an Aladdin's lamp in the hands of the dairymen and farmers of this country. The authors cannot help being reminded of an old adage which has to do with pulling oneself up by his own bootstraps as closely paralleling the injection of a cow's milk into itself to insure maximum milk production.

The authors do not desire to question the authenticity of the numerous cases quoted by Doctor Duncan, in which the injection of mother's milk into herself is stated to have been followed by a stimulation of the milk flow. In view of the fact, however, that this treatment appears to have been most effective in cases in which there was a sudden cessation of the milk flow, it is not unlikely that the milk which was injected had to do with the removal of the inhibitory factor, rather than that it exerted the effect of a galactagogue. If milk itself contains an active galactagogue, the question might well be raised why the chances are not equally as good for the resorption of the galactagogue into the blood stream while the milk is still in the mammary gland as after the milk is withdrawn and injected into another part of the body. It hardly seems probable that milk would develop its powers as a galactagogue only after it had been withdrawn from the body.

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1. CHARLES H. DUNCAN: A New and Powerful Galactagogue. *New York Medical Journal*, cv, 1, pp. 22-23, 1917.
2. W. L. GAINES: A Contribution to the Physiology of Milk Secretion, *American Journal of Physiology*, xxxviii, 2, p. 285, 1915.

**Treatment of High Blood Pressure.**—Wilbur Blackman (*Charlotte Medical Journal*, July, 1918) points out that in the treatment of high blood pressure regularity is of the greatest importance. This applies to eating, drinking, sleeping and even thinking. In heart lesions with dyspnea rest in bed is imperative. In kidney lesions elimination is of prime importance. In autotoxemia a nonprotein diet, preferably an antitoxic buttermilk ration, colonic irrigations and skin elimination are indicated: in the case of the overworked man, rest, away from his usual surroundings. Hydrotherapy and the electric light bath are of value. At the sanatorium for heart cases the Nauheim baths are used; for kidney conditions, the sweating packs; in autotoxemia, abdominal fomentations and colonic irrigations; for high nervous tension, the prolonged neutral bath or the wet sheet pack is efficacious; for a laboring heart, intermittent ice applications to the precordium are used.

# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.

BY CHARLES GREENE CUMSTON, M. D.,  
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### GENERAL ANTISEPSIS WITH UROTROPIN AND URASEPTINE.

Quite recently Dupuy de Frenelle has undertaken some interesting work on general antiseptis. The idea of this surgeon was to transform the body into a medium unfavorable for the development of bacteria and at the same time not to interfere with the natural means of organic defense. When urotropin is given *per os*, the analysis of the urine shows the presence of formol, and de Frenelle has endeavored to discover if the same reaction could be traced in the pus on dressings from subjects having been given this drug.

The result has been that after a certain daily dose has been attained, the reaction on the dressings has been found positive; therefore it seems proved that urotropin given *per os* transforms the organism into a formulated medium, and that the totality of the tissues infected by the wound undergo the influence of the formol or of its derivatives, resulting from decomposition of urotropin in the organism.

In his researches de Frenelle used Schiff's reagent (bisulphated fuchsin), which is employed for detecting formol in milk in a dilution of 1 : 100,000.

At the daily dose of two grams, urotropin gives a positive, although weak, reaction on the dressings, in the form of light violet spots which appear on the gauze soaked in the reagent. At the dose of three grams in twenty-four hours the reaction is much more distinct, while four grams daily gives a very characteristic positive reaction.

Uraseptine gives a weak reaction at the dose of three coffeespoonfuls a day, a distinct reaction at four coffeespoonfuls, and when five are given a very intense reaction on the gauze in the form of large violet spots. The normal dose for obtaining a constant reaction would seem to be from two to three grams of urotropin or from three to six coffeespoonfuls of uraseptine in twenty-four hours.

Urotropin at the above daily doses is not considered toxic by de Frenelle, even when given for one month. In some wounded Germans, with extensive infected bone lesions, de Frenelle was able to reach the dose of fourteen grams in twenty-four hours, and yet these patients offered no evidence of poisoning. On the contrary, they greatly benefited from the urotropin treatment and in no case could albumin be detected in the urine.

### BLOOD TRANSFUSION.

Blood transfusion which became very popular following the first excellent results obtained and was then severely condemned by many surgeons, has now regained the favor that it deserves. The danger of blood transfusion lies especially in faulty technique and the incompatibility of the blood of the donor

with that of the receptor, but with modern technique the risks accruing from this operation are small and need hardly be taken into consideration.

Transfusion is to be resorted to either for replenishing blood lost, for obtaining hemostasis in cases of hemorrhage, or for provoking a hematopoietic reaction. In the case of acute anemia, blood transfusion is unquestionably superior to physiological serum, while as a hemostatic agent it is one of the most powerful we possess and as a hematopoietic agent it has certainly given very brilliant results.

Monod has published some twenty cases in his recent thesis (Paris, 1917), which confirm the above statements, particularly instances of anemia gravis produced and maintained by repeated hemorrhage. However, it must be said that other than in cases of hemorrhage the procedure does not appear to give particularly good results. As to instrumentation, Monod advises the use of Elsberg's cannula.

### INDICATIONS FOR AMPUTATION PROCEDURES.

Metivet, with an experience of 100 cases, has studied the indications for amputation in war surgery and points out that all procedures have their indications. The circular or flap operations, which are excellent when infection is absent, are dangerous in infected tissues. The two step procedure gives the maximum of drainage and also results in a supple, painless stump. In selecting the procedure in each particular case, the surgeon should take into consideration the level at which the incision of the integuments is to be made, likewise the level at which the bone lesions are seated, as well as their site on either the distal or proximal portion of the limb involved, and last but not least, the presence or absence of infection. According to circumstances primary or secondary amputation will be done.

### INDURATION OF CORPUS CAVERNOSUM.

A very interesting and curious case of induration of the left corpus cavernosum following crushing of the parts has recently been shown by Le Fur at the Paris Society of Surgeons. There was permanent priapism, and I will briefly give the principal data concerning the case.

A soldier received a contusion on the anterior aspect of the left side of the pelvis. This was followed by symptoms of rupture of the urethra and a month later by those of traumatic stricture. At the same time a permanent priapism took place, which was most uncomfortable for the patient.

Exploration revealed a massive induration of the left corpus spongiosum at its posterior aspect, at the level of the root of the scrotum, due evidently to rupture of the corpus, followed by interstitial hemorrhage. This condition resulted in a permanent, painful erection which lasted three months and was accompanied by genital impotency, because the patient desired but could not accomplish the act of coitus, and never during the three months of priapism did ejaculation occur.

At the same level as the induration of the left



corpus cavernosum, a very indurated nucleus of limited extent was detected in the lower urethral wall, which explained the traumatic stricture.

After internal urethrotomy and numerous dilations a distinct decrease in the size of both the indurated nodes in the corpus and urethral wall was noted while at the same time there was an evident improvement in the traumatic stricture. The permanent, painful erection also decreased and the genital impotency disappeared.

#### DECREASE IN SYMPATHETIC OPHTHALMIA CASES.

Doctor Weekers, the Belgian oculist, has not met with a single instance of sympathetic ophthalmia out of a total of over 800 ocular injuries, and de Lapersonne, of Paris, has had the same experience in a total of 1,000 eye lesions of war.

This decrease in the frequency of sympathetic ophthalmia appears to result from the rigorous application of the principles of antiseptis and asepsis at the first dressing and subsequently during treatment and operative work. Enucleation of the wounded eye was formerly the rule in order to prevent sympathetic involvement of the normal fellow organ, but today this is no longer the case. In every case where the injury offers any hope whatsoever of preserving the globe in a presentable shape, conservative treatment is to be adopted. If, after the lapse of one month to six weeks, the injured eye is still painful and irritated, enucleation must be done and when this is necessary exenteration is to be preferred as it offers quite as much guaranty against sympathetic ophthalmia as enucleation and gives far better prothetic results.

#### DRY WOUNDS OF THE LARGE BLOODVESSELS.

Neuberger has published in his thesis (Paris, 1916) twenty-five cases of dry wounds of the large vessels, five of them being personal. From the viewpoint of localization, there was complete division of the humeral artery in nine, a lateral wound of the axillary artery in two, total division of the femoral artery in one, one case of lateral wound of both the femoral artery and vein, one case each of lateral wound of the femoral vein and artery, complete division of both popliteal artery and vein in one case, the popliteal vein alone in another, and finally complete division of the primary carotid once, and once a lateral wound of the external carotid.

In five instances there was neither hemorrhage nor clot (typical dry vascular wounds); six cases offered some clot in the wound without a true hematoma and two cases offered an interstitial hemorrhage.

The evolution was always favorable except in the case of complete division of the primary carotid, the patient developing a hemiplegia followed by death, and in two cases of serious lesions to the popliteal vessels where gangrene supervened.

As soon as a patient, brought to a first line ambulance, is suspected of having a dry vascular wound, this being based on the assumption that anatomically, given the direction, the track of the wound probably involves a large vascular trunk, the wound should be opened up as in any wound of warfare but with the addition of careful exploration of the large vessels. Search should be made

for rupture of the vessels or the branches of a vessel if it is ruptured, and all are isolated. The ligatures should be placed at some distance from the divided ends in order to avoid applying them in the midst of the zone of thrombosis.

#### LACTIC BACTERIOTHERAPY AND WOUNDS.

The use of lactic ferments has, as is well known, given excellent results in intestinal affections and Ferrata has shown that it is always possible to transform the intestinal flora by substituting the lactic bacilli for the preexisting natural bacteria of the gut. He has also shown that in acute types of intestinal disturbances lactic bacteriotherapy is the most powerful of all treatments. The temperature rapidly falls and a cure is wrought in exact ratio of the transformation of the intestinal flora.

Starting from this point of view, Patellani and Colombino have applied lactic bacteriotherapy to wounds of warfare. They commenced by undertaking some experimental work which showed that not only did the lactic ferments completely prevent tissue putrefaction, but that they caused the putrified tissues to rid themselves of their bacterial content, such for example as the staphylococcus, and all other bacteria of putrefaction.

After settling the above question, they next resorted to the use of lactic ferments in the treatment of a very large number of injuries of warfare. They say that it is possible to sterilize a wound in a few days when the lactic ferment is placed in direct contact with the entire infected wound surface and that repair is hastened, this being probably due to the sterilization of the wound.

These favorable results are readily explained, because the fluid used being very bactericidal on account of the lactic ferments, is, from its chemical composition, a real physiological serum and in addition it possesses the great advantage of remaining sterile. The good results obtained by the use of lactic bacteriotherapy should be essayed by surgeons in order to study the action of the lactic ferment in various types of infection and to improve the technic of the method in wounds of warfare.

#### BACTERIOLOGY OF TRENCH FEVER.

At a recent meeting of the Society of Tropical Medicine, England, Major W. Byam, R. A. M. C., related a bit of work produced under the direction of Sir David Bruce, which, for the time being, at least, would seem to be destined to enter into the ranks of the most important scientific research work being carried out in both England and France.

The affection designated as "trench fever" has been a scourge among armies almost since the commencement of the present war. The number of its victims has been fearful and it has been largely responsible for a high rate of illness, although it must be admitted, it is not dangerous as far as mortality is concerned. Many have been the efforts to conquer this disease, but until recently they have not been attended with success. The medical department of the War Office was nevertheless determined to deal adequately with the question and spared no pains to organize research work. Sir David Bruce was asked to form a committee and gathered about him a number of eminent scientists. The actual work on patients was carried out by

Major Byam, who, with a staff of experts, went to work at the New End Hospital at Hampstead.

For the purposes of this work it was necessary that volunteers willing to be infected with the disease should be obtained and no difficulty was met with in this direction because as soon as the need was made known many offered their services. Many of these were ex-service men whose desire to fight in the army or navy had not been gratified and they declared that at least they would now be given an opportunity of doing something for their country. How much they were able to do was made clear by the paper read on May 21st by Major Byam, in which he depicted the brilliant researches completed under his direction.

In the first place it was suspected that lice were the carriers of the disease, but it soon became manifest that the carrying powers of the insect were more complex than had been suspected, since a subject might be bitten by many lice which had been previously fed on trench fever patients and still not contract the disease. This fact led to the idea that possibly it was the excreta of the lice and not their bites, which conveyed the infection, the means of entry of the virus being provided by the scratching of the patient. This theory was tested and proved positive; for in every case in which lice excreta was scratched into the dermis by the subjects the disease developed in a few days.

The importance of these findings is evident when it is recalled that lice abound in the trenches and their excreta is scattered about as a fine dust. The findings afforded an explanation of the origin of trench fever occurring among persons handling soldiers' clothing and likewise suggested the possibility of an infection of the civil population some distance from the firing line. Even if no lice were present the excreta remained virulent if brought into contact with a cutaneous solution of continuity.

Again, it was found that for a week after feeding on a trench fever case a louse was not infective, or rather its excreta were not infective. After a week, however, it became so, even if it had fed only once on the patient. Probably, therefore, the germ of the disease passes through a part of its life cycle in the body of the louse, as malaria does in the mosquito, and until that period is completed the disease is not spread. The importance of this from the viewpoint of prophylaxis is self evident. Indeed, it was proved that the amount of heat sufficient to kill lice is by no means sufficient to rob the excreta of its infective properties. In other words, louse free clothing may still be highly infective owing to the excreta they contain.

Among the complications sometimes arising from trench fever under field conditions are "soldier's heart" and neurasthenia, and Major Byam was able to announce that some very important observations on this aspect of the question had been made and methods of treatment devised.

#### FAMINE IN AUSTRIA AND STYRIA.

That there is famine now in Austria and Styria is unquestionable. The scarcity of breadstuffs so increased during June, July, and August that as a result during these three months these countries were the field of epidemics of rather severe type.

#### BOMBING OF BRITISH HOSPITALS IN FRANCE.

As I conclude this letter, more detailed news of the bombing of the military hospitals behind the front in France has come to hand. Such is Hun savagery at its worst.

"*Man lernt nie aus*"—one has never done learning—say the Germans. Consequently they seem bent on teaching the world that Mr. Kipling's classification of mankind into human beings and Germans was scientifically exact. Their latest exploit in deliberately bombing a well known group of British hospitals in France, and in sweeping the cots of the wounded men and the devoted nursing sisters and attendants with machine gun fire, is on a par with all the devilish, nay hellish, abominations that have caused the German name to stink in the nostrils of humanity since the very outset of the war, and that will cause it to stink while memory endures.

To outrages of this kind there is but a single reply; fierce and relentless war upon the Huns and their kind till they be utterly vanquished, and then ostracism from the society of civilized nations and of all decent minded men.

Upon scientific felons who know neither truth nor chivalry let there be among the allied nations a ban outlasting in duration and intensity even the remembrance of the chastisement which the allied nations are more than ever bound to inflict upon them. And in this particular circumstance let the medical profession of the United States be ever mindful of the recent slaughter of their professional brethren of Britain and the innocent wounded to whom they were tendering their skill at the moment of the foul Hun murder.

#### PSYCHOLOGY IN THE ARMY.

At a meeting of the College of Physicians of Philadelphia, on Wednesday, June 5, 1918, with Dr. Thomas R. Neilson in the chair, the advisability of the use of psychological tests in the army was discussed. Neuropsychiatric examinations were described with emphasis on their bearing in preventive work and in the reconstruction of soldiers. The opinion was given that on the medical side of the war, the neurologist was the man who had the best chance to be of use.

#### PSYCHOLOGICAL EXAMINING IN THE ARMY.

Major Robert M. Yerkes, Sanitary Corps, National Army, said that the principal purposes in examining drafted men and company officers were to assist the psychiatrist and neurologist in eliminating the mentally unfit; to assist the personnel officer in classifying soldiers, and to aid all officers in the selection of men who were fit for special responsibility or for training in officers' training camps. Methods for this work had been devised during the summer of 1917 and had since been greatly developed. Approximately 300,000 men had been examined. Of these, 10,000 were officers and approximately 25,000 were students in officers' training camps. At least 50,000 psychological examinations were being made a week. The work had more important significance for the personal bureau of the army than for the Medical Department. The



procedure of examining was roughly as follows: A group of from 100 to 300 drafted men, reporting in examining room, was divided into two sections, one consisting of those who can read and write English fairly well, and the other those who because of foreign birth or lack of education had less knowledge of English. The literate group was then given one form of examination; the illiterate group an entirely different sort of examination, which did not require either reading or writing. A man failing in either or both examinations was given individual examination. Several varieties of individual examination were used and were applied in accordance with the characteristics of the individual to be examined. (Slides were exhibited at this point to indicate materials used for examinations, show examining procedure in one of the National Army cantonments and to present important results of examining in the army.) The personnel for this work was of very high quality. More than seventy officers had been trained for work in military psychology at the School in Military Psychology, Medical Officers' Training Camp, Fort Oglethorpe, Ga. These men were now conducting psychological examinations in the various army training camps. At the same school about 250 enlisted men had been given training in military psychology.

#### NEUROPSYCHIATRY IN THE ARMY.

Colonel Pearce Bailey, Medical Corps, National Army, described the examinations to determine whether or not men were to be allowed to go overseas. One method employed consisted of a rapid survey of the whole organization, of all the troops, officers included. All passed under the eye of one or more neuropsychiatrists. They were given a test of about a minute and a half, long enough to test the knee jerk, tremors of hand and tongue, and the reaction to the immediate situation. This test determined the indication for a more extended examination. The other method, used much in the first draft and before the neuropsychiatry department was organized, was a method of referred cases, in which only those referred by other officers, line or medical, were examined. We had in this more cooperation from the laymen than from the medical officers. At present we had very close cooperation from every one. The psychiatrist did not recommend a discharge without such recommendation going through the disability boards and thus being endorsed by at least three nonspecialists. We believed that by the means employed in our work neuropsychiatry would reach a point in preventive medicine of high significance. In the reconstruction of soldiers we believed that neuropsychiatry would also have an important function. We had examiners at the camps, depots, and ports of embarkation. A certain percentage of the men were found to be nervously unfit. Not many neurological cases have yet been returned from the other side. We had just secured a hospital at Plattsburg to which patients were transferred from the cantonments as fast as possible. How these cases differed from the war neuroses of the other side we did not know, but we were confident that there were no neurotic symptoms produced on the front not to be found here. We had found a much smaller number of

insane requiring hospital treatment than we had anticipated. A contributing factor to this smaller percentage was the fact of the examinations made at the point of entrance to the army. The States, with but few exceptions, had cooperated in caring for their insane when insanity developed immediately after entrance in the army. While only 300 have gone back it was shown that army life renders a neurotic the subject of custodial care. We had had less than 500 cases of drug addicts. If the number proved to be very much above this, a special camp would be established for the treatment of such patients, after which they would be drilled for military service. We now had in the neuropsychiatric department about 359 officers, about one third of whom were on the other side. They had come chiefly from the State hospitals. We were asked to send men with neurological training and last month we were obliged to decline 100 applications for positions to be filled. Men who spoke Italian and Spanish were especially wanted.

*Discussion.*—Dr. F. X. Dercum said that we could group the symptoms of the psychoneuroses met with in the army under the familiar clinical pictures seen in civil life. Curiously enough, they occurred largely among the draftees just as in the outpatient departments and hospital wards; they were less frequent among officers, just as they were less frequent among the better classes in civil life. It was most important that these be excluded at the source. These tests were not a measure of a man's physical strength, of his endurance, of his ability to shoot, of his personal courage. Many a man had sprung from the ranks who did not have the qualities of mind enabling him to pass through such a series of complicated tests, and yet had made an efficient officer.

Dr. Thomas McCrae remarked that if any one who had been abroad working on the medical side in the war were asked who had the best chance of being of use, he would answer the neurologist. Doctor McCrae did not believe that this was sufficiently recognized. He had urged upon every man connected with the formation of a military hospital unit the necessity of having a well qualified neurologist on the staff. As head of the medical side of a hospital without a neurologist he had had to meet the neurological problems arising among 2,000 patients. Many cases of nerve injury were extremely complicated and the decision as to treatment was often a difficult matter. The need in this war for the neurologist must be emphasized.

**Athletic Equipment for Men in Training Camps.**—Athletic material sufficient to supply 1,750 companies, or 125 complete regiments, has been purchased by the War Department Commission on Training Camp Activities, an appropriation of \$250,000 having been obtained for this purpose. The supplies, for which the War Department through the commission invited bids, included the following items: 17,500 sets of boxing gloves, 7,000 baseball bats, 21,100 baseballs, 3,500 playground baseball bats, 10,500 playground balls, 3,000 Rugby footballs, 7,000 soccer footballs, 3,500 volley balls, and 1,750 medicine balls. Allotment of the material to the various training camps is being made.

## MEDICAL NEWS FROM WASHINGTON.

*Appointment of Brigadier General Merritte W. Ireland to Be Assistant Surgeon General.—Mobilization of Hospitals Under One Head.—More Rigid Physical Tests for Aviators.*

WASHINGTON, D. C., August 26, 1918.

The appointment during the past week of Brigadier General Merritte W. Ireland, chief surgeon on the staff of General Pershing in France, "to be assistant surgeon general, with the rank of major general, during the existence of the present emergency, for service abroad, under the provisions of the act of Congress approved July 9, 1918, with rank from August 8, 1918," has revived the interest that has been prevalent in the appointment of an officer to succeed Major General George W. Gorgas as surgeon general upon his retirement for age in October.

No indication has been given by the authorities as to what bearing General Ireland's new appointment has upon his chances for appointment later to the position of surgeon general of the army, but his friends, both at home and in France, who have been advocating his appointment, do not believe that it will affect his chances adversely.

In the meantime, a number of other prominent physicians and surgeons connected with the army have been mentioned in connection with the place, and it is known that some of them, or their friends, have been working actively in their behalf.

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The suggestion has been made that a step in the direction of efficient medical service for the period of the war would be a mobilization and coordination of the hospitals of the country under one controlling authority to the extent that full use might be made of their capacity, and the matter has been given much consideration at the hands of the government medical authorities.

Under present conditions, most of the hospitals are filled with patients, many of whom could be treated at their homes. This would give increased bed capacity, and, in conjunction with the activities of the Volunteer Medical Service Corps, would provide for many additional patients.

Those that are interested in the subject believe that boards of directors of local hospitals should be encouraged to increase their present hospital facilities, but one difficulty at present lies in the almost prohibitive cost of building construction and the curtailment by the war industries board of non-essential activities.

The government hospitals at Washington are particularly crowded to an extent that is not conducive to good health, and the same conditions prevail to a greater or less extent in other cities where industries relating to the war have brought in many new residents. For this reason, it is believed that the hospital facilities of every community where there are military men and war workers should be carefully surveyed and such additions made as are justified to insure adequate medical protection in case of epidemic. Mobilization of the hospitals under one central authority would further a more adequate conception of these increased needs due to present conditions.

More rigid physical tests lately have been prescribed for aviators of this country. All men that have won their wings in the air service now are required to pass a new heart, lung, ear, and eye test to establish their physical and mental fitness when high in the air, and particularly to indicate at what heights they are in a condition to fly. Cadets receive a test before they finish their schooling; fliers are given the tests periodically to eliminate any whose physical or mental efficiency has become impaired in any way.

The prescribed tests are the results of study and investigation by the medical research laboratory at Hazelhurst Field, Mineola, N. Y., whose staff has devised apparatus and determined upon a standard examination for classifying pilots.

To stay in the rarefied air at an elevation of 20,000 feet for any length of time has been found to be a strain even upon the most physically perfect. It also has been discovered that many of the most seasoned fliers cannot undergo the sudden quick changes in altitude occasioned by diving and climbing, without physical deterioration. It was recognized as too great a risk to subject these men to actual flying tests. Therefore, the research laboratory at Hazelhurst Field undertook to devise some way of getting the same results by means of a ground test.

In the early tests the pilot was placed in a sealed airtight cylinder from which the air was gradually exhausted and then replaced to simulate a flight into the rarefied air of high altitudes and back to earth, but today the pilot sits comfortably in the same room with his examiners. His nose is clamped so that he cannot breathe through it. Over his mouth is placed the breathing apparatus, which is connected by tubes with a tank of measured air and with the instruments that record every breath he takes. The air is analyzed at various stages of the run. As fast as he exhales, the air is taken into a reservoir, where it is cleared of carbon dioxide and then returned to the tank. Gradually he uses up the oxygen, and thus air conditions of high altitudes are duplicated. The higher one goes up, the rarer the air becomes; just so with the man under test, for after a certain time he has consumed an amount of oxygen that leaves the remaining supply just equal to the oxygen available at a certain altitude. Time takes the place of height in the test. "All the way up," so to speak, several specialists watch him; one his heart, pulse, and blood pressure, one his eyes, and the others his responses to signals and observations. Records of his pulse and blood pressure are made every other minute; the eyes are tested every three minutes.

The man under test is kept fairly busy, just as he would be piloting an airplane. Before him on a table is a bank of small electric lights, one or another of which flashes every five seconds. These he must extinguish as fast as he observes them and before they go out. He has but a few seconds. Below the lamps is a corresponding set of buttons, which, when touched with a pointer held in the right hand, extinguishes the respective lights. Two observers watch him constantly and check his errors or delayed actions.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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*A Weekly Review of Medicine*

EDITORS

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## THE MENTAL HYGIENE MOVEMENT IN CANADA.

There was recently formed at Ottawa a Canadian National Committee for Mental Hygiene, with Dr. Charles K. Clarke, dean of the Medical Faculty of the University of Toronto and medical superintendent of the Toronto General Hospital, as medical director of the organization. Doctor Clarke has since resigned the superintendency of the hospital and will henceforth devote his time and energies to the new organization. For many years he has been one of Canada's leading alienists, having held the position of superintendent of the Rockwood Hospital for the Insane, at Kingston, and latterly the superintendency of the Hospital for the Insane, at Toronto. Associated with him in the prosecution of the work will be Dr. Charles M. Hincks, of Toronto, as secretary and assistant medical director.

For quite a number of years it has been held in medical circles that intelligent and organized effort should be put forth to prevent, if possible,

the annual increment in the admissions to the hospitals for the insane throughout Canada. Year by year these hospital reports for every part of the Dominion showed that insanity was on the increase; and while the figures presented were of the official insane, it was recognized that those not domiciled within institutions could be counted in considerable numbers. Additions were constantly being required to existing institutions, new buildings were being erected, new institutions were being established, but the requirements could not keep pace with the demand. At times jails had to be pressed into service, until it became a public scandal that persons requiring hospital treatment of the most enlightened and modern aspect very often had to be housed in criminal institutions and herded with offenders against the law.

Gradually public sentiment revolted against this condition as it had revolted against the placing of politico-doctors as superintendents of hospitals for the insane over the heads of trained and competent assistants; and not for some years now, in Ontario at least, has there been any evidence that the hospitals for the insane are used as sops to the physicians who had engaged in political and party warfare. Still, Canada was a little slow in following the example of the United States and establishing a National Committee for Mental Hygiene. Now, however, a beginning has been made, and as in other departments of medicine for the public, the government is awakening to its responsibility for the personal health and welfare of the people, recognizing that it is the common agent of all, charged with the interests of all.

Possibly the aims of the Canadian National Committee of Mental Hygiene can best be set forth by the following quotation from the constitution of the organization: "To work for the conservation of mental health and for improvement in the care and treatment of those suffering from nervous or mental diseases or mental deficiency and for the prevention of those disorders; to conduct or to supervise surveys for the care of those suffering from mental diseases or mental deficiency; to cooperate with other agencies which deal with any phases of these problems; to enlist the aid of the Dominion and provincial governments and to help organize and aid affiliated provincial and local societies or committees of mental hygiene."

That there is a wide field in Canada for this

work can be understood by a consideration of some statistics presented by Dr. C. A. Porteous, assistant superintendent of the Protestant Hospital for the Insane, Verdun, Quebec. Of 4,780 admissions to that institution in twenty-seven years, 1,884, nearly forty per cent., showed definite hereditary taint. There were 1,134 patients in whom no facts as to heredity were ascertainable. Of the 1,762 remaining, or thirty-six per cent., hereditary tendency was absolutely denied. Twenty-seven per cent. of all the cases, 1,300, occurred at or about puberty, or the climacteric, or in the presenile period of life. Five per cent. of the total admissions, 230, were defectives, all of severe grades.

The figures bearing on war conditions are quite as interesting. In Canada, up to within a recent date, 15,000 men had been rejected because of some nervous or mental disability. Since the war began Verdun has admitted forty-eight soldiers, thirty returned from active service. Five had been patients previously in civilian life. Sixteen patients of these have recovered—thirty-three per cent. of the whole number of soldiers admitted.

The National Committee of Mental Hygiene in Canada proposes to establish centres, or affiliated societies, in various parts of the Dominion, so that the work may be adapted to the more particular needs of each community. There is generally little trouble in securing public spirited citizens to act on such committees, but physicians are, as a rule, if they may be judged from the committees in the tuberculosis campaign, more or less indifferent. If the committee, or the directors, can overcome this indifference and secure the hearty cooperation of the profession, the work will be advanced rapidly. Having secured that cooperation, there yet remain to be approached the national, provincial, and municipal governments.

An alternative plan would be the wholetime medical officer for provincial districts.

#### INFECTIO OF THE SALIVARY GLANDS IN INFANTS.

The anatomical development of the salivary apparatus of the newly born is probably too well known to require mention, likewise the infectious agents to which this apparatus is exposed; but the resistance offered to this infection, its mechanism, and the pathogenesis of the infection when it does occur, are matters of considerable interest. If the general etiology of salivary infections is considered, it becomes manifest that

in infants no obstruction from calculi, new growths, etc., exists and that specific infections, such as mumps, play no part. What does occur in infants are serious acute deuteropathic infections of the salivary glands, followed by cachexia.

The infection travels to the glands by the canaliculi and not by the lymphatics, so that any condition favoring buccal infection will, of necessity, favor secondary salivary infection. Thrush is particularly prone to infect the salivary glands, especially when the infant is puny.

Much has been said about the antisepsis of the saliva in the prevention of these infections, but in reality this is most problematical. It is far more probable that the bacteria in infants' mouths are of low virulence and that the white corpuscles in the saliva exert a phagocytic action. But, on the other hand, during the first three months of life the production of saliva is small and the hematopoietic organs are only in a rudimentary state, therefore there must be a relatively weak phagocytosis, so that if any microbicidal action of the saliva exists in reality, it must of necessity be slight.

The bactericidal properties of the mucus of the glandules of the excretory ducts are likewise hypothetical, and any action that it may possess is rather more due to the renewing and shedding off of the epithelium, two phenomena related to the general activity of the salivary secretion, and, consequently, reduced in infants as is the function itself.

The only real defensive barrier to infection is the length of Stenson's duct and the peculiar position of the orifice of Wharton's duct; and this is why infection of the parotid and submaxillary glands is not as common in infants as it otherwise might be.

The bacteria found in the pus when these glands become infected are usually the staphylococcus and streptococcus, singly or combined, and occasionally the *saccharomyces albicans*.

The prognosis of salivary infections in infants is particularly serious, and of course varies with the individual resistance of the child.

The symptomatology differs in the case of parotiditis and submaxillitis. The parotid gland being divided up by a series of very resistant fibrous septa, the lobules are thus imprisoned separately and the gland is rendered both hard and compact. From this two consequences result: 1, The pus does not collect in a single focus; 2, when inflammation and suppuration occur in the gland a true strangulation and gangrenous melting of the organ takes place. For this reason no definite fluctuation can be detect-



ed, only a doughiness of the parts with regional edema is felt.

In the case of the submaxillary gland there is an appreciable tumefaction of the organ, with pain on pressure. The overlying integuments soon become red and adherent and distinct fluctuation soon becomes manifest. The floor of the mouth projects and pushes the tongue backward so that deglutition is interfered with, requiring the use of a catheter for feeding. But there is no compression of the larynx nor respiratory disturbance.

Finally, general symptoms of septicemia appear, even of a hyperacute type in some cases, and death occurs. Recovery is infrequent. It is to be noted that the affection is in most instances unilateral and that but a single gland is usually involved.

#### A PLEA FOR GREATER DEFINITENESS IN REGARD TO OVARIAN AND PLACENTAL EXTRACTS.

Clearness and definiteness of procedure is certainly essential in the preparation and use of internal glandular substances. So much is expected from this newer branch of therapy, and so much is claimed, that hopeless confusion and uncertainty and distrust will be the result, unless the steps are carefully taken and adequately explained. A plea for greater carefulness is issued by W. H. Morley, M.D.,<sup>1</sup> who reviews the researches which have been published in regard to the preparation and employment of ovarian and placental extracts, with a notice of results obtained. Some of this is the result of careful and accurate work and is cautiously reported; other results are claimed without clear explanation of method or results.

The results would be much more uniform and clearer, the author states, were the active principle of the ovary and placenta isolated. The fact that this is still unknown makes it so much more necessary to proceed by some uniform method of preparation and necessitates the standardization of ovarian and placental extracts.

It is only within ten years that search has been made for this active principle, although before this there had been a use of desiccated ovary or corpus luteum for symptoms which manifested a disturbance of the inner secretory activity of the ovary. Iscovesco, investigating the "lipoids" obtained from red blood corpuscles, the hypophysis, the kidney, the suprarenal capsules, the

ovaries, the testicles, and the corpora lutea, discovered that they had a special influence upon the female genitalia. He found that there were two classes of these lipoids and among them two lipoids of special importance to be obtained from the ovary. He was followed by Hermann, Seitz, and others, all of whom employed a similar method of extraction of a definite character, which aimed to discover and isolate the active principle of these substances. Their products could be submitted to experimental and clinical tests which tended toward definite physiological and anatomical results.

In the reports of other researches the terminology has been too vague and nondescriptive to assist in a standardization of the resulting products. The same lack of precision prevails too often in determining clinical results only through the testimony of the patient and in reporting results.

The presence of a pressor principle in these extracts has been especially tested by Rosenheim in order to confirm previous observations of Dixon and Taylor. He did not find such a principle in normal human placenta. Similar experiments were carried on by the writer, who proved, with Rosenheim, that normal placenta does not contain a pressor or a marked oxytocic principle. There was some contraction of the uterus of a guineapig in the author's experiments and slight change in blood pressure, but neither were marked. These effects in two of the samples at least were due in part to the fact that decomposition of the substance had begun. Rosenheim identified the pressor principle as belonging to the amines and as probably derived from the cleavage product of proteins. Other experimenters found that the pressor principle is present in putrid meat. Moreover, all meat extracts, the author states, will contract the isolated uterus if they are used in sufficient concentration, and this action is increased by decomposition.

#### PSYCHIC EFFECTS IN SURGERY.

Much has been heard about needless surgery; and when a body of eminent surgeons deem it necessary for the protection of the reputation of their own branch of practice to sign an agreement not to perform unnecessary operations, the accusation from without would seem to receive full confirmation.

But there is little doubt that, as in the giving of drugs, the use of the knife often produces good effects from a purely psychic influence. The effect of an operation, especially of the prepara-

<sup>1</sup>The Preparation and Standardization of Ovarian and Placental Extract, *Transactions of the American Gynecological Society*, 1917, pp. 228-230.

tions for an operation, upon the patient is profound, and were there not hope and expectation of improvement back of it all, the bodily results of mental states would often prove disastrous. Improvement is expected, and improvement usually takes place, therefore, no matter what emotional disturbance is undergone.

Operations are of such common occurrence and so much discussed that by a certain class of persons, women especially, they come to be desired as a curative means, and even when not needed for mechanical abnormalities or for the removal of foci of disease, their performance produces good results. The patient, with a few exceptions, is satisfied with the experience, and above all feels (even if the symptoms are not removed) that everything possible has been done. It must be a hard hearted surgeon who would refuse to operate in such a case, especially if the fee were at all adequate; and since the risk is slight, he is certainly not more culpable than the physician who doses his patient, to the injury of the digestive apparatus, with drugs whose effects are likewise psychic. How to twist the mentality into healthy channels without the use either of the drug or the knife, especially if a friend of the victim has recovered through such treatment, is not an easy proposition—certainly far less simple than the use of material means as an aid to the cure.

The experiment of giving bread pills to patients in one medical ward of a hospital, and regulation drugs to those in another, has been tried and the results are familiar to the reader. A comparison of the effects of a scratch through the skin and a few superficial stitches and some more complicated procedures in selected cases (for which experiment there would be many cases to select from) might prove equally instructive.

#### CALLING IN A SPECIALIST.

While many patients, especially women, take pleasure in telling how many specialists they have seen, concluding from this their case was particularly bad or interesting, there are many who are annoyed and bewildered by being sent from one doctor to another. They see the inevitability or necessity for many men to make only one part of their autos or their shoes, but still think the doctor should understand the interdependence of every part of their bodies and be able, by himself, to give medical or surgical aid comprehending all. Admitting that the "family doctor" does well to call the pathologist, röntgenologist, bac-

teriologist, stomatologist, alienist, ophthalmologist, and what is known as a "nose and throat man" to assist in diagnosis, there are many small towns where this plan is abused. For instance, many doctors often have their offices in one building, and the desire to do a good turn to a colleague in return for referring a patient causes them to send cases from one office to another, though knowing that only an opinion will be gained rather than an elucidation, for the "specialists" do not deserve the title, being only "good on eye work" or "first rate on stomachs"; that is, they have had a little more experience than the referring doctor, but certainly not enough to merit an extra ten dollars being added to the account for their services. While some patients are gratified by these additional opinions, in the long run this practice will lead to distrust of that old friend the "general practitioner," and he will have to take a new name—"omnispecialist," which will help to sustain his reputation, the therapeutic value of a long or little understood word being universally acknowledged.

#### THE MEDICOTELESCOPIST.

The greatest of scientific discoveries are at first given a brief notice in some "Proceedings," or get permission to lodge in a short paragraph in a scientific journal, until a subeditor, seeking copy for his daily, hashes it up with his own incorrect knowledge and the general public read, comment, and forget, until, long after, they wonderingly link it up with the "new discovery" concerning which all the world is talking. So it was with the idea of seeing over the telephone or transmitting a picture over the wires, yet that television and telephotoic plan has now come to stay and monthly improves. The question for us is, How will it affect the doctors? It is true that a great many now charge for advice so sent, but what will be their fee for a teleclínico visitation? The plan is, to elucidate matters by using a diagram of the human body and to trace on it the source of pain in the same way as in transmitting maps by telephone. Doubtless a photographer will be in the sick room to make quick proofs to speed over the line, and, when he sends the unmistakable facies Hippocratica, the doctor will say, "All U. P.: ring off."

But there will be gross abuses. Picture the neurotics who wake the doctor at 4 a. m. to ask if they shall take some more of the medicine, or telesmilingly tell him, as they drag him away from his dinner, that they knew they would be sure to find him, as it was his dinner time. How if they can exhibit their physical diagram and "touch the spot" to elucidate their verbose muddling symptomatologic statements. Clearly the only way will be for every doctor to term such call a "consultation" and to charge the higher fee usually asked.



## News Items.

**Epidemics in Northern Russia.**—According to cable despatches from Amsterdam, dated August 24th, the northern provinces of Russia are being swept by epidemics of cholera and typhus, the starving population dying in great numbers.

**Yale Buys a New Haven Hospital.**—The Elm City Hospital, a private institution, has been purchased by Yale University. Possession will be given September 1st, and the property will be available for Government work in connection with the Yale army laboratory school and the medical side of the chemical warfare service.

**Reconstruction.**—This is the title of a periodical devoted to the reconstruction of disabled soldiers and sailors, which is published monthly at Ottawa, Canada, by the Department of Soldiers' Civil Reestablishment. It is similar in scope to *Carry On*, a monthly periodical issued from the Office of the Surgeon General, Washington, D. C.

**A Case of Leprosy in Connecticut.**—On June 6, 1918, there was reported to the United States Public Health Service a case of leprosy in Bridgeport, Conn., in the person of T. H., a native of Greece, aged forty-one years, who had lived in Bridgeport six months and previously in Stamford and in New York. The patient has been in the United States four years. The Bridgeport department of health has supervision of the patient, who is in an isolation hospital.

**Four Chairs Endowed at Toronto University.**—A recent endowment to the University of Toronto, which may amount to about three million dollars, provides for the establishment of four special chairs in medicine, as follows: One in obstetrics, one in gynecology, one in pediatrics, and the fourth in some special branch of medicine which has not yet been decided upon. These chairs will be held by specially qualified men who will be able to devote all their time to the work.

**Airplane Ambulances.**—All flying fields in the United States are to be equipped with airplane ambulances to carry injured aviators quickly from the scene of an accident to a field hospital. A standard training plane is to be used for the ambulance, the rear cockpit being cleared and enlarged sufficiently to permit a combination stretcher seat to be placed in it. The injured person is placed with his head toward the pilot and rests easily. The first airplane ambulance is being operated successfully at Gerstner Field, Lake Charles, La.

**Chiropodists in the Army.**—The War Department announces that as far as is consistent with the military demands, chiropodists taken into the army will be transferred directly to the medical department and either assigned directly to the various camps for duty under the camp surgeon or first sent to Camp Greenleaf for further training under the regular orthopedic instructors. On the demonstration of proper skill and attainments they may be advanced to the grade of sergeant. A canvass of the camps is now being made to determine the need of this service.

**Flight Surgeon Killed.**—Major William R. Ream, of San Diego, California, flight surgeon of the British-American "flying circus" which started on August 24th from Indianapolis for St. Louis, was killed near Effingham, Ill., when the airplane in which he was riding fell about one hundred feet to the ground. The pilot was seriously injured. This is the second death which has occurred since the mission started on a tour of the Middle West. Major Ream was forty-one years of age. He had served on the Mexican border, and until his assignment on this flying tour was stationed at a flying field near his home in San Diego.

**Enlarging the Scope of Azalea War Hospital.**—United States General Hospital No. 16, situated at Azalea in the mountains of North Carolina, near Asheville, was designed primarily for the care and treatment of tuberculous soldiers and sailors, but climatic conditions proving to be advantageous in gas cases, it has been decided to enlarge the scope of the institution to admit gassed soldiers. The hospital was opened on August 20th, with accommodations for one thousand patients, and orders have been given to add twenty-two buildings, which will provide for an additional five hundred patients. The cost to date is about \$1,500,000.

**The Journal of General Physiology.**—This is the name of a new publication which will be issued bimonthly by the Rockefeller Institute for Medical Research. According to the announcement, this journal is intended "to serve as an organ of publication for papers devoted to the investigation of life processes from a physicochemical viewpoint." The editors of the new journal are Dr. Jacques Loeb, of the Rockefeller Institute of Medical Research, and Professor W. J. V. Osterhout, of Harvard University. The first number will be issued on September 20, 1918.

**Special Hospital for Aviators at Cooperstown, N. Y.**—The War Department has accepted the offer of Edward S. Clark, of Cooperstown, N. Y., to use the Mary Imogene Bassett Hospital and Pathological Laboratory at Cooperstown for the period of the war and one year after. It will become a general hospital, where special attention will be given to nervous conditions among aviators. The hospital, which is being erected at the present time, will be ready for use early in 1919. It is a stone building of fireproof construction, consisting of one main building and wards with accommodations for 185 patients.

One hundred beds and full equipment necessary for caring for that number of patients will be provided by Mr. Clark. The balance of the equipment is to be furnished by the government.

**A School for Nurses Opened at Camp Dix.**—The first class of the Army School of Nursing which was opened on Wednesday, August 21st, at Camp Dix, Wrightstown, N. J., is composed of thirty-five young women from New England and Atlantic States. Miss Caroline Milne, for twenty-three years head nurse at the Presbyterian Hospital, Philadelphia, is in charge of the school. The candidate nurses were required to enlist for the period of the war, or a three years' course which includes two years in an army hospital and one year in a civilian hospital as necessary to win a diploma. Following their preliminary training they will be assigned to assist graduate nurses in the hospital. Later their advancement will make it possible to release many graduate nurses for overseas work. The hospital has accommodation for two thousand patients.

**American Red Cross Work in France.**—The monthly report of the American Red Cross Society, issued on August 25th, shows that the society has supplied 1,100,000 surgical dressings to the American wounded during the last month; twelve hospitals are being operated, four new hospitals are being built, and convalescent homes have been established at Biarritz and other places. The report also shows that the canteen service has supplied 100,000 meals and a million hot drinks to the wounded, to whom 4,000,000 cigarettes also have been distributed. The American Red Cross is now operating farms for the convalescent, aggregating 249 acres. The report dealing with supplies shows that each division of the army receives 2,500 daily papers and 500 weekly magazines. Loans to 362 newly commissioned army officers have been made to assist them in buying equipment.

**Hospitals' Plea for Exemption.**—In response to a letter from the Office of the Surgeon General suggesting the calling out of the hospital interns and that certain hospitals transfer to the Army School of Nursing considerable numbers of senior and intermediate pupil nurses, the Hospital Conference of New York voted, at a meeting on August 27th, to send a committee to confer with the Surgeon General for the purpose of forming a definite plan to furnish the greatest amount of medical and nursing aid to the army without entirely disorganizing civil hospitals. The directors of several hospitals here have urged the use of nurses' aids in hospitals in France, but this was not encouraged until recently by the Surgeon General's Office, whose original plans called for hospital nursing by only trained nurses. The members of the Hospital Conference consider that the deprivation of the civilian hospitals of junior and intermediate nurses will not fulfill the present and future needs of the army; will seriously cripple the activities of the civilian hospitals; and will present a serious obstacle to the training of pupil nurses in the future, since all the senior nurses will be taken away. They suggest a special six months' course of intensive training for special nurses' aids who will serve in France to be given by the hospitals in association with the Army School of Nursing.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### VICIOUS CIRCLES IN DISORDERS OF THE RESPIRATORY SYSTEM.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 344.)

In lobar pneumonia an important vicious circle involving the functional relationship of the heart and lungs is not infrequently encountered. The blood vessels of the consolidated lung tissue, though still in some degree pervious, are compressed by the edematous and leucocytic infiltration in the walls of the air cells and by the exudate lying within these cells. Even in certain portions of lung tissue not actually consolidated edema bordering on a state of gelatinous transformation may prevail. Obstructing circulation through the pulmonary vessels, these conditions place abnormal stress upon the right heart, itself already exposed to the debilitating action of pneumococcic toxemia and at times, also, to that of hyperpyrexia. In response to the increased functional demand thus thrown upon it, the right ventricle undergoes up to a certain point, as does the left ventricle under analogous conditions of increased arterial resistance, a process of physiological dilatation, whereby in virtue of the elongation and increased tension of the muscle fibres, the latter are able to develop more energy and yield the required output of blood in spite of the unusual resistance in the pulmonary circuit. If the severity of the disturbance increases further, however, or if the heart has already been impaired before the advent of pneumonia, the protective dilatation becomes inadequate and gives way to a more pronounced, pathological dilatation, in the presence of which the necessary output of blood from the right ventricle is no longer maintained.

At this point a vicious circle becomes established which in many ways resembles that encountered in primary cardiac disease with failure of compensation. The stasis in the pulmonary circulation resulting from insufficiency of output of the right ventricle necessarily implies a subnormal inflow into the left ventricle. Thus, all organs supplied by the general circulation receive less blood than under normal conditions and their various influences in imparting nutritive material to and removing toxic material from the blood are impaired through deficient oxygenation and otherwise. The quality of the blood supplied to the heart muscle being thereby impoverished, defective nutrition is added to the difficulties under which the right ventricle is already laboring and its weakness accentuated, with consequent completion of the vicious circle. Again, since there is stasis in the pulmonary circulation, deficient aeration of the blood supplied to the ventricular walls is likely to be an additional evil factor which may react directly upon the activity of the right ventricle and constitute another phase of the vicious circle.

The danger attending this vicious circle is illustrated in the unfavorable prognostic portent of its clinical manifestation. Combinations of two or more of these manifestations, which include an increase in the heart rate above 125; impaired volume and rhythm of the pulse; cyanosis and distended jugular veins; cold extremities; a high rate of respiration; a blood pressure relatively low in comparison with the pulse rate, and disappearance of the accentuation of the second pulmonic sound, are of considerable significance as indications of a lethal trend.

The ease with which the vicious circle attending decompensation in primary cardiac disease can frequently be broken up by appropriate remedial measures suggests a priori that the somewhat similar circle encountered in pneumonia may likewise be susceptible to artificial interruption, with analogous clinical benefit. As a matter of fact, the vicious circle in pneumonia may be therapeutically attacked from several different angles.

The dilatation of the right ventricle itself can be treated by drugs of the digitalis group, by other directly or indirectly cardiostimulant remedies, and by venesection. According to some, the efficiency of digitalis in febrile states is slight; during fever the vagi are in abeyance, and the action of the drug in slowing the heart rate is thus interfered with. That part of the cardiac enfeeblement which is due directly to toxemia is, perhaps, less easily influenced by the drug than that resulting from impaired nutrition or oxygenation of the myocardium. Yet among careful clinical observers the utility of digitalis in pneumonia is by no means despised. The assertion of Vaquez, 1918, that strophanthin is far more effectual than digitalis preparations in restoring myocardial tone, coupled with the experimental observation of Jamieson, 1915, that the action of strophanthin in normal animals is identical with that in pneumonia infected animals, would seem to render advisable a special clinical study of the utility of strophanthin in the pneumonia cases under consideration. Stimulants such as aromatic spirit of ammonia, caffeine, strychnine, and adrenalin may also exert a certain beneficial influence, the details of which need not here be described. In failure of the right ventricle, blood being no longer pumped with sufficient rapidity through the lungs owing to the circulatory obstruction therein, the systemic veins and right ventricle itself become overfilled; hence the efficacy, at times striking, of blood letting—eight to twenty-four ounces—or in less degree, of dry cupping two or three times a day.

Any of the measures which enhance the propulsive power of the dilated right ventricle *ipso facto* improve the general circulation by causing more blood to enter the left ventricle from the lungs in a given period of time. All nutritive and eliminatory functions may thus be improved, the quality of blood supplied to the myocardium likewise, and the tendency of the vicious circle further to impair



cardiac nutrition and power abolished. To promote elimination by means of simple diuretics, saline solution, and laxatives is, of course, a useful auxiliary procedure. Again, certain drugs are credited with the power to dilate the coronary vessels, presumably thus increasing the blood supply to the heart muscle.

Imperfect blood oxygenation as a factor in the vicious circle is in part counteracted by all measures which increase the output of the right ventricle. An additional special agency in this connection, however, is oxygen. Although Norris, 1913, asserts that he has never seen any benefit follow the use of oxygen in pneumonia, it is the definite view of pharmacologists that wherever, as in this disease, the blood becomes distinctly venous, oxygen inhalation will promote saturation of the hemoglobin with this gas. Some indirect beneficial action of oxygen may also be implied in Stewart's observation, 1911, of a marked increase in the blood flow of the hands in a cyanotic patient to whom oxygen was administered. Theoretically, oxygen will spare a fatigued respiratory centre. At times, however, stimulation of this centre with strychnine seems of very distinct service.

Fresh air may break into the vicious circle at several different points. It probably improves oxygenation by supplying additional oxygen; spares myocardial activity by reducing the demand on the mechanical process of respiration, quieting restlessness and promoting sleep, and favors proper nutrition of the heart by enhancing the digestive functions.

Sudden physical exertion is to be remembered as a factor which may rapidly and dangerously accentuate the vicious circle, and which therefore must be carefully guarded against.

(To be continued.)

**Fracture of Patella.**—C. D. Schaeffer (*Pennsylvania Medical Journal*, June, 1918) considers the end results of nonoperative measures markedly inferior to those obtained by operations. Nonoperative measures can not meet the following pathological conditions: 1. The tilting of the fragments; 2. hemorrhage into the joint; 3. the inversion over the fragments of the periosteum and prepatellar tissues, preventing the accurate apposition of the fractured surfaces and consequently interfering with the bringing together in close contact of the osteogenic elements of the fragments; 4. the lateral laceration of the aponeurosis which is much larger in a refracture than in the original injury. Refracture of the bone is common following nonoperative procedure. Operation at a late date is not attended with good results. Operative interference is contraindicated in fracture of the patella in diabetic patients, advanced tubercular, cardiac, renal and hepatic diseases; in longitudinal fracture without displacement and in fracture without laceration or tearing of the prepatellar tissue. The best time for operation is from six to ten days following the injury, in order to give the synovial membrane an opportunity to react to the irritation of the trauma and the irritation of the blood clot in the joint.

Immediately after the fracture an injection of ten c. c. of formalin and glycerin solution is made into the joint. This produces a chemical irritation causing an increase in the number of polymorphonuclear leucocytes and is a prophylactic measure. At the operation a U shaped incision with the convexity above is made and the flap dissected up from the prepatellar tissue. The fragments are inspected and the intervening clots removed with a forceps and irrigated with normal saline. Absorbable sutures should be used. The prepatellar and capsular tissues are carefully sutured with chromic catgut, after which the circumferential suture which had previously been introduced is tied. This brings the bony parts together. The joint should be closed without drainage. After ten days passive exercise may be allowed. On the 14th day the limb is flexed from five to ten degrees. The fixation of the joint is continued for three weeks, when the splint is removed and the patient allowed to bend the joint. During the course of the treatment the leg should be slightly flexed on the abdomen in order to relax the quadriceps femoris muscle.

**Bacterial Examination of Wounds.**—C. Levaditi (*Presse médicale*, June 10, 1918) states there is no longer any doubt as to the importance of bacteriologic examination of war wounds as a guide to the indications and results of primary, primo-secondary, and secondary suturing. In the case of a primarily sutured wound the inoculations are made from a wick of silkworm gut strands placed in the centre of the wound before suture. In wounds that are to be left open, the cultures are taken fifteen to twenty hours after the surgical cleansing procedures by means of a tampon on a metallic rod, placed in a sterile test tube. From this tampon are inoculated in succession an agar slant; a tube of glucose agar (Veillon), and a tube containing two mls of bouillon and 0.2 ml of horse serum. With a fine pipette a second passage is made, beginning with the agar slant and glucose agar. Finally, a smear should always be made from a second tampon previously passed into all the wound recesses. This should be stained with Gram fuchsin. The results are recorded after twenty hours' incubation on a special chart with separate columns for the bacterial species detected and the results of quantitative microscopic study of the smear, the number of bacteria per field being noted. This quantitative examination, carried out every two or three days until suture is deemed opportune, supplies data for a bacterial curve and shows the precise moment of critical depuration of the wound. In a separate column the indications for suture are noted by the bacteriologist for the surgeon's information. Wounds with streptococci, primarily sutured, must be watched and the sutures cut in the event of marked general and local reaction; if not yet sutured, they should be submitted to adequate treatment, preferably the Carrel procedure, and left open until the cocci disappear or are sufficiently attenuated to permit of healing by first intention or almost complete closure. In wounds showing other germs, suture is in order unless the infection is very abundant, in which event they should remain open until the bacterial curve indicates the moment of critical depuration.

**Ichthyol and Glycerin in Gunshot Wounds.**—

C. W. Duggan (*Therapeutic Gazette*, June, 1918) asserts that while the much lauded watery antiseptics soon check suppuration, they leave the granulations water logged—which necessitates astringents or a change of antiseptic—and delay healing. Glycerin places wound surfaces in a much better condition for healing, while ichthyol markedly relieves the congestion of the surrounding skin present in the great majority of gunshot wounds. Duggan uses ichthyol and glycerin in equal parts as long as there is suppuration, i. e., for three days, where foreign bodies have been removed, abscess cavities completely opened, and counteropenings made if sinuses exist. The concentration of ichthyol is then reduced to twenty per cent. The combination is painted over the wound and surrounding skin with a camel's hair brush and then covered with antiseptic gauze, absorbent cotton, and a bandage. No impermeable dressing is used, as it delays healing. At the redressing on the next day, the surface is simply dried with a sterilized swab, and occasionally, pure alcohol is used. No drainage tubes are used. Cavities and sinuses are syringed out with pure alcohol and painted with ichthyol and glycerin. Where the alcohol irritates, methylene blue, four grains to the ounce, is added with good results. The method is asserted to avoid all risk of extension of sepsis and secondary hemorrhage; septic absorption is checked; the dressing does not adhere; it does not irritate the wound; frequent redressing is unnecessary, and the time in the hospital is greatly curtailed. Mud should be removed from the wounds with vaseline applied on sterile swabs. Ichthyol, alone or with glycerin is also recommended by Duggan in burns, whitlow, boils, carbuncles, vaccination conjunctivitis, gonorrhea, abscesses in general, external carcinoma and operative wounds in tropical abscess of the liver and suppurative appendicitis.

**Pyorrhea Alveolaris.**—B. Kritchevsky and P. Séguin (*Presse médicale*, May 13, 1918) report good results in sixty cases from Barton L. Wright's method of mercury succinimide injections. They noticed in the pyorrheal secretions numbers of large spirochetes, which generally disappeared almost completely as a result of the injections. This led them to suspect that the spirochetes might be of etiological importance, and even better therapeutic results secured by means of the organic arsenicals. Studies in 244 cases showed that the spirochetes are present in large number in three fourths of all cases of pyorrhea, in fact, in twenty-two out of twenty-four cases not previously treated. In healthy mouths, on the other hand, the spirochetes were absent or few in three fourths of all instances. Six to ten injections of 0.1 to 0.6 gram of neosalvarsan, among forty-two patients all showing numerous spirochetes, caused disappearance of the latter in twenty-nine cases, in the absence of all local treatment. A few patients were treated with local instillations of neosalvarsan solution or by application of the powdered drug in the pyorrheal pockets. Excellent results were obtained both as regards clinical improvement and rapid disappearance of the spirochetes. The treatment the authors recom-

mend for pyorrhea is as follows: intravenous injections of 0.1 to 0.3 gram of neosalvarsan; if contraindications or special technical difficulties exist, intramuscular injections of mercury succinimide should be substituted. Local treatment is equally necessary. If the tooth is entirely loosened and the alveolar process destroyed, the tooth had best be removed. If the alveolar process is but partly involved the roots should be scraped and even carefully polished. Fluorine salts will assist in breaking up and loosening the tartar. Neosalvarsan should also be introduced into the pyorrheal pockets in solution or powder form. Recurrence is obviated only by persistent, careful cleansing of the teeth by the patient or a dental specialist.

**Cysts and Pseudocysts of the Pancreas.**—A. A. Kerr (*Surgery, Gynecology, and Obstetrics*, July, 1918) summarized on the above conditions as follows: Pancreatic and pseudopancreatic cysts, while not rare, are of sufficient importance to be recorded. The x ray is an important aid in diagnosis in showing the position of the cyst in relation to the stomach and other organs. The treatment is surgical, usually incision and drainage. Sometimes it is practical to remove the entire cyst in favorable cases. Diabetes is an occasional complication of pancreatic cysts, and when present renders the operation more dangerous, although one should hesitate when less than four per cent. of sugar is present (C. H. Mayo), after giving a diabetic diet and a course of alkaline treatment to minimize the acidosis, to give even the benefits of the operation. An antidiabetic diet is advisable following operations on the pancreas; especially where the discharge is irritating. Paraffin ointments are serviceable to allay the irritation.

**Quinine Hydrochloride and Cacodylate of Soda in Chronic Malaria.**—John C. Clark (*Therapeutic Gazette*, July, 15, 1918) uses a preparation of dihydrochloride of quinine of such a strength that one c. c. represents one half grain of the salt. It is given intravenously. When used in connection with cacodylate of soda the following dose has been adopted: one grain of quinine for every ten pounds of body weight and one grain of cacodylate of soda for every fifty pounds of body weight. This amount is to be given daily for five days. Subsequently on each fifth day, for a period of thirty five days, the same amount of quinine is given with one grain of cacodylate of soda for every twenty-five pounds of body weight. In addition a certain amount of quinine hydrochloride is given by mouth daily, an average of five grains, together with Bland's mass, laxatives, etc., depending on the general condition of the patient, and, when necessary, alkaline diuretics in sufficient quantity to insure a relatively low acidity of the urine. The injection is given at the rate of about one c. c. per minute. The after care consists in the oral administration of from one to two drams of alcohol containing five minims of chloroform to the dram. Following this the patients remain in a reclining position for a variable length of time before leaving the office. Fresh distilled water should always be used in order to avoid the chill which sometimes occurs.



**Malaria.**—S. Gréhan (*Bulletin de l'Académie de médecine*, May 14, 1918) reports constant success in nine years of practice in the French colonies from the following plan of treatment: Any malarial patient whose temperature rises to 39° C. is given, in the absence of albuminuria, intramuscular injections, for three successive days and at twenty-four hour intervals, of from 0.75 to one gram of quinine sulphate, according to his size. Where, after a time, a fresh paroxysm occurs, another like series of injections is made. Were this plan generally and systematically followed, most malarial cases would be rapidly and permanently cured. Among illustrative cases the author cites that of his own person. In 1911, on the Niger, he had several attacks of fever and finally a grave bilious remittent condition. Injections of saline solution and of quinine, administered by his wife, saved his life. Subsequently he had no more attacks of fever and led an extremely active and fatiguing life.

**Ulnar Nerve Paralysis.**—N. I. Spriggs and Astley V. Clarke (*Lancet*, June 8, 1918) points out that the condition of *main-en-griffe*, so common in ulnar paralysis, can be produced in the cadaver by simultaneous traction on the extensor and flexor tendons of the forearm, or in the living person by simultaneous electrical stimulation of these two groups of muscles. Under these conditions the forearm muscles are acting while the small muscles of the hand are not. If, under the conditions named, the tendon of one interosseus also be pulled upon the deformity does not result in that finger. If the interosseus tendon on each side of the finger be joined to that of the flexor sublimis just distally to where the latter splits, the fingers are given a useful prehensile power when the flexor tendon is pulled upon and the *main-en-griffe* deformity is prevented. On the cadaver this operation is comparatively easy and it is suggested that it be applied to correction of the deformity in cases of ulnar paralysis presenting the *main-en-griffe*.

**Intravenous Arsenobenzol Treatment Combined with Lumbar Puncture.**—A. Tzanck and A. Bernard (*Paris médical*, May 11, 1918) deem all intraspinal injections of arsenobenzol unsafe, however small the dose, in late syphilitic meningomyelitis. Sicard having shown that such injections alter meningeal permeability, the reaction locally being such as to permit drugs introduced intravenously to pass through the pial carrier, the authors have been seeking to obtain the same meningeal perturbation and pial permeability by simple spinal aspiration by lumbar puncture, intravenous administration of the arsenical being thus alone required. They give successive injections of 0.15, 0.3, 0.45, 0.6, 0.75, 0.9, 0.9, and 0.9 gram of neoarsenobenzol, each followed within five minutes by lumbar puncture. The amount of spinal fluid removed must always exceed ten mils, and the fluid obtained is used for cell numeration, albumin estimation, and the Wassermann reaction. The lumbar puncture regularly proved less disturbing to the patient than in cases with normal spinal fluid; the patients welcomed the punctures because they relieved their headaches. In some cases the combination of intravenous injections and lumbar puncture alone re-

lieved the headache, either measure practised independently failing to do so. Eleven cases were treated, including one of tabes, one of paresis, two of meningomyelitis with arteritis and paralysis, one of Erb's syndrome, and seven of chronic syphilitic meningitis of various types. Pronounced improvement was noted in over two thirds of these cases, both serologically and symptomatically. Objective signs persisted, but the course of the disease was arrested. While less efficacious than intraspinal arsenical injections in meningitis cases of the secondary stage, this treatment is the only safe procedure where late organic involvement of the neuraxis is considered a possibility.

**Senile Chorea.**—Malford W. Thewlis (*Medical Review of Reviews*, July, 1918) says that true senile chorea should be treated with arsenic. He prefers to give a tablet containing 1/100 grain of arsenic trioxide before each meal and at bedtime. Fowler's solution may be used in five minim doses three times a day, but it is essential to watch for the secondary effects of arsenic in the aged, as elimination is very slow and the drug is apt to have a cumulative action. To prevent this the bowels should be kept open by free catharsis. When symptoms of poisoning appear, such as a puffiness of the lids and coryza, the arsenic should be discontinued for a few days. Ordinarily he discontinues the arsenic at the end of three weeks, replaces it with elixir of iron, quinine, and strychnine phosphates, a dram before each meal, and resumes the arsenic at the end of two weeks. If nephritis is the cause of the condition it should be treated by dietary methods and free elimination through the emunctories. If the patient is robust a saline laxative may be prescribed each morning before breakfast, and electric cabinet baths are beneficial. If he is physically frail a pill should be used.

**Results of Blood Transfusion.**—J. Rieux (*Paris médical*, May 4, 1918) reviews the subject of blood transfusion, as illuminated through general discussion at the recent Fourth Interallied Surgical Conference. He takes up first the rules for choosing donors, then the indications for transfusion, and later the various methods employed. The artery to vein method may now be considered obsolete. Transfusion of pure blood from a receptacle coated with paraffin, of citrated blood, or of preserved blood, constitutes the prevailing procedure, the preserved blood method being simplest of all, though not as yet definitely established. Transfusions in rather large series of cases yielded 71.8 per cent. of recoveries in cases of hemorrhage or of hemorrhage with shock; twenty-seven per cent. in cases of pure shock, and 44.4 per cent. in cases of infection. Results from the three methods referred to—pure blood, citrated blood, and preserved blood—have seemed practically the same, about three fourths of all cases of grave hemorrhage being saved. The percentage of recoveries in the entire number of cases of different types under discussion, covering 150 transfusions, was sixty. This result is so gratifying that Tuffier has characterized the lack of attention paid until lately to blood transfusion as one of the gravest therapeutic omissions since the beginning of the war.

**Obstetrical Physiology and Delivery.**—F. M. Horsley (*Virginia Medical Monthly*, May, 1918) believes the average confinement case is better delivered in the dorsal than in the lateral posture. It is important to allow enough for the tissues to stretch; if need be, the presenting part should be held back until gradual dilatation has made it safe for the child to be delivered. The head, when protruding should be strongly pressed upward toward the symphysis to save the perineum. This may be done by placing the thumb on the one side of the perineum and the fingers on the other, covering the head as it begins to open the vulva about  $2\frac{1}{2}$  inches. The prone position permits of better use of the expulsive muscles and intraabdominal forces. Since the perineum is more quickly dilated in this position, the head can be kept by pressure from flexing too soon at expulsion and thereby preventing a larger diameter at the vaginal outlet than would otherwise be presented. The author does not hesitate to make vaginal examinations when they seem needed. There often arises some obstruction to the passage of the fetus that can be relieved by manipulation and which might otherwise waste the strength of the mother and cause contusion at certain points of the parturient canal, with consequent greater liability to infection. Failure of engagement in spite of thorough dilatation of the os is often remedied by rupture of the bag of waters. Again, a slightly excessive extension of the head causing delay may be helped through counter pressure upon the brow. Similarly, any variation in the size or shape of the head or in the form of the pelvis may cause the head to bind at certain points and this difficulty may easily be overcome by manipulation.

**Simple Treatment of Scabies.**—G. Milian (*Paris médical*, May 18, 1918) lays stress on the importance of scabies in war practice. He thinks two army corps may yield as many as 500 cases every month, thus removing a large force from active service and entailing great expense for treatment. The official course of treatment, he finds, is too complicated and is frequently misapplied by the attendants. The chief source of difficulty is that sulphur being insoluble, does not penetrate the skin, yet must be brought in direct contact with the parasites if successful results are to be obtained. Milian's simplified treatment is based on the use of a soluble sulphur preparation, and this does away with the necessity not only of the preliminary rubbing with soft soap and the hot bath, but also of the rubbing in of the sulphur itself, and even of the disinfection of the clothes—if the patient can continue to wear the latter during the treatment. The ointment employed is made by mixing 250 grams each of petrolatum and wool fat, incorporating with them a solution of fifty grams of potassium polysulphide in 250 grams of water, and adding five grams of zinc oxide and 200 grams of liquid petrolatum. The odor of this ointment persists only half an hour. The patient first rubs himself with soap in a shower bath or takes an ordinary cleansing bath. The entire surface of the body, with the exception of the head, is then covered with the ointment and the patient dons the same clothes he

had on before. For greater certainty, a second unction may be carried out the next day. On the third day the body is well washed with soap to remove the ointment. The underwear is then changed and, if possible, also the sheets. The ointment is less irritating than those hitherto used and can be used even where furunculosis or extensive impetigo coexists. In the first three or four days the lesions of scabies become larger, due to edema, but the parasites upon examination are found to be dead. In about one case in fifty, viz. in susceptible subjects and those insufficiently cleansed with soap on the third day, a harmless eruption of small papules on the trunk, lasting five to six days, may be noted. In cases with impetigo or furunculosis already present, a paste of equal parts of zinc oxide, petrolatum, and wool fat should be applied locally.

**Therapeutics of Oily Solutions of Sulphur.**—L. Bory (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March, 7, 1918) uses a one per cent. solution of sulphur in oil of sesame. His earlier favorable results from injections of the solution in psoriasis have been confirmed by further experience. He now administers large amounts from the outset, giving five mils of the one per cent. solution at a dose. In cases of syphilis in which a particularly active mercurial treatment is required, an injection of one to five mils of sulphur solution every five to eight days greatly facilitates the treatment. Bory was thus enabled, in cases previously intolerant of mercury, to administer as much as 1.15 to 1.3 grams of mercury, divided into eighteen to twenty injections, in the course of twenty-five to thirty days. In joint affections the remedy has seemed particularly useful. In a case of gonococcal arthritis of the knee, three injections of one to two mils of the solution were followed by rapid disappearance of pain and functional recovery. In a case of multiple chronic arthritis following severe tetragenous septicemia, of over two years' standing and but slightly benefited by colloidal sulphur, three injections of five mils of a 0.2 per cent. oily sulphur solution at weekly intervals were followed by marked and lasting improvement. In Achard's experience, sulphur injections proved of value in facilitating mobilization of stiffened joints in seven war fracture cases; in three other instances curative intramuscular injections were given, with rapid subsidence of joint effusions and febrile temperature.

**Liquid Tight Closure of Wounds.**—Walter Herbert Taylor and Norman Burke Taylor (*Lancet*, May 11, 1918) hold that the method of liquid tight closure in the treatment of infected wounds has the following advantages: It provides thorough mechanical cleansing by insuring the penetration of the fluid to all recesses and insuring its tidal removal from such recesses. It secures an outward flow of lymph and bacteria under negative pressure. Large and mutilating incisions are avoided. The concentration of the solution used for treatment remains constant and the solution can be renewed as often as necessary. The beneficial effects of heat can be secured readily. The bed and dressings are kept dry and time, effort, and dressings are economized.



# Miscellany from Home and Foreign Journals

**Absorption of Air from the Pleural Cavity.**—P. E. Weil and Loiseleur (*Presse médicale*, June 6, 1918) state that where, after removal of intrapleural fluid by puncture, air is injected, its reabsorption occupies a very variable period of time. A careful study of the cause of this variability showed, in the first place, that reabsorption becomes increasingly slower as the pathological damage to the pleura increases. Air was still found after three months in thick walled purulent pockets in cases of suppurative tuberculous pleurisy. In ordinary serous pleurisy, six weeks is an average period, while in the hydrothorax of Bright's disease all traces of injected air have disappeared in a week. Methylene blue, injected into the pleura in serous tuberculous pleurisy, continued to pass out in the urine for three and even five days. In suppurative cases the stain cannot pass into the urine at all, and can be recovered in the intrapleural fluid five or ten days after the injection. Production of a pneumothorax often hastened elimination of the methylene blue, as though the air injected lessened the disease of the serous membrane or increased its permeability. In cases in which the pleural fluid showed rapid and massive coagulation *in vitro* after puncture, the air and fluid were quickly reabsorbed and complete recovery without adhesions took place. Variations in the functional activity of the diaphragm were also found to influence the rapidity of absorption of intrapleural fluid.

**War Dyspepsia.**—G. Mouriquand and L. Bouchut (*Presse médicale*, June 6, 1918) comment on the increasing number of dyspepsics in military hospitals. They present an analysis of 200 cases based on complete clinical and laboratory examinations. Organic diseases of the stomach are excluded from consideration. The cases are divided into three groups, according as the chief symptom is flatulence, pain, or vomiting. The first group is the largest; associated symptoms are eructations, heat flushes, somnolence, and frequently dizziness, headache, precordial anxiety, anorexia, coated tongue and constipation. In the painful group of cases, there is burning or epigastric tightness coming on immediately or one half to one hour after ingestion of food. The epigastrium is tender, but under radioscopy the gastric area proper is painless. In the group of cases with vomiting, this symptom ranges from simple regurgitations one half to one hour after meals to copious vomiting immediately after each meal. Radioscopy revealed a normal form, position, mobility, contractility, and mode and duration of evacuation of the stomach in three fourths of the 200 cases. Five cases, however, seemed to show gastric hypertension and forty-five, atonia. Of the latter, twenty-three were in the painful group. Gastric acidity was nearly always normal. The general condition was little influenced in the cases dating back only two or three months, but later there were loss of weight, anemia, tachycardia, dizziness, etc. A prominent etiological feature was that nearly all the cases were in robust men, for the most part peasants, previously entirely free from gastric dis-

turbances; among city dwellers the tendency seemed rather toward relief from preexisting dyspepsia. The gastric neurosis sometimes had become established after a violent shock, as the bursting of a shell nearby; after a wound, sometimes slight; after typhoid or paratyphoid fever or febrile gastroenteritis; as a result of bad teeth, or after gas intoxication. Placing these cases by treatment in a condition fit for return to the front proved a difficult matter. The only possible way of restoring a considerable number to service appears to be to prepare for each man a careful protocol of the results of the various clinical examinations undergone, to be presented to the various medical officers in whose hands he passes, including those at the front; the tendency toward undue leniency and unnecessary prolongation of hospital treatment could thus be eliminated.

**Alcoholism in China.**—W. H. Park (*China Medical Journal*, May, 1918) says that alcoholic drinks are made and sold in immense quantities in China. Distilleries and breweries are found all over the country, and, in addition, the farmers make for themselves more alcoholic liquors than are probably made by farmers in any other country in the world. Drinking seems to be a universal habit, from the coolies upward. Farm laborers stipulate that they shall have so much liquor daily in addition to their wages. Business and professional men, merchants, doctors, priests, and officials, drink more than the coolies and laborers. Worst of all are the idle rich. The possibility of alcoholism has to be kept in mind in every important case needing treatment in China, regardless of age, sex, or condition in life. It may not be apparent at first sight, owing to the Chinese way of drinking and to the fact that many stop drinking before consulting a doctor, but it is present just the same. In taking histories we have to be on the alert else alcohol may never be mentioned. Otherwise many cases will not be understood and the diagnoses may be as unreliable as the histories given by the patients.

The editor of the *China Medical Journal* commenting on this article says that the assumption that the Chinese are, and always have been, a very sober people, is not correct. In the second century a law existed which prohibited more than three persons from drinking together without special cause and license. Quotations from Chinese literature show the same sentiments and songs shared by toppers all over the world. Hard drinking seems to be common in some parts of China, especially in the smaller places, but a drunken person is rarely seen on the streets of a Chinese city. In Shanghai, during 1917, there were only sixty-four arrests for drunkenness among a Chinese population of 644,580. According to Rodney Gilbert the Chinese drink as much as they can, but the fear of "losing face" acts as a deterrent to open drunkenness. It is no impropriety to succumb to a great quantity of alcohol, in fact it is rather heroic, but one loses prestige by succumbing to a little, and as the Chinese respond quickly to stimulants there are very few

successful toppers among them. It is suggested that in the keen struggle for existence families with a propensity to drunkenness have been weeded out, so that as a nation the Chinese may be more temperate than formerly. At any rate Western nations cannot be accused of having led the Chinese astray from the paths of sobriety. There is a general impression that the suppression of the opium traffic is leading to an increased consumption of alcohol.

**Antibody Production after Partial Adrenalectomy in Guinea-pigs.**—Frederick L. Gates (*Journal of Experimental Medicine*, June, 1918) does not believe the adrenals play an important part in antibody production or in the known immunity reactions of defense against bacterial invasion. He arrived at this conclusion after observing the effect of partial adrenalectomy on guinea-pigs immunized either before or after operation with typhoid vaccine or with washed red blood corpuscles of the hen. The typhoid agglutinins or hemolysins and hemagglutinins were titrated at intervals during the course of antibody production. It was found that partial adrenalectomy with removal of a single gland or of one gland and as much of the other as could be safely taken had no influence on the formation of typhoid agglutinins in guinea-pigs.

**Mesenteric Vascular Occlusion.**—Arthur A. Gisenberg and Henry A. Schlink (*Surgery, Gynecology, and Obstetrics*, July, 1918) conclude with regard to the form of occlusion as follows: 1. Mesenteric vascular occlusion is not an extremely rare condition, there now having been collected about four hundred cases. 2. The occlusion is most frequently in the arteries. 3. By far the most common lesion produced is hemorrhagic infarction of the intestine. 4. The most common cause of the occlusion is embolism resulting from infection and injury. 5. There is no difference clinically between the arterial and the venous occlusion, regardless as to whether it is due to embolism or thrombosis, in the superior or inferior vessels. 6. The clinical diagnosis should be made on sudden onset, acute coliclike abdominal pain, distention and tenderness, signs of shock, and collapse. Often there may be vomiting and constipation. If diarrhea is present it is almost always accompanied by melena.

**Tachycardia with Hypertension in Soldiers.**—C. Aubertin (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, January 24, 1918) states that, of the cases of tachycardia met with at the front, some present a valvular murmur, others a systolic murmur of doubtful significance, while others still exhibit no murmur. In the latter variety, high blood pressure often coexists, thirty-four out of forty-three cases, and rest usually reduces the rate twenty-three out of twenty-eight cases. The patients are usually young infantrymen. The heart rate is generally 120 to 140 in the standing position and 100 to 100 in the recumbent position. After rest in bed for one day the rate shows a tendency to fall during the course of the day and at night, rising again in the morning. Compression of the eyeballs generally fails to slow the heart, as do also rest in bed and digitalis; potassium bromide and a milk

diet, however, sometimes influence the rate. The accompanying hypertension is usually manifest in a systolic pressure of 160 to 170 mm. of mercury. The diastolic pressure is either normal, eighty to ninety, or slightly raised, 100 to 110. Exertion generally causes considerable dyspnea and the rate rises to 150 or 170. Of thirty cases, sixteen showed reduction of both rate and blood pressure after one to three weeks' rest and a meatless, wineless diet. Seven cases showed reduction of tachycardia but not of blood pressure. In two the tachycardia had already passed off on admission. In five, rest in bed, milk diet, and drugs failed to reduce either pulse rate or blood pressure. Possibly these were hyperthyroid cases. The cases recovering under treatment may be sent back to the front, but must be spared heavy exertion. In the diagnosis, certain conditions must be carefully excluded, viz., valvular disease with temporary marked tachycardia, in which rest, digitalis, and at times ocular compression will slow the heart and cause the murmur to reappear; secondly, tachycardia due to tuberculosis. Overlooking the tachycardia because the pulse is normal in recumbency must also be avoided; blood pressure estimations and exercise tests are necessary for this purpose.

**Bradycardia, Low Blood Pressure, and Acrocyanosis.**—H. Vincent (*Paris médical*, May 25, 1918) has observed rather frequently among children, adolescents, or young adults of both sexes a syndrome comprising these features. The subjects are frequently of an apathetic disposition, growth of hair is somewhat delayed, and among females menstruation may be insufficient or irregular. Of twenty-nine cases nine had a personal or family history of rheumatism. Degenerative stigmata are not uncommon. Some have ichthyosis of the knees, elbows, or ears. The acrocyanosis consists in a cold, bluish condition of the extremities, favored by exposure but occurring even in the summer time, and commonly complicated in winter in children and young girls by edema of the hands and chilblains. The pulse is small and the blood pressure decidedly low. The change of pulse rate from the standing to the recumbent position is fifteen to thirty pulsations per minute instead of the normal eight or nine, and in recumbency the rate falls to fifty-eight or even lower, down to forty. Upon rising, the blood pressure, already low, descends twenty or thirty m.m. further. The sphygmogram shows exaggerated and delayed diastole. The syndrome becomes attenuated or disappears in the adult or aged, frequently at the time of active genital functioning, e. g., in young women after marriage and especially after pregnancy, which brings into action the uteroovarian and mammary functions and excites thyroid activity. Upon examination of the thyroid gland before this period one finds reduction of its lobes or at times almost complete absence of one lobe; or, the gland may be rather large, but is soft and devoid of tonicity. Regular use of thyroid substance with potassium iodide or iodine causes marked improvement. Chilblains, if present, quickly disappear. Adenoid tissue, if noted, should be removed and in a few of the cases in young girls, ovarian substance should be given in addition to the thyroid.



**Emotion in the Etiology of Tabes Dorsalis.**—E. Fernandez Sainz (*Revista de Medicina y Cirugía Practicas*, May 7, 1918) is strongly of the opinion that emotional disturbances as well as traumatism and exposure may sharply aggravate the course of a latent tabes, or provoke the appearance of the first appreciable symptoms of the disease in a patient predisposed by a previous syphilis.

**Salt Metabolism in Diabetes Mellitus.**—A. H. Beard (*Archives of Internal Medicine*, June, 1918) has been attempting to determine the cause and conditions leading to rapid loss or gain in weight in diabetics. The large amounts of sodium chloride that diabetic patients will ingest proved of interest in this connection. Increase of weight in patients with unrestricted intake of chlorides was invariably associated with chloride retention. The edema usually passed off after the disappearance of glycosuria. Two cases showed a variation of carbohydrate tolerance directly in proportion to change in weight.

**The Psychoneurotic Syndrome of Hyperthyroidism.**—Malcolm S. Woodbury (*Journal of Nervous and Mental Disease*, June, 1918) says that the contention of certain alienists that the thyrotoxic psychosis does not deserve a separate classification is very likely correct, though there is in the non-insane cases of thyrotoxicosis a very definite mental and nervous picture differing in degree, and somewhat in type according to the acuteness and type of dysthyroidism. Depression of moderate duration is more common in thyrotoxic nonexophthalmic cases than in the exophthalmic, and when it occurs in the latter it is usually much more transitory; in neither is it usually associated with self accusatory delusions. The presence of nervous symptoms with other classic symptoms of dysthyroidism should arouse suspicion, regardless of the size of the thyroid. In all such cases it is best to study basal metabolism if possible, but the adrenalin chloride tests as described by Goetsch, should certainly be applied.

**Researches on the Cancerous Diseases in Norway.**—F. G. Gade (*Journal of Cancer Research*, April, 1918) presents an investigation of cancer in Norway. The statistics are based on the Mortality Statistics from 1902-1911, and the material collected by the Norwegian Committee for Cancer Research from 1902 to 1912. It covers a vast number of figures which are marshalled together in an orderly and impressive fashion. One of the most striking facts is the high occurrence of gastric carcinoma, which is reported as 61.2 per cent. of all carcinomas. An analysis of the social position and occupation of 2,554 cases showed that carcinoma was most frequent in farmers and least often found in officials, officers, artists, and university graduates. Attention is called to the frequent occurrence of cancer on the lower lip, particularly in those regions where the use of the clay pipe is in vogue, although all the deduction drawn from the figures and from such facts are made with every reservation. It is concluded that married life with a cancerous person does not involve any greater risk of the development of cancer than does the factor of heredity, as some of the cases reported may perhaps point to a family predisposition to the disease.

**Nocturnal Enuresis and Adenoids.**—A. M. Calderan (*Revista de Medicina y Cirugía Practicas*, April 14, 1918) in reporting a case of nocturnal enuresis in a child of eleven years which resisted all medical treatment and was readily cured by removal of adenoids, draws attention to the common connection between adenoids and incontinence of urine and the frequency with which this condition of the nasopharynx is either overlooked or passed over as of no consequence.

**Alexin Deficit in Overwork.**—H. Vincent (*Presse médicale*, May 2, 1918), in experiments on guinea pigs, found that acute and prolonged exertion causes a lowering, often marked, of the alexic power—complement—of the blood serum. This may account for the fact that the resisting powers toward certain bacterial infections are greatly weakened during periods of exaggerated and prolonged fatigue, when the serum has lost a large portion of its protective constituent.

**Early Leucocytic Modifications in Wound Cases.**—Brodin and Saint-Girons (*Presse médicale*, May 2, 1918) state that in all cases of extensive wounds a marked leucocytosis rapidly arises. The differential count, moreover, is of prognostic significance. Predominance of the large mononuclears over the lymphocytes and intermediate mononuclears taken together signifies a grave condition; the converse constitutes a favorable indication, which is all the more favorable as the lymphocytes and intermediate mononuclears predominate over the large mononuclears.

**Focal Necrosis of the Adrenal: with Remarks upon Acute Adrenal Insufficiency.**—E. Moschcowitz, (*Proceedings of New York Pathological Society*, October-December, 1917) describes two cases, the first occurring in a man forty-one years old. The most prominent symptoms were a subnormal temperature and slow respiration and pulse. Death followed three days after a nephrectomy for a pyonephrosis. Post mortem examination showed a number of sharply defined focal necroses scattered throughout the cortical zone of the right adrenal, with degeneration of cells, polynuclear infiltration, and moderate hemorrhage of the gland. Many of the capsular vessels were thrombosed, so that this thrombosis of the vessels may be a possible cause of the adrenal lesions. The second case was that of a child who had been sick for a long time with an abdominal ascites and chyluria. Autopsy examination showed bacterial emboli in the spleen, pancreas, and kidney, and beneath the capsules of both adrenals, at places surrounded by a polynuclear infiltration. The patient had died from a streptococcemia of three days' duration. A review of the literature showed that acute inflammatory lesions in the adrenal were most common in some of the infectious diseases, as diphtheria, variola, typhoid, tetanus, pneumococcus infections, dysentery, and streptococcus infections. It may be obtained experimentally by injections of some of the pathogenic bacteria. Moschcowitz calls attention to the various and conflicting symptoms that have been described under the clinical aspects of acute adrenal insufficiency, and states that they do not correspond to what is known of the physiology of the gland.

# Proceedings of National and Local Societies

## THE AMERICAN GYNECOLOGICAL SOCIETY.

*Forty-third Annual Meeting, Held in Philadelphia, May 16, 17, and 18, 1918.*

The President, Dr. JOHN G. CLARK, of Philadelphia, in the Chair.

*(Concluded from page 356.)*

### **Final Results of X Ray Treatment of Fibroids.**

—Dr. JOSEPH BRETTAUER, of New York City, in conclusion, formulated very briefly his views on the x ray treatment of fibroids. 1. At an age below forty-five the x ray treatment for fibroids should not be the choice, but should be employed only when operative measures are not advisable or are refused. 2. Between the ages of forty-five and fifty-five, x ray treatment should be the method of choice and no patient should be deprived of the right to undergo it. With an open cervix and a distinct diagnosis of the submucous development of a fibroid, operative measures promise better results. Patients with relaxation and laceration of the genital tract should be expected. These cause no symptoms while the uterus is large and above the pelvis, but when as a result of the treatment the uterus becomes smaller and sinks down into the pelvis, serious inconvenience is caused and operative interference becomes necessary for its belief. 3. Uterine hemorrhages due to fibroids in women beyond the age of fifty-five should raise suspicion of sarcomatous degeneration and operative measures are preferable to any other form of treatment.

**The Use of Radium by the Gynecologist.**—Dr. CURTIS F. BURNAM, of Baltimore, Md., stated that the basic principle underlying all radium treatment was that pathological tissues were in general more sensitive to radiation than normal tissues, and that consequently it was possible with appropriate dose to destroy the former and leave the latter intact.

The gamma rays of radium, which alone could be used for therapeutic purposes, could not be focused and consequently were dispersed in the form of a sphere. This led to their rapid dilution inversely with the square of the distance. In addition there was an absorption of about eight per cent. per cm. in tissue. The absorption in tissue could not be helped. It was, however, possible to minimize the dispersion factor by placing the source of radiation away from the surface and consequently increasing the radium as well as the time of exposure. If the radium was placed two millimetres from the surface, at one cm. below the surface only 2.5 per cent. of the surface application was still present and at five cm. only 0.107 per cent. remained. But if the radium was placed twelve cm. above the surface, at one cm. below the surface seventy-eight per cent. of the surface radiation was still intact; at five cm. 35.8 per cent., and at nine cm. a little less than twenty per cent.

Radiosensitivity of tissue was extremely difficult to determine. Individuals varied immensely so far as normal tissues were concerned. Variations of

tumors of the same type were even more marked. The same tumor varied at different stages of its development. The single dose method was very valuable in giving us standards to work by, but the broken dose method at week intervals permitted of giving nearly twice the dose within six weeks, the time necessary to elapse between massive treatments.

At a distance of 2.5 cm. from the skin a gram of radium on an applicator 2.5 cm. square filtered through two millimetres of lead would lead to an erythema in two hours and would cause a marked retrogression or cure of an epithelioma. One one thousandth of this dose might be effectual in destroying large masses of lymphosarcoma or of splenomyelogenous spleen tissue. Three or four times the dose, however, had to be given to destroy normal skin. Ovarian tissue was roughly ten times as easily injured as normal skin; the vaginal wall would tolerate four or five times the skin dose; the rectal mucosa as much as the skin; the mucous membrane of the bladder certainly twice as much. The vaginal and cervical cancers were fully as susceptible to treatment as skin cancers, perhaps more so. The adenocarcinomas of the rectum as well as of the body of the uterus were decidedly more susceptible than epithelioma. Uterine fibroid tissue was tremendously more susceptible than normal skin.

The doses given were for massive radiation with at least six weeks' interval between treatments. They could not, as a rule, be repeated then without leading to more or less destructive effects on surrounding normal tissue. Effectual treatment could only be secured by careful preliminary determination of the distances of all parts of the growth from the portals. Cross fire radiation should be employed and normal tissues protected by pushing the parts aside wherever possible and by metal screens.

For radiation within the cervix, uterine cavity, and rectum, the radium emanation was enclosed in glass tubes, these in metal tubes, and these in rubber tubes, securing a pure gamma radiation. The small growths of the bladder were best treated by direct application through a cystoscope. Extensive infiltrating bladder growths and some rectal cancers were best treated from without the body.

A number of illustrative cases of cervical and vaginal cancers were discussed in detail. Appropriate treatments for each were suggested. The injuries likely to result from overirradiation, such as fistulæ and rectal ulcers, were described as were also the most effectual methods of guarding against them.

**Clinical Data on Chorioepithelioma.**—Dr. HIRAM N. VINEBERG, of New York City, said that chorioepithelioma occurred in two types, benign and malignant, but as yet there were no recognizable histological differences between the two varieties. An endeavor should be made to make a diagnosis on clinical data, inasmuch as a curettage was attended with the risk of causing rapid and extensive metastases. Furthermore, a microscopic examina-



tion of the curetted material was not always decisive, and might even be misleading. For the present, not knowing the cause, we could have no means of prevention. But, as a possible safeguard, placental residue, when present, should be promptly removed, and in every case of hydatid molar pregnancy, an anterior hysterotomy should be done for the double purpose of removing all the vesicles and exploring the entire inner wall of the uterus for any suspicious nodules or extra thinning of the wall at any one point. Once the diagnosis had been made, panhysterectomy was indicated, as we had no means of differentiating between the so called benign and the highly malignant cases.

**Cancer of the Cervix Complicating Triplet Pregnancy.**—Dr. BENJAMIN P. WATSON, of Toronto, Can., reported the following case: Patient, aged thirty years, quintipara, pregnant. On examination a large cauliflower carcinoma was found growing from the anterior lip of the vaginal portion of the cervix. The abdomen was opened, the uterus incised, and three five months' fetuses removed, and then three separate placentas connected by membrane. A Wertheim operation was then proceeded with. The patient made a good recovery. He reviewed the histories of other cases of cancer of the cervix complicating pregnancy.

**The Graduate Degree in Obstetrics and Gynecology.**—Dr. JENNINGS C. LITZENBERG, of Minneapolis, Minn., stated that the Minnesota plan for graduate work in the medical specialties was new, but new only in its application to medicine. The plan simply applied the principles governing university graduate work in any other branch of advanced learning to the medical branches and placed them not only under the same principles, but actually in the graduate school of the university.

The requirements for entry were a college degree, a medical degree, and a thorough reading knowledge of French and German, and an internship of at least one year. The course extended over three years of work with a major and a minor, the same as candidates for other advanced degrees, and examinations were by graduate faculty. A thesis, which must be an original contribution to science, was required and must be defended. This led to the degree of Doctor of Philosophy in Obstetrics and Gynecology. A two years' course might lead to Master of Science. Withal it was a plan to raise to a high level the training of specialists.

**The Use of Dakin's Solution in Suppurative Conditions Within the Peritoneal Cavity.**—Dr. RALEIGH R. HUGGINS, of Pittsburgh, drew the following conclusions: 1. When Dakin's solution is brought in proper contact with an infected surface, it will destroy pus; if this does not happen, it is because there is some focus not reached by the solution or because of imperfect technic. 2. As a result of its use, there is rapid return of strength, and the postoperative course is more comfortable, and with less danger of secondary complications. 3. Any offensively smelling discharge is destroyed almost immediately. 4. It is contraindicated in the presence of an intestinal fistula. 5. That it may delay the final healing by interfering with the normal granulating process in some instances, may be true. Fur-

ther observation is necessary to determine this question.

**Dystrophia adiposogenitalis in Women.**—Dr. EDWARD A. SCHUMANN, of Philadelphia, drew the following conclusions: The syndrome resulting from the effects of deficient pituitary secretion upon the female sexual system may properly be divided into three clinical groups, according to the sex epoch affected. The terms amenorrhea of obesity and lactation atrophy or superinvolution of the uterus are no longer correct, since it seems reasonably well proven that both these conditions are but phases of a primary hypopituitarism. Definite regression of the reproductive tract may follow deficient pituitary secretion in parous women of mature age, and may and frequently does give rise to erroneous diagnosis of pregnancy. Treatment for all groups consists in general measures and the empirical use of glandular extracts, the systolic blood pressure being a fair index of the particular gland substances to be employed; low pressure indicating pituitrin; high pressure, thyroid. The prognosis is guarded in all cases, as to recovery, but is favorable in direct ratio with the age of the patient.

**Description of Goffe's Gastrocolonopexy Operation.**—Dr. J. RIDDLE GOFFE, of New York city, stated that from his experience he had gradually evolved the method which he now employed as follows: This description embraced the complete operation in which both stomach and colon were involved in extreme ptosis and adhesions.

A longitudinal or transverse incision was made below the umbilicus. Through this adhesions were severed, the organs were set free, the appendix was removed, the caput, if overdistended, plicated, the uterus, which was frequently found displaced, restored to normal position and supported there, and if necessary the appendages were dealt with as indicated. The incision was closed.

A longitudinal incision was then made above the umbilicus through which the upper abdominal cavity was thoroughly explored with the hand, noting the condition of the liver, its ligaments, the gallbladder, and ducts especially. Any pathological conditions were dealt with according to indications, new incisions having been made or the original one enlarged, if necessary.

The stomach was then delivered through the wound, inspected and palpated for ulcers and pyloric irregularities. If dilated, the anterior wall was depressed with a sound along the middle line and over this the stomach wall was plicated in a double row of linen sutures. In a line just above or below this, and midway between the extremities of the stomach, two, three or more linen sutures were threaded along in the stomach wall, including the peritoneal and muscular coats, each one being buried for one half to three fourths of an inch, the two ends left long and protruding from the wound. They were wrapped in sterile gauze. The transverse colon was then delivered through the wound, the omentum ligated along the border of the gut and cut away. The long sutures were threaded singly in a Peasley needle and passed successively through the abdominal wall into the interior of the abdomen and brought out in the bottom of the skin

incisions previously described. First, the stomach sutures were passed, emerging in the middle incision, the stomach restored to normal position, the sutures drawn taut, tied, and cut short. The three pairs of sutures in the colon were successively passed in the same way, each pair in the three designated loci of the colon, being directed to the incision in its corresponding location. All the sutures were drawn taut to straighten out the intestine and make intimate contact between it and the parietal peritoneum, and were then tied external to the deep fascia in the bottom of the incision and cut short. The three incisions were then closed with a subcuticular catgut suture and sealed with sterile colloidion.

It will be observed that the fixation sutures of the stomach and transverse colon were brought out through the same incision. When both organs were to be attached the fascia in the bottom of the wound was laid bare for half an inch above and below the midline of the incision and the respective sutures passed at the extreme limits of the denuded spaces, the stomach sutured above and the colon sutured below. The sutures composing the pairs were threaded along in the same line and about one quarter of an inch apart. He had deemed it advisable in some cases to link the sutures together, thus converting them into a figure of eight or chain suture. This distributed and equalized the tension over a broader area and diminished the tendency to contract. The abdominal wound was closed in the usual three layer method. Adhesive plaster and abdominal binder were applied rather tightly, and the foot of the bed kept elevated from six to eighteen inches according to the tolerance of the patient.

#### ASSOCIATION OF AMERICAN PHYSICIANS.

*Third-third Annual Meeting, Held in Atlantic City,  
N. J., May 7 and 8, 1918.*

The President, Dr. F. H. WILLIAMS, of Boston, in the  
Chair.

(Continued from page 268.)

**A Study of the Empyemas at Camp Upton.**—This paper was presented by Major H. BROOKS, M. R. C., and Major R. L. CECIL, M. R. C. Major Brooks said that his coworker had undertaken a very extensive study of the laboratory side of the problem. They had had a very virulent type of empyema. The cases were all associated with pneumonia. The disease had also been associated with measles but not with mumps. The causative germ had been the streptococcus in fifty per cent., in the other fifty per cent. the pneumococcus. Cases of pneumococcus empyema had recovered after operative treatment. There were forty-nine cases of streptococcus empyema with a mortality of sixty-one per cent. Of four streptococcus viridans cases, three died; four mixed infections with streptococcus and pneumococcus, no deaths; of thirty-five hemolytic streptococcus cases, twenty-two died. The empyema seemed in each case to be a concomitant infection of the pleural sac. With the entrance into

camp of a large contingent of colored troops the percentage of hemolytic streptococcus infections increased. The question arose as to whether this disease was transmitted directly from soldier to soldier, but with very careful isolation of cases there was found to be no diminution of occurrence. Still, the isolation was being carefully maintained. In the bronchial type there was very little cough, very little sputum raised, and little pleuritic pain, the chief symptom throughout being prostration. The diagnosis was made by aspiration and confirmed by the x ray findings, also the changes in percussion were important signs. The exudate in these cases had the appearance of alkaline urine and generally contained streptococci. Pericarditis usually developed early, and was progressive, but there was lack of metastases elsewhere. Of twenty-seven cases that came to autopsy, twenty-three were streptococcus cases. The pulmonary lesion showed interstitial bronchopneumonia, of the type described by Cole. Pneumothorax was also present. As regards treatment, it had been found that it was essential to wait till the pus became cellular in character, when operation could be safely performed.

Dr. H. A. CHRISTIAN remarked that, in civil practice they had had practically the same experience as had been reported in army cases, and experience showed that fatalities occurred from too early operative interference.

Dr. E. LEBMAN said that Fraenkel had drawn attention to the fact that during epidemics of gripe the pneumonias and empyemas followed a devious course. During such epidemics it was found that primary empyemas occurred. This form of the disease had been named *pleuritis acutissima*. The apex had to be watched for accumulation of fluid. His experience had been that the x ray would help in detection of empyema, but that it failed when the empyema was localized between the lobes and under the axilla.

Major W. H. WELCH said investigations made by Zinsser and Dochez brought out clearly that the streptococcus was the most important cause in these infections. At one camp the cases seemed to be due to the streptococcus viridans, and it was a question as to what had played a part in enhancing the virulence of this streptococcus. It was necessary that groups of experts should give undivided attention to the better control and management of the disease. Men all over the country should unite in comparing their investigations so that medical officers should have the necessary knowledge for controlling disease among the troops. MacCallum had thrown much light on the problem of the lesion in the lung as seen at autopsy. The pulmonary lesion was frequently so mild as not to be recognized. In the infection through the respiratory tract the streptococci made way rapidly to the pleural passages, but no doubt they left small foci of disease which could be detected on careful examination.

Major R. L. CECIL, M. R. C., spoke about the bacteriological aspect of these cases. In regard to the pneumococcus, cases were found with Type II in the sputum and Type IV in the pleural fluid. Of the streptococcus group four cases had shown non-hemolyzing streptococci. These were recognized as



viridans. He was loathe to make a diagnosis of viridans, as this could be said to be a constant inhabitant of the normal mouth, but upon using blood broth medium the sputum cultures showed absolutely pure growth of this organism. The colonies were typical, small, green, with a very slight zone of hemolysis which did not appear in blood broth cultures. In the types of cases with mixed infection there was a mortality of sixty per cent. Often there was streptococcus in the pleural fluid and pneumococcus in the sputum. In regard to sterile empyema, there was some confusion as to what was empyema and what simply pleural fluid. Empyema cases had pus cells in the fluid.

Major E. P. JOCELIN, M. R. C., said that of fifty-five patients operated upon, seven died. Operations were by simple drainage and no osteotomies were done. Twenty patients died without operation. In many cases several cavities were involved.

Dr. RUFUS COLE remarked that from the epidemiological view, rather than the viewpoint of complications of pneumonia, the streptococcus empyema was very different from the pneumococcus infection. It was necessary to be very accurate about interpreting favorable results of any procedure until considerable conclusive evidence had been obtained and until one could tell whether one was dealing with a frank streptococcus pneumonia or an empyema developing upon deep lobar pneumonia. Another important point was the necessity of cooperation between the surgeon and physician following operation. The internist had not completed his whole duty when he had made a diagnosis of empyema and had turned over the case to the surgeon.

**Experimental Hemochromatosis.**—Dr. PEYTON ROUS made this presentation. The pigment seen in cirrhosis of the liver was stated to be derived from the blood. If the activity of the spleen and the liver could be overborne, the pigmentation could be controlled. It was sought to do this by experiments on rabbits, which were known to be able to put away a very large quantity of alien blood. Rabbits were transfused and in three months there was found to be a considerable siderosis of the spleen and bone marrow, caused by the pigment hemosiderin. This was analogous to the deposits of hemosiderin in human hemochromatosis. In the human subject the hemosiderin pigmentation might be secondary to the cirrhosis. The injury to the pancreas in the cases caused death. The pectoral distribution of lesions in hemochromatosis indicated the influence of actinic rays upon the pigment.

**Hemosiderin Granules in Cells of the Urine: An Aid to the Diagnosis of Pernicious Anemia and Hemochromatosis.**—The same speaker gave this paper, saying it was thought that hemosiderin might be found in the urine. In a soldier of forty-six years, with lesions of hemochromatosis, the diagnosis between this disease and syphilis was doubtful. There was enlargement of the liver and spleen and a peculiar gray pigmentation of the skin. The urine was found to contain considerable hemosiderin granules. The patient died within three months with characteristic signs of hemochromatosis. It was also stated that in eight tenths of the cases of pernicious anemia hemosiderin granules were found in the urine. Fresh urine should be used for the test.

Dr. E. L. OPIE, of St. Louis, Mo., said that the experiment did not explain the etiology of hemochromatosis, but it did account for the pathology. In every essential it seemed clear that the disease had been reproduced by the experimental method. The disease was perhaps due to interstitial inflammation of the pancreas. The cirrhosis of the liver was probably secondary to accumulation of iron pigment in the cells.

Dr. W. TILSTON, of New Haven, said that in a patient of sixty-seven years, with chronic jaundice he had found in the spleen and liver a hemosiderosis comparable with that shown by Doctor Rous. In this case, there was no cirrhosis of the liver.

Dr. P. ROUS said that the animals had not been pushed far enough to get breaking down of the cells. They were now trying to keep the animals longer. The body was found to tolerate hemosiderosis to a remarkable degree, but in the human organism, in cirrhosis, the cells were not flooded with pigment as were those shown in the experiment. One must assume that the liver was in some way prevented from destroying the blood pigment so that hemosiderin would accumulate in the cells.

**Mould Infections.**—Dr. C. P. EMERSON, of Indianapolis spoke of a patient, a man of forty-eight years, who presented himself for treatment of tuberculosis. He had no toxic symptoms, no asthenia, no secondary anemia. He stated that he had not been able to lie down to sleep for eleven years, on account of asthmatic attacks. The sputum culture showed aspergillus and was negative for tubercle bacilli. The x ray showed massive cirrhosis of the hilus of the lung. He was put on large doses of potassium iodide and improved greatly, but the x ray still showed masses of scar tissue. Two other cases had occurred in one family at the same time. The *Sporothrix Shankii* was isolated, a parasite supposed to be derived from buckwheat. The infections had come on after the buckwheat crop. It was said among the population in the buckwheat raising country that those who worked among buckwheat plants were subject to chronic boils. This was clearly a mycosis infection. One woman showed lesions in which the pus had small black flecks, clearly sporothrix.

Dr. W. W. FORD, of Baltimore, said he would like to confirm Doctor Emerson's observations in regard to buckwheat. In Northern Ohio, a buckwheat district, boils were extremely common. This had been interpreted as increased sensitiveness to the buckwheat poison. The boils did not have the appearance of ordinary infections. No bacterial studies had been made so far as was known.

**The Rat and Infantile Paralysis. A Theory.**—Dr. M. W. RICHARDSON, of Boston, gave this, the second communication, on the subject. The possibility of transmission of human poliomyelitis by means of the rat and the flea was considered. That direct human transmission was not likely was shown by the fact that a block adjacent to an infected block was frequently untouched. Cases occurred in the same house, but in different families. Nothing but the rat and the flea could effect such conditions. A comparative study with bubonic plague had been made. Great similarity was found in the phenomena. Rats were always noticed be-

fore the appearance of the plague, but it was not necessary to find the rats to prove the existence of the plague. The question, "Does the rat suffer from paralysis?" had been answered. At the time of epidemics of infantile paralysis rats had been seen with paralyzed legs, and hardly able to move. Children who played with dead rats had been found to contract poliomyelitis within a short time. Since 1894, plague had become pandemic and had extended all over the world. Infantile paralysis had spread in about the same time. Rats were found to follow the grain traffic and a connection between infantile paralysis and grain traffic would have to be proved. In a very large number of rural epidemics the infections were found to start "at the mill." In plague, the flea curve preceded the plague curve by about ten days, and it was found that it also occurred with the poliomyelitis curve. Water fronts, usually infested with rats, were commonly centres of infection. There was also a disease of rabbits which carried off large numbers every six or seven years, and this was found coincident with the poliomyelitis years. Another point was that in plague the lesion was apt to occur where the patient was bitten, and in poliomyelitis the paralysis was most apt to occur in the lower limbs which would be the ones to be bitten by the flea.

Major S. FLEXNER said he was very much interested in the views of Doctor Richardson. The aspect of the epidemiology had received considerable attention, but the other aspects had also to be considered. The possibility of the reservoir of the virus was very evident to the men engaged in the study of the disease. It very soon came to light that there were cases of animal paralysis coincident with the outbreaks. Animals had been studied by the experimental method to see if any evidence could be secured to indicate epidemics in the lower animals. Paralytic disease of all kinds of animals had been studied. Material had been used for inoculation into monkeys, the only secure method for transmission of virus. The histological lesions in the man and the monkey were very characteristic. It was supposed that the effects would be similar. There was, however, no instance on record in which histological characteristics had been sufficient to compare the disease in animals with the disease in human beings, or in which inoculations could be successfully performed with the nervous tissues of animals on monkeys. Observers began early to use the reverse method. They tried domestic animals; mice, rats, rabbits, guinea-pigs, calves, sheep, goats, ponies, and cattle. They had never succeeded in showing characteristic poliomyelitis in those animals. Inoculations could cause death in rabbits but there was no histological change in the nervous system. In 1916 a large number of rats were collected from infected districts in Brooklyn, in order to test out Doctor Richardson's views. It seemed a promising direction in which to search for evidence. The nervous system of these animals was examined. Inoculations into the nervous systems of monkeys were made with the material from rats. In no instance was monkey poliomyelitis produced. The reverse method was then used.

Active virus from monkeys was injected into rats to find out how long the virus survived in the

nervous system. The tissue was then removed and put into monkeys to see if the virus survived. At the expiration of seven days the virus had apparently disappeared. It would seem that if the virus did not survive this length of time in the rat, that the rat could not act as a reservoir. One could not say that Doctor Richardson's theory was disproven. The rat might be the reservoir and the flea, under favorable circumstances, might carry the disease to human beings.

Doctor RICHARDSON said the diseased rats might be done away with, and the old rats would not be likely to have the disease. If there was anything in the theory of rat transmission, it would appear in the trenches which were known to be overrun with rats. In one sector of the trenches eleven cases had been reported. This was an unusual number among adults.

(To be continued.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Lessons from the Enemy. How Germany Cares for Her War Disabled.* By JOHN R. McDILL, M.D., F.A.C.S., Major, Medical Reserve Corps, U. S. Army. Philadelphia and New York: Lea & Febiger, 1918. Pp. xiii-262. (Price, \$1.50.)

Our medical officers are indeed fortunate in being able to profit by observation of service on both sides of the battle front. Dr. John R. McDILL went to Germany as director of a hospital unit, arriving on June 17, 1916, where he was assigned to duty at Coblenz. Later, he served in different sections and received specific permission to inspect the sanitary system followed by the German army and to prepare manuscripts on this system for publication in the United States. The Germans assert that through their system they have been able to return ninety-five per cent. of their wounded either to military duty or to self supporting civic or industrial usefulness. It is well for us to study methods which have produced such satisfactory results, and we are fortunate in having such an excellent, clear, and concise exposition of these methods as is furnished in Doctor McDILL's manual, which forms No. 5 in the valuable series of medical war manuals issued by Lea & Febiger.

*The Way Out of War. Notes on the Biology of the Subject.* By ROBERT T. MORRIS, F.A.C.S. New York: Doubleday, Page & Co., 1918. Pp. vi-166.

War exists as a biological and social fact. Individual cells, organisms, and social groups are always in a state of warfare with each other. All of this is not such destructive warfare, however, as the modern form of it by arms, which is particularly directed to destruction and not merely to the elimination of what is useless and in the long run inimical. The latter is not so directly in the service of progress as is much of the inherent biological conflict in organic nature. More and more in modern times the destructiveness of war has overbalanced any constructive and progressive effect it may formerly have had.

Such war demands preventive treatment, and this can only come about by understanding the biological foundation of war. This includes also, the writer believes, the grasping of the fact that a too complex social development has not been paralleled by an equal alteration of the germinal inheritance of the race. War is then precipitated as a remedy for the existing state of things. It is then a result of decadence, not an essential function of the State. The principle of the senescence of protoplasm in nations or parts of nations is involved in this. All this in the history



of these nations or groups must be taken into account, also the actual differences which exist among peoples, their biological development, and their different channels of outlet and reaction. Only on such a fundamental basis of inherent factors can a real and enduring peace be made.

The author's views are largely presented in mechanistic fashion, and he regards the greater difficulties which man has in keeping himself from this destructive warfare as dependent upon recent physical evolutionary development. His rising upon his hind legs threw him seriously out of balance. One is forced to question the sure foundation of such fantastic reasoning. Originality of expression and a direct stimulating grasp of thought presents much matter for further pondering. Conception and presentation form a broad and sweeping background for the practical consideration of conditions which the war has so forced upon attention. The book lacks unity of treatment in its rapid passage from one to another of the many points of view from which the questions of peace and war are considered. This unity is not essentially demanded in the short essay form in which the book is written, and yet it exists in the general background upon which the theme is worked out.

*Medical Service at the Front.* By Lieutenant Colonel JOHN MCCOMBE, C. A. M. C., and Captain A. F. MENZIES, C. A. M. C. Philadelphia and New York: Lea & Febiger, 1918. Pp. 128. (Price, \$1.25.)

*Medical Service at the Front* is the attractive title which has been given to a medical war manual by two officers in the Canadian Army Medical Corps, Lieutenant Colonel John McCombe and Captain A. F. Menzies. The manual sets forth clearly and in an easily comprehensible manner the organization of the army in the field and the duties of the medical officer at the front. While the observations are made by a Canadian, the organization is the same as that followed throughout the British army. Our own medical officers will find this manual most informing and helpful. It is rather unfortunate, we think, that the terminology of the medical department of the British and the American armies differ, but the reader is warned against the differences which otherwise might lead to some confusion. For instance, what in our own army is spoken of as the "field hospital" is known in the British army as the "ambulance," the British using the term ambulance here with the significance attached to it by the French, namely, that of a movable hospital. Notwithstanding these and other minor differences, the organizations of the British and American army are so nearly alike that our own officers can study this interesting book with much profit.

*Alcohol: Its Action on the Human Organism.* A Review by the Advisory Committee of the Central Control Board (Liquor Traffic) in England. New York: Longmans, Green & Co. Pp. x-133.

This book is a report of the Advisory Committee of the Central Control Board (Liquor Traffic), appointed in England in 1916. The report embodies a brief résumé of the investigations and a succinct statement of the conclusions which this committee reached in regard to the physiological action of alcohol, especially the effects of its use in beverages of varying strength and constituency upon health and industrial efficiency. No clearer and more concise report of actual results of investigation has been prepared. Its aim is to present a purely physiological study, avoiding all partisan discussion based on prejudice and leaning as little as possible on subjective testimony.

Therefore the facts which pertain to the use of alcoholic beverages are carefully examined and weighed in as straightforward a manner as possible. The simple and convincing manner of the report commends it for careful reading. Wherever investigation must necessarily proceed with some uncertainty and unreliability of results this is carefully noted. The whole work bears the marks of a painstaking and fair-minded gathering of evidence, which then is thrown into the balance in the concluding summary, while the reading of the scale is left to those who would pursue the subject and take practical action in any way upon it. The report admirably fulfills its strictly limited purpose.

Yet in spite of this there is much food for consideration summed up in these pages. The facts are often those not popularly accepted. The work throws a clearer light upon

the real nature of the alcohol effect, which is narcotic and never really stimulant. It discusses the influence upon the nervous system, the action upon the digestive organs, the limited effect upon respiration and heart action, its mental effect, and the reason for its widespread use. It points out just to what degree it may be considered as a food, and whether its value as such is sufficient to offset accompanying deleterious action. It presents the difference in effect of the isolated indulgence and the repeated use of alcohol and the cumulative effect of frequently repeated doses or portions. The book is of great value at the present time; since without a well considered study of facts no true judgment can be formed in regard to the value of alcoholic substances.

*Essentials of Dietetics for Nurses.* By MAUDE A. PERRY, B. S., Formerly Instructor in Dietetics at Michael Reese Hospital, Chicago; Red Cross Dietician for Base Hospital Unit No. 14. St. Louis: C. V. Mosby Company, 1918. Pp. 154.

This book recommends itself to both physicians and nurses, for its manner of presentation is concise, definite, and the subject matter has been well selected from the many things that might be said and which have been said on the subject of diet. Its form makes it particularly suitable as a textbook or a guidebook for the busy nurse, but even the physician will find its pages oftentimes useful for reference. Moreover, with the present intensified interest in food values and the cheapest way of getting these, it contains information useful to the public generally. It also includes specific directions and diets for various diseases.

Food is discussed under its different groupings, with the chemical constituency of each food. Its relation to varying needs of the individual is pointed out, and then the various forms of food and their values are treated in relation to those needs. The care, preservation, and preparation of food are all considered. Of course throughout, and in particular in the second half of the book, emphasis is laid upon the use of foods in disease and in the feeding of infants. There is no attempt made to link up the problems of dietetics with other medical problems, which gives the book a somewhat dogmatic character. This is felt particularly in the chapter on diet in skin diseases, where this particular factor in skin diseases is given no relation to other factors. In so simple and direct a volume for daily practical use not too much of such matter could be looked for. Yet we are coming to expect more and more in all medical treatises, inclusive of this important one of diet, a recognition of the wider interaction of factors, based upon a broad psychological background. This point of view needs to be impressed upon nurses.

## Births, Marriages, and Deaths.

### Died.

BERENDSOHN.—In Brooklyn, New York, on Friday, August 16th, Dr. Rudolph Berendsohn, aged eighty-one years.

DRYFOOS.—In New York, on Thursday, August 22d, Dr. Arthur D. Dryfoos, Captain, Medical Reserve Corps, U. S. Army, aged forty-one years.

HANCHETT.—In Siasconset, Mass., on Monday, August 19th, Dr. Henry Gronjer Hanchett, of Orlando, Fla., aged sixty-five years.

HILL.—In Bainbridge, N. Y., on Saturday, August 24th, Dr. Frederick W. Hill, of Brooklyn, aged forty-three years.

HOLMES.—In New York, on Thursday, August 22d, Dr. David H. Holmes, aged fifty-five years.

KEATING.—In Saranac Lake, N. Y., on Friday, August 16th, Dr. John Joseph Keating, of Brooklyn, aged forty-two years.

LANDIS.—In Cincinnati, Ohio, on Saturday, August 24th, Dr. J. H. Landis, of Chicago, aged fifty-eight years.

MARTIN.—In Attica, N. Y., on Thursday, August 15th, Dr. M. Eugene Martin, aged fifty-four years.

NEAFIE.—In Long Branch, N. J., on Sunday, August 11th, Dr. Harry Neafie, of Freehold, N. J., aged fifty-nine years.

STEVENS.—In Sayre, Pa., on Monday, August 12th, Dr. Edward H. Stevens, aged fifty-one years.

# New York Medical Journal

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## Original Communications

### OVARY: CORPUS LUTEUM,

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#### GENERAL CONSIDERATIONS

The close correlation of many of the endocrine glands makes it necessary to discuss briefly several of their interrelations before we can well describe the function and therapeutic uses of any one of them. The close relationship of the ovary and its most active part, the corpus luteum, makes it logical to discuss them together.

As this article aims to outline tersely the present knowledge concerning the function, pathology, and therapeutic uses of these glands, for the sake of brevity only a few references will be given, but due credit should be given to Dr. C. E. de M. Sajous for the many years of hard work on, and stimulation which he has given to, the study of the glands of internal secretion. Much of the therapeutic advice here offered is founded on the writer's own clinical experience.

At what embryonic age the sex glands (ovaries and testicles) begin to furnish specific hormones has not been determined, but external anatomical sexual characteristics are apparently not caused by stimuli from these glands. Various methods for the determination of sex have been suggested, but none is beyond practical criticism. Forced protein feeding of the mother has been advised to produce a male child. *Per contra*, it has been thought privation of proteins in starvation and war times is the cause of more male births in such periods. Theoretically, anything that stimulates the mother's adrenals, which are more male than female glands, should develop a male fetus. Feeding of suprarenal to the mother has been thought to produce a male child (1).

The testicles and ovaries resemble each other histologically, not only during embryonic life, but even well through early childhood; but if the animal is castrated before sexual life develops or before puberty, secondary sexual characteristics do not develop. In males the penis does not grow, hair on the face does not develop, hair on the pubis is generally scanty, the voice remains high pitched, there is more or less muscle weakness, more or less obesity, and the mentality is sluggish, i. e., a eunuch is the result. In the castrated female, the pelvis does not grow to the female size, the breasts do not

normally develop; more or less hair appears on the face, the voice is low pitched, the legs are longer, and the mentality may be sluggish. In other words, the castrated male takes on a feminine type, and the castrated female, a male type. Now, if in the castrated male is transplanted an ovary, he develops female characteristics, such as enlarged mammary glands, and there may even be a tendency to the secretion of milk. If in the castrated female a testicle is transplanted, she grows taller, and develops male characteristics.

In males the extremities grow longer than in females, and it has long been noted that the earlier the menstruation in the female, the shorter the legs, and the later the development of this function, the longer the legs. There are many exceptions to this rule, but ordinarily, at puberty the girl ceases to grow tall.

In boys sexual precocity may be caused by an hypertrophy or an abnormal growth of the testicles, or of the suprarenal glands (the cortex especially), or perhaps of the pineal gland, and of the pituitary gland. Precocity in girls is perhaps always caused by an hypertrophy of the ovaries. Hypersecretion of the pituitary or of the suprarenal cortex, or a disturbance of the pineal gland in girls tends toward masculinity and not to precocity. Goetsch (2.) believes there is a close relation between the function of the pituitary and the sex glands, and that over function of the anterior lobe of this gland is associated with over activity of the sex glands. Deficiency of pituitary secretion seems to cause underdevelopment of the sex glands in youth and sexual inactivity in the adult.

It has long been known that a disturbed secretion of the hypophysis, as in acromegaly, causes a woman to become masculine in type, with amenorrhea and loss of sexual desire, and the skin, hair, voice, and facial contour become masculine and gross. The effect on female development of an early subthyroid secretion is well understood; though the uterus and ovaries may be apparently normal, menstruation is likely not to occur.

If subthyroid secretion is the condition after puberty, the menstruation becomes scanty or is entirely in abeyance. The symptoms and physiological conditions of cretinism and myxedema need not be here described, but ovarian secretion is always abnormal in thyroid subsecretion. Also the ovaries are overstimulated in thyroid hypersecretion. In thyroid insufficiency the skin is dry and



coarse; in pituitary insufficiency, if the thyroid is not also much disturbed, the skin is moist and soft. In both conditions, as just stated, there is likely to be amenorrhea. Thyroid disturbance is far more frequent, about eighty per cent. of all cases, in women than in men, and is often due to genital disturbance or to abnormalities in the female pelvic organs. The thyroid is typically a female gland, entering constantly into the woman's sexual life. Menstruation cannot properly occur without the activity of the thyroid. Too much thyroid secretion may cause profuse or too frequent menstruation. The thyroid hypersecretes at each menstrual epoch and during pregnancy, and many of the disturbances of the menopause are due to too much or too little thyroid secretion.

Too long continued or too much ovarian secretion probably causes increased sexual desire in women at all times, but especially perhaps at the menopause, and at that time ovarian irritability, with disturbance of the thyroid gland, causes the vasomotor irregularities of this period. On the other hand, a too rapid loss of ovarian secretion may cause depression and melancholic conditions.

The rôle of the thymus gland in female development is not known. This gland ceases its activities and atrophies at about the time of puberty, when the thyroid becomes more active and the full ovarian activity, with the development of corpora lutea, has occurred. It has been suggested that a too early loss of thymus secretion may allow a precocious puberty, with a diminished growth of the girl. The thymus seems to be engaged in calcium metabolism, perhaps most closely related to the growth of the bones. Too early menstruation may cause a coincident too early loss of calcium to the girl; hence perhaps the stunted growth.

X ray radiations may inhibit more or less completely the activities of the ovaries, which may also be accomplished by destructive lesions, inflammations, and growths in the ovaries.

#### MENSTRUATION.

While it is probable that one of the functions of the corpus luteum is to cause menstruation, it cannot yet be declared just what determines the day and hour of the flow. Although a large amount of calcium, as well as other salts, is lost with such blood, still this blood does not coagulate. If uterine clots occur the bleeding is abnormal. Profuse or too frequent menstruation causes too much loss of calcium as well as of other salts, and the bones, hair, teeth and nails suffer. Also much loss of calcium causes nervousness, loss of sleep, and great irritability. Calcium is a nerve sedative. Perhaps by such extra loss of calcium the parathyroid glands become affected, and for this reason alone the calcium salts are sedative.

Too frequent pregnancies and too much ovarian secretion may cause too great a loss of calcium and consequent osteomalacia.

During pregnancy the calcium normally lost by the woman goes toward the needs of the fetus, and if she has insufficient for herself and the child, she has signs of its loss, viz., decaying teeth, irritability, and lack of strength. Feeding extra calcium may help her. After the child is born, the calcium goes

into the milk, if the mother nurses the baby. When menstruation again begins, the milk secretion either ceases, or the milk becomes inferior in quality. Of course a too long lactation causes a drain on the mother, and an inferior milk, even if menstruation has not occurred.

Women castrated during menstrual life generally add weight, not only because of the cessation of the loss of blood, but also because of the loss of ovarian secretion and of coincident lessening of the thyroid secretion, and perhaps of the pituitary secretion. If the thyroid hypersecretes for a time, there is no gain in weight. Normally, when menstruation ceases, the woman gains weight on account of a normally diminished ovarian and thyroid secretion, and perhaps, also because of a diminished pituitary secretion causing an increased carbohydrate metabolism.

All through female life the thyroid secretion is of constant importance, and normal ovarian and uterine function cannot occur without normal thyroid function. In female cretins the genital organs may develop, but they do not function.

At the time of the menopause, if the thyroid begins to gradually diminish its secretion, with a gradual cessation of the ovarian activity, there are few unpleasant symptoms occurring at this period. If, on the other hand, the cyclical hypersecretion of the thyroid which occurs every twenty-eight days continues to occur and menstruation does not take place, the patient becomes very uncomfortable at these periods, with hot flashes, restlessness, irritability, sweatings, and many other associated disturbances due to hypersecretion of this gland. This condition, with more or less symptoms of hysteria, and with neurotic symptoms will continue intermittently until the thyroid activity is normal for this period of life.

If, on the other hand, at the menopause the thyroid, with the absence of stimulation by hormones from other glands (such as the corpus luteum or other parts of the ovaries) subsecretes, the woman more or less rapidly adds weight, the skin becomes dry, digestive disturbances may occur, and she is sleepy and more or less mentally apathetic. If the secretion of the thyroid is very greatly diminished, the woman shows symptoms of myxedema. This is the period of life when myxedema is most frequent, by far the majority of all nonoperative myxedematous cases occurring in women, and in the decade of forty to fifty.

Puberty in this country occurs at about the fourteenth year. If it occurs before the age of twelve or not until after the age of seventeen, it is abnormal. If puberty occurs earlier than twelve years of age, such precocity may be due to heredity; to overfeeding; to too much sexual talk; and to too much theatre, novels, "movies," dancing, parties, and other social affairs. If puberty occurs late, after seventeen, it may be due to heredity; to a low protein diet; to seclusion; to too much book work; to lack of amusement, etc. Insufficient thyroid secretion will and insufficient pituitary secretion may, prevent or delay puberty and prevent all sexual gland activities. Puberty is delayed by ill health, and by hard work in bad hygienic surroundings.

Sexual excitements hasten puberty. Excessive thyroid secretion generally increases menstrual flow, but occasionally it may so disturb the pelvic organs as to cause amenorrhea. Profuse menstruation in girls is often due to hyperthyroidism, and may be prevented by the administration of mammary substance, and by treatment directed toward slowing the activity of the thyroid. Amenorrhea and chlorosis are often well treated by thyroid extracts, with or without iron. Pituitary feeding may also stop uterine bleeding.

#### MAMMARY GLANDS.

The gradual development of the mammary glands in the girl just before and at puberty is one evidence of her maturity; but some girls have only rudimentary mammary glands, and others have very large, even at times enormous glands, and that without much relationship to the development of menstruation, its amount, or its frequency. In fact, girls with very large mammary glands may have long periods of amenorrhea without pregnancy, or they may have very irregular and scanty menstruation.

It should be noted that very large mammary glands at any age may not denote a large amount of real glandular secretory tissue; in fact, the large glands of stout girls and women are mostly fat.

It has not been shown that these glands have an internal secretion, but they certainly have a close chemical or hormone relation to the ovaries and uterus. Castrated male animals having ovaries implanted in them may develop secreting mammary glands.

Not always, but quite generally, the mammary glands are painful and become swollen and congested for a few days before menstruation, from one to seven days. As soon as menstruation begins, the mammary pains abate and soon disappear, and as menstruation ceases the glands return to their normal quiescence, unless there is pregnancy. If menstruation is delayed, the pain in the breasts may continue for a longer time, but anything that hastens menstruation will shorten or prevent the pain in the breasts; hence some hormone of the ovary activates these glands, but without the stimulus of pregnancy they return to the normal inactivity of the menstrual interim. If there is pregnancy, the glands normally continue to grow in size and in activity. This has been thought to be due, at first, to corpus luteum chemical stimulus and later to a placental chemical stimulus. It would seem, however, more harmoniously logical to believe that the ovary, which is apparently able to start the activity of the mammary glands, may continue to stimulate these glands throughout pregnancy, and until menstruation again begins, the more important function of the ovary, viz., ovulation, being temporarily in abeyance. However, according to Bell, the removal of both ovaries in pregnancy does not interfere with subsequent lactation.

The glandular tissues of the breasts generally diminish in size after the menopause, especially in women who have nursed children. In stout women the fat enlargement will remain. Adenomatous cysts may disappear after double ovariectomy, though, on the other hand, apparently harmless cystic enlargements or adenomatous growths of the

mammary glands may rapidly develop into cancer after the menopause.

There also seems to be a reciprocal action of the mammary glands on the ovaries, as is so well known by lactating women who often prolong their lactation to prevent menstruation and hence the danger of another immediate pregnancy. If lactation is soon stopped, menstruation early occurs. Also, a profuse or too frequent menstruation, when there is no pathological excuse, especially in young girls, may be corrected by feeding mammary extracts.

The reflex stimulation of the breasts on the uterus is well known to cause its better contraction after parturition, thus preventing hemorrhage. Therefore the child, after birth, is soon put to the breast. The uterus after parturition is thought to involute more rapidly when the woman nurses than when she does not suckle her child.

#### SYMPTOMS OF OVARIAN EXTIRPATION.

The exact physiology, or pathology, of total removal of the ovaries depends upon the age of the individual at the time of the removal. It is rarely justifiable to remove both entire ovaries in the human female, and of course it is excessively rare that such an operation should be performed on a girl before puberty. Most knowledge of early extirpation is acquired by operating on animals. There is no question that the early removal of the ovaries causes the masculine type of development, with a greater growth of the extremities. A later removal of the ovaries causes atrophy of the uterus, and may or may not cause abortion in a pregnant animal.

There seems to be a great disturbance of the nutrition, and especially of the chemical metabolism, after ovarian extirpation. More especially is there a diminished calcium excretion, and probably there is a disturbance of the chloride and phosphorus equilibrium. Waste metabolism is less active, and the body puts on weight largely in fat, if the extirpation is after puberty. Other endocrine glands are also disturbed by such extirpation, notably the thyroid. The thyroid may have its colloid content increased, but often it soon becomes less active, and may even hyposecrete.

In early extirpation of the ovaries the thymus has become enlarged and active, and the pituitary and suprarenal glands may become more active, to the production of a masculine appearance and masculine tendencies.

If a small portion of an ovary, or if a supernumerary ovary is left in the animal, there may be no signs of privation of this secretion, or, if at first such signs are in evidence, they may soon disappear.

#### SYMPTOMS OF OVERSECRETION OF THE OVARIES.

Excessive ovarian secretion (probably generally associated with increased thyroid secretion) causes increased sexuality, even to all kinds of sexual perversion. Simple increased secretion may make girls coquettish and constantly seek male companions. Even if there are no other symptoms of increased ovarian secretion except profuse menstruation, the body loses an excessive amount of lime and other salts, as well as blood, essential to the general welfare of nutrition and of the nervous system. Often this excessive menstruation and increased waste metabolism may be due primarily to hyperthy-



roidism. Excessive ovarian secretion in girls may lead to masturbation or may be caused by masturbation. It may cause insanity, and the relation of the various internal gland disturbances to female insanity should be carefully studied. Removal of a diseased ovary or a diseased uterus has at times cured serious mental disturbances.

Excessive ovarian activity, either *de novo* or from too frequent pregnancies may cause osteomalacia. Ovarian hypersecretion may also cause parathyroid disturbance (perhaps due to calcium shortage from a too great loss) and therefore more or less nervous symptoms. Removal of one, or of one and a half ovaries, and feeding calcium may cure osteomalacia.

#### CORPUS LUTEUM.

This small glandular structure was thus named by Malpighi. Although the corpus luteum is an integral part of the ovary and should be considered as the most active part of that organ, it is often discussed as though it were a separate gland furnishing an internal secretion. Although it seems to be a mistake so to consider this body, still the corpus luteum has so many proved positive activities that these may be with profit described separately from the whole ovarian activity.

This part of the ovary does not develop until puberty, i. e., until the girl menstruates, or at least until the ovule, Graafian follicle, ripens and ruptures. Until puberty, the important necessary secretion of the ovaries seems to be elaborated by the interstitial cells.

Though asserted, it has not been proved and is probably not a fact that the corpus luteum determines or produces menstruation. It does, however, seem to furnish the hormone that sensitizes the uterus to make it ready for pregnancy and for the growth of the placenta. It is uncertain how much this gland, new at each epoch, has to do with sexual impulses, sexual excitement, or sexual desire.

The corpus luteum generally continues to grow for about two and one half weeks and then progressively degenerates, provided conception has not occurred. If the female becomes pregnant, the corpus luteum persists, at full activity apparently, for about two months and then begins to degenerate. Just what causes the degeneration of this body at this time is not known.

It has been suggested that some hormone or activating substance is elaborated to cause the next ovule to develop, rupture (ovulation) and the next corpus luteum to grow. In the later degenerating corpus luteum of pregnancy it has been suggested that this hormone was not furnished, and hence ovulation did not occur and new corpora lutea do not grow.

Abnormal degeneration or disease of the corpus luteum seems to prevent the next menstruation, or at least an abnormal function of corpora lutea seems to cause irregular or abnormal menstruation. The resorption or degeneration of the corpus luteum of pregnancy, occurring about the middle or end of the third month, has been thought to be the cause of the cessation of the nausea of pregnancy, i. e., the absence for two months of this secretion to which the

mature woman is more or less constantly subject is a cause of nausea. Hence it suggests itself to feed this gland for such nausea. Some therapeutic success has seemed to follow such treatment. It would, however, seem almost paradoxical that this enlarged gland is furnishing no secretion and only does its work when some hormones are released at the time of its degeneration.

It should be noted that the surface study of an extirpated or exposed ovary showing an absence of corpora lutea does not preclude the possibility of these bodies being deeply seated in the structure of the gland. The part of these bodies that furnishes an important secretion is probably the lutein cells; the so called paralutein cells may also furnish an important secretion.

Anything that irritates the ovaries, either an inflammation in the ovarian tissue or an inflammation elsewhere in the pelvis, may cause hyperactivity of the ovaries, one or both, and excessive or too frequent menstruation. Later, by disease, or by over-tiring of the ovaries, a diminution of glandular activity and atrophy of the ovaries may occur; or there may be diminished function and amenorrhea, with absence of ovulation and hence absence of corpora lutea, and consequent symptoms of the menopause will occur. There are normally no active corpora lutea in the nonmenstruating woman, at least after a few months of amenorrhea. Why a nursing woman so rarely ovulates or menstruates is not known, but there is certainly an interaction of the ovaries, of the corpus luteum, and of the mammary glands. Hence some secretion from the latter may inhibit the corpus luteum growth and activity unless lactation is too long continued and becomes abnormal from all standpoints. It is also suggested that the swelling of the breasts before menstruation and then the continued growth of the breasts during pregnancy is due to corpus luteum stimulation.

Removal of both ovaries (and hence also of all corpora lutea activities) causes all the symptoms of the menopause, only the symptoms are aggravated because the transition of the woman from one condition to the other is so sudden; however, a normal or an abnormal menopause is really a polyglandular disturbance.

It has been thought that removal of the ovaries has stopped the growth of mammary cancer. This is doubtful. It has not been shown, however, why mammary cancer, and in fact cancer in other parts of the body, so frequently develops after the menopause. Whether or not there is a germ of cancer, as seems probable, certain it is that the polyglandular condition of the menopause predisposes to, or stimulates, this small cell proliferation. The periodical uterine activity may cause the breasts to enlarge, and then the placenta may furnish a hormone to stimulate the breasts for lactation. Later the atrophy of the uterus, at the time of the menopause, may furnish a hormone that irritates the breasts. All of this is, of course, only suggestive hypothesis.

Some unexplained, and often recurrent, abortions may be caused by a too early corpus luteum degeneration. This suggestion should not be considered

until other local and systemic causes are excluded, although in syphilitics this may be the active cause of the abortion.

Just how long the corpus luteum of pregnancy furnishes secretion after it begins to degenerate, about the third month, is not known, but the corpus luteum body persists until the end of pregnancy. Also, after the menstruation, the corpus luteum, which begins to degenerate about the third week, does not reach the stage of so called corpus albicans or scar tissue until some time later; hence several degenerating corpora lutea may be found in the same ovary.

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(To be continued.)

## THE MODERN TREATMENT OF SYPHILIS.\*

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The object of this paper is not to unfold new and original ideas in the management of the syphilitic, but to set forth the generally accepted principles and methods in the modern treatment of syphilis. In the first draft I was fortunate to be a member of the advisory board in venereal diseases at St. Mark's Hospital, New York, under the direction of Dr. V. C. Pedersen. Those men called for physical examination, who claimed to have venereal diseases were sent to St. Mark's Hospital. We examined about 1,500 cases and about sixty to seventy-five per cent. were syphilitic. In taking the histories of these men one of the questions asked was the amount of previous treatment they had had. I was surprised to learn that the majority of the syphilitics had had very little treatment. Some were going to their family physicians and were carrying anywhere from twenty-five to fifty mercury pills in their vest pockets. They had never received a salvarsan injection, for their doctors told them salvarsan was dangerous and did more harm than good. Others, on the other hand, were getting as much as one salvarsan treatment every six months. It was gratifying to learn that the patients going to well organized and up to date clinics were receiving adequate treatment. On account of the inadequate and inefficient treatment of the syphilitic, by his physician, I decided to choose the treatment of this class of patients for the subject of my paper.

The elements of the subject of the treatment of syphilis include the time for beginning treatment, treatment in the various stages, hygiene of the patient, the place of the newer substitutes of salvarsan and neosalvarsan, the place of mercury and the value of the Wassermann reaction.

A thorough physical examination is essential in determining the character and intensity of the treatment. The examination should include the weight of the patient, the examination of the heart changes in blood and bloodvessels, the taking of the blood pressure, the condition of the lungs, reflexes, reaction of

the pupils, examination of the mucous membranes of the mouth and rectum, condition of the kidneys, and abnormalities of the urine.

After the diagnosis has been made by a carefully taken history and thorough physical examination, and by finding the spirochetes in the serum from the initial lesion by the dark field illumination or India ink smear, or by obtaining a positive Wassermann reaction from the blood serum or from the cerebrospinal fluid, we are ready to begin the treatment. The important factors are immediate diagnosis and immediate institution of treatment.

In reference to the Wassermann reaction as a control in syphilis, in the majority of cases a strongly positive reaction indicates syphilis. There are a few diseases which we have to take into consideration in making our diagnosis, for they give positive Wassermann reactions. Those diseases are: malaria, during the febrile stage; yaws, a disease caused by a spirochete; cancer; scarlet fever; relapsing fever; occasionally, some case of leprosy; cases of autointoxication; and cases of diabetes, in which acidosis is present. The ingestion of alcohol, if taken within twenty-four to thirty-six hours before a test is made, often converts a strongly positive to a negative reaction. Even small amounts may cause this change, and where the reaction is used as a control in the progress of the treatment, it may mislead us as to the real serological status of the patient. The Wassermann is also of importance in the early diagnosis of the disease, as shown by Major Craig, Medical Corps, United States Army, in a series of 600 cases of primary syphilis:

Thirty-six per cent. of primary cases gave a positive Wassermann within the first week after appearance of the chancre; almost sixty per cent. during the second week; almost seventy per cent. during the third week; over seventy-seven per cent. during the fourth week; over eighty per cent. during the fifth week after the chancre had appeared.

The Wassermann is therefore of distinct value in the early diagnosis of syphilis, where the spirochetes cannot be demonstrated. It is also of value in determining the progress of the treatment and, at times, it is the first clinical symptom in forewarning a relapse, before any other clinical symptoms are present. When beginning treatment the patient should receive a pamphlet of instructions, concerning the general significance of his affliction, his diet, general hygiene, and the danger of communicating his disease to others. In a general way the aims of the treatment of lues should be: 1. Destruction of the *spirochætæ pallidæ* in the circulation; 2. prevention of the organisms from becoming surrounded by infiltration; 3. absorption of the infiltration surrounding the organisms, so that they may be acted upon by our spirocheticides.

## TREATMENT OF SYPHILIS.

*In the primary stage.*—If a chancre is diagnosed before, or even after, the Wassermann reaction becomes positive, salvarsan should be immediately administered. If, for some reason or other, the patient cannot be induced to take salvarsan, a wet antiseptic—mercurial dressings, such as *lotio nigra*, or weak solutions of bichloride (1-5,000)—should be used locally until the ulceration begins to granulate. Then the blue ointment or white precipitate ointment should be applied until the sore becomes

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covered over with new skin. It is best to continue the use of one of these salves until the infiltration has been absorbed. If the salvarsan treatment is adopted—and it is the only one to adopt—an injection should be given every five to seven days until six injections have been given. This should be followed by a series of mercury injections or inunctions, until a negative reaction has been obtained and maintained.

*In the secondary stage.*—Give six to eight salvarsan injections at intervals of five to seven days, followed by twelve to fifteen insoluble mercury injections or by thirty to forty soluble mercury injections or inunctions. At the end of that course of treatment a blood test should be taken, and the same course of treatment should be repeated as often as necessary until a negative Wassermann is obtained. Then the patient receives treatment for a period of four to six months and, if the Wassermann is still negative, treatment is suspended, but the patient is kept under observation.

*In the latent period.*—In the course of syphilis a latent period, or one free from symptoms, represents merely a shorter or longer period of remission. A positive Wassermann reaction, indicative of latent syphilis, is an indication for careful examination, lumbar puncture and antisypilitic treatment similar to that followed out in the secondary period. Sufficient treatment during the latent period will prevent dangerous and incurable conditions of the tertiary period, particularly involvement of the central nervous system.

*In the tertiary stage.*—(Excluding cerebrospinal cases). Treatment in these stages is similar to that in the secondary stages. Courses of salvarsan and mercury with iodides are given. We meet from time to time cases which have been thoroughly treated with salvarsan and mercury for two to three years, and yet the positive Wassermann has not been converted into a negative. In those cases, if the patient is in good health and is gaining weight and the spinal fluid examination is normal, it is better to desist from further treatment and keep the patient under observation.

Patients cannot be considered as cured until the following requirements have been met: 1. Absence of all clinical symptoms; 2. continuation of treatment for four to six months after the first negative test, and a negative test at the end of that period of treatment; 3. observation for another six months, and a negative test each month; 4. a provocative injection of salvarsan and blood tests, showing negative on the second, fifth, and seventh days afterward; 5. six months later a negative test; 6. normal cerebrospinal fluid.

#### THERAPY OF SYPHILIS.

Salvarsan and its substitutes—diarsenol and arsenobenzol—neosalvarsan and its substitutes—neodiarsenol and novarsenobenzol—are the most efficient remedies in the modern treatment of syphilis. Notwithstanding the fact that the high hopes we had when salvarsan was first introduced to the profession—that one injection of salvarsan would destroy every spirochete—hopes which were speedily shattered as soon as we started to use this drug, it would nevertheless appear that salvarsan and neosalvarsan,

or their substitutes, are the most efficient remedies we have in the modern treatment of syphilis. By experience we know that there is no marked difference in the therapeutic value of salvarsan and neosalvarsan. The majority of the profession prefer the neosalvarsan because it is easier to administer—a smaller quantity of water can be used and the immediate effects are so much less trying physically than those caused by salvarsan. Neosalvarsan must be administered in larger doses than salvarsan, in the general ratio of 0.9 gramme of neosalvarsan to 0.6 gramme of salvarsan. A course of four injections of salvarsan is inadequate treatment. A course should consist of six to eight injections of salvarsan, or one of its substitutes, followed by the use of mercury and by iodides, if they are necessary. A series of salvarsans, not followed by mercury, produces few negative serum results (1).

*Dose.*—The dose to be employed and the frequency of administration should be determined by the stage of the disease and by the weight, age, vigor, and constitution of the patient. In the primary stage, when abortive treatment is desired, large doses should be given and repeated at intervals of five to seven days. During the secondary stage, when a spirochetic septicemia exists, it is also desirable to push the drug to its physiological limit. In ordinary and latent cases, it is best to start with smaller doses in order to determine the susceptibility of the patient, and this is especially true in cerebrospinal cases. In myocardial and renal cases great care should be taken in the administration of salvarsan. If the changes are marked, it would constitute absolute contraindications for the use of the drug. The drug, though powerful, has the inconvenience of being eliminated too rapidly from the body, and its action, therefore, extends over a short period of time. In order to get results it is absolutely essential that the drug be administered at short intervals and in as large doses as the patient can tolerate. If given at long intervals, the salvarsan introduced will cause the destruction of large numbers of the spirochetes that exist in the circulation; those forming behind them will not be affected.

*Preparation of the patient.*—Before receiving an injection of salvarsan, the patient should be instructed not to eat for five hours and to take a cathartic the night before, in order to have a clear gastrointestinal canal. He thus avoids the severe reaction following the administration of the drug. After the injection the patient should lie down for two or three hours and then, if no symptoms develop, he may have a light lunch.

*Administration of salvarsan.*—Salvarsan may be administered intravenously, intramuscularly, or subcutaneously. The method generally employed is the intravenous, where the salvarsan is given by the gravity method, using a greater or lesser dilution, or in a concentrated form with a twenty c. c. record syringe. In the gravity method, usually 125 to 150 c. c. dilution is made, freshly distilled water is run into the circulation, before starting the flow of salvarsan, to make certain that the needle is in the lumen of the vein. The salvarsan is then run in slowly, and, when all has entered the circulation, more distilled water is used to wash the salvarsan

out of the vein to avoid a phlebitis. I have seen two cases of phlebitis following the administration of diarsenol, 0.6 gramme. Both patients had previously received two to three injections of salvarsan. Distilled water had not followed the administration of the drug.

The method which I have been using for three years is the syringe method, employing a twenty c. c. record syringe. Neosalvarsan, diarsenol, neodiarsenol, and novarsenobenzol may be injected with a syringe. The manufacturers of arsenobenzol (Philadelphia) advise that their preparation be diluted in 120 c. c. of boiling water, as they have reported undesirable reactions following the use of concentrated solutions of arsenobenzol. American made salvarsan (Metz) is also very toxic in concentrated solutions. In giving salvarsan by the syringe the following technic is employed. The drug is dissolved in nineteen c. c. of freshly distilled water and, when perfectly dissolved, a fifteen per cent. solution of chemically pure sodium hydrate is added drop by drop. At first a heavy yellowish precipitate is produced, which clears up when sufficient alkali has been used. When neosalvarsan, or one of its substitutes, is used, no alkali is employed. The solution is drawn up into the syringe, and air bubbles are expelled. The patient's arm is then painted with tincture of iodine, a tourniquet is applied, and the patient closes his hand. By gently massaging the forearm, from the wrist upward, the veins become more prominent at the bend of the elbow. The left thumb fixes the most apparent vein at the bend of the elbow, so as to prevent its slipping away from the needle. Puncture the skin and the vein at the same time; a flow of blood into the syringe indicates that the technic has been successful. Push the needle along the axis of the vein for about one c. c., but do not go through it. If the needle has gone through the vein, the flow ceases, and a hematoma forms. If a mistake is made, remove the needle and try another vein. Attach the syringe to the needle before removing the tourniquet. Inject the medicine slowly, taking two to three minutes to do it. By the slow and interrupted injection of the salvarsan, the blood stream washes the medicine along and mixes with it. After the salvarsan has run in, inject a few c. c. of distilled water through the needle to wash the salvarsan out of the vein. I have seen several cases of infiltration following an injection of salvarsan, in which the patient experienced no pain while receiving the injection; but pain and swelling made their appearance from a few minutes to an hour after the administration of the salvarsan.

Intramuscular or subcutaneous injections of salvarsan were formerly used, but are rarely used now on account of the intense and persistent pain they cause. They may be of use in obese patients where it is impossible to give the drug intravenously. L. W. Harrison, C. F. White, and C. H. Mills (2) state that in a parallel series of cases treated by intravenous and subcutaneous methods, the subcutaneous or intramuscular method was distinctly more efficient than the intravenous in both primary and secondary stages, and that this method has the following advantages over the intravenous: 1. Since

it is simpler of execution, it is more generally applicable by the general practitioner. 2. The alarming and unfavorable side actions are almost wholly absent. 3. Pain can be eliminated, or at least ameliorated, by making a solution of 0.6 gramme in seven mils of four per cent. stovaine to which one mil of creocamph cream is added and the whole well shaken.

*Mercury.*—The former method of treating syphilis by the internal administration of mercury leaves much to be desired. Tabes and paresis occur almost exclusively in this class of patients. Patients who had taken mercury by mouth for three to four years in the days before the Wassermann was discovered, and were clinically cured and discharged by their physicians, come back today with strongly positive reactions. As Keyes, Jr., says, "visceral syphilis, notably of the liver, heart, and aorta, is the heritage of the present generation from the 'pill and potash' of the preceding one." Mercury is useful, when employed between courses of salvarsan for the purpose of preventing relapse of symptoms, and can be administered either intramuscularly or by inunction. Intramuscularly either soluble or insoluble preparations of mercury are used. The soluble preparations in use are the bichloride and the biniodide. They must be administered daily. The insoluble preparations in use are the salicylate, gray oil, and calomel. They are administered every five to seven days.

The injections are made with an ordinary hypodermic syringe or a specially constructed Gotthell syringe, using a needle two to two and a half inches long and with a thick bore. The mercury cream or suspension is thoroughly warmed and then shaken. If the patient is to receive the injection in the upright position, let him stand on one leg, while the leg which is to receive the injection hangs free in order to relax the gluteal muscles. In that way the medicine will not be forced into the fat and so cause a node. The skin is sterilized with tincture of iodine. The needle with the syringe attached is thrust into the gluteal muscles at a point either an inch above or below the top of the gluteal fold and from one to three inches from the median line, so as not to injure the sciatic nerve. The syringe is removed to make sure that a vein has not been penetrated. If blood oozes out through the needle, the needle is removed and another location used. Injections of mercury into the vein may cause a pulmonary embolus. Begin as a rule, with one grain of salicylate of mercury in males and one half grain in females, and run it up just short of salivation. Injections should be given every five to seven days, using alternating sides.

Treatment by inunctions of mercury is the oldest method of treating syphilis. Each treatment should be preceded by a hot soap and water bath and an alcohol rub. The treatment consists in rubbing a definite quantity of blue ointment, or a substitute calomel ointment, into a different part of the skin every night for a week and, then, after two such courses of treatment, allowing a period of rest. The ointment is rubbed into the skin until every part of greasiness has disappeared. This method is efficient, but is dirty, and irritates the skin; and



the dose is uncertain. When a syphilitic under active treatment begins to lose weight, stop the mercury and put the patient on tonics. While giving a course of mercury injections, the urine should be tested for albumin and casts and, if they are present, treatment should be suspended for one or two weeks. At the end of that time reexamine the urine.

**Iodides.**—The iodides have no direct action in destroying the spirochetes, but they are of great help in removing infiltrations, gummata, and nodules. Their field of usefulness is therefore reserved for the latter part of the secondary stage, the latent period and, particularly, the tertiary stage. Usually a saturated solution is used, one minim of distilled water representing one grain of the salt. Begin with small doses and gradually increase the dose, watching the effect on the patient.

**Hygiene.**—The patient should be treated as well as the disease. It is a good plan to push all medication in syphilis up to the point of tolerance; but, if the patient does not stand up well under the routine, it is better to stop treatment for a week or two and put him on tonics, fresh air, and nourishing foods.

#### TREATMENT OF CONGENITAL SYPHILIS.

As soon as it is ascertained that a woman known to be luetic is pregnant, treatment should be instituted at once, combining salvarsan with mercury and iodides. When the baby is born, it is determined as soon as possible by clinical and laboratory data, employing the Wassermann and luetic tests, whether or not he also is luetic. If the baby shows no clinical evidences and the laboratory findings are also negative, he is closely watched, and examinations made from time to time. If, on the other hand, clinical evidences and laboratory findings corroborate the diagnosis of lues, the treatment is begun immediately. The mother and baby should be treated with salvarsan and mercury. Salvarsan is given intravenously in the same manner as to an adult. The accepted dose is .01 gram per kilogram of body weight. A satisfactory vein should be selected, either at the bend of the elbow or, in infants, the jugular vein, the veins of the scalp, or the longitudinal sinus through the fontanel. Mercury may be given by mouth, by inunctions, or intramuscularly. The drugs given by mouth are calomel in doses of 1/20 to 1/10 grain, three times daily, gray powder, one half grain, three times daily, or bichloride of mercury, 1/200 to 1/100 grain, biniodide of mercury in the same dose. Usually mercury is given by inunctions. The blue ointment is diluted with two to three parts of vaseline. The dose used is ten to thirty grains increasing to the point of tolerance. This is laid on the belly band and renewed with it. Injections of mercury should be employed in about one tenth of the adult dose. This dose may be doubled at the time of second dentition, trebled thereafter. In infantile syphilis the division into secondary and tertiary periods is not clearly defined, and the lesions peculiar to both periods may exist at the same time. For this reason, it may be necessary to prescribe iodides early in the disease. The iodides may be given in doses of one to two grains, three times daily, to an infant of six months to one year, and the syrup of iodide

of iron in doses of three to six drops, three times daily, for the same ages. The duration of routine treatment in infancy should cover the first two to three years.

#### CEREBROSPINAL SYPHILIS.

There is little to be hoped from treatment in advanced cases, hence the crying need for an early diagnosis. The best treatment is the prophylactic—vigorous and thorough courses with salvarsan and mercury. It has been learned that when salvarsan alone is used, neurorecurrences are apt to follow. According to Fordyce (3) twenty to twenty-five per cent. of all syphilitics are candidates for nerve syphilis. In general, the lesions due to inflammation are much improved. By our treatment those due to degeneration are but little improved. The results are better in the tabetic than in the paretic patients.

Some patients show improvement, especially those having symptoms due to exudation, by an intensive course of treatment with salvarsan, mercury, and potassium iodide. Some patients, on the other hand, need intraspinal treatment with either salvarsanized or mercurialized serum. Many cases of tabetics improve under the intravenous injections of salvarsan and mercury alone, while others need intraspinal treatment in addition. In well developed cases of paresis we may improve the patient, but the ultimate hope of recovery is slight. Treatment to be effective in paresis must be given in its earliest stage; in cases of long standing it is useless. Cell destruction cannot be replaced.

According to Evans and Thorne (4) twenty-three victims of paresis were subjected to intraspinal treatments with salvarsan, neosalvarsan and albuminate of mercury. Three patients showed mental and physical improvement; ten died—four, during the course of the treatment, and six, several months after the treatments were discontinued; ten are living and markedly demented. I have seen Normal Sharpe, of New York, treat early cases of paresis by injections of solutions of salvarsan and blood serum into the lateral ventricles of the brain with fair results. His report of thirteen cases is as follows: Two of the patients died of paresis, one was unimproved by the only injection he received, another showed no improvement. The remaining nine showed decided improvement both serologically and clinically. Bernard Sachs (5), on the other hand, believes that no case of general paresis has been cured by intraspinal injections of salvarsan. He claims that the changes in the spinal fluid following intraspinal injections have also followed intravenous injections, repeated lumbar punctures, and the introduction of the patient's nonsalvarsanized serum. Therefore, the only hope for improvement in cerebrospinal cases is in the early diagnosis and persistent treatment of these cases. A patient's cerebrospinal fluid should be examined before discharging him. This examination should include a cell count, a test for globulin, colloidal gold and a Wassermann; for in many cases of cerebrospinal syphilis the blood Wassermann is negative.

In treating a syphilitic, do not give a short course of intensive treatment, obtain a negative Wassermann and then stop treatment. If treatment is discontinued at that time, the Wassermann will be-

come positive in a few weeks or months. As in tuberculosis, the patient and the disease must be treated continuously until results are obtained. Our insane asylums are overcrowded, as the result of the former quick and early cures, and our clinics contain the remainder of the incapacitated victims of this insufficient and hasty treatment. Our aim should be to secure a negative Wassermann as early as possible and to keep it so. Then treatment should be continued for several months thereafter, and the condition of the blood should be examined by reasonably frequent blood tests to determine whether the negative reaction has remained unaltered.

The duration of treatment is still a question of opinion. Formerly, under mercury alone, the duration was set down as two and a half years, but, today, we can be less definite in our statement. The patient should be under treatment and observation for at least three years. Following this limit of three years, the patient should still be under observation for two to three years, and have Wassermann tests made every three or four months. Those cases which remain negative are the hopeful ones, while a relapse may be looked for in those in which the serum reaction returns to positive.

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## VISCEROPTOSIS: ITS DIAGNOSTIC IMPORTANCE.

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One of the most prevalent of gastrointestinal diseases is visceroptosis. Though it is essentially a disorder of the alimentary tract, the effect on the nervous system is most marked; in fact, often the extreme nervousness of the patient far overshadows the visceral symptoms. The causes are many, the most common being loss of weight and pregnancy.

The symptoms are very varied. There is no condition of the gastrointestinal diseases which visceroptosis cannot simulate. The most frequent source of error is the diagnosis of gastric ulcer or gallstones. Frequent complaints are made of pains in the abdomen which may occur at any particular time. Nausea is a common symptom, though vomiting is unusual. Headache, loss of appetite, and loss of weight are very frequent symptoms. Eructations, which may or may not be sour, and constipation also occur. Of great importance is the nervous instability of these patients. They are extremely irritable, sleep poorly, complain frequently of extreme dizziness, and palpitation of the heart.

This affection is most common among women. Physical examination reveals a fairly obese person. The abdominal wall is flabby, and there is

tenderness all over the abdomen, usually on deep palpation. The cecum is frequently palpable, as are the kidneys. Gurgling sounds are heard as a rule. Scars, the result of appendectomies or cholecystectomies, or what not, are of very frequent occurrence.

Of greatest interest is the large number of useless operations performed upon this class of patients. It seems that as many types of operations have been performed as there have been varied diagnoses made, with no improvement and often an exaggeration of the condition.

A few case histories, perhaps, may be illustrative of the points in question:

CASE I.—J. G., female, aged thirty-six years. The chief complaint was distress, distention and belching immediately after each meal. The past history was negative. The appetite was poor, and bowels costive. At times the patient had palpitation of the heart.

Present illness.—About two years ago patient first complained of distress after eating, distention and heartburn. Went from physician to physician with slight relief. In August, 1917, patient again experienced pains and above symptoms were renewed. Has never vomited. Bowels have been costive. Pains start in epigastrium, radiate to back; for these, the patient formerly took bicarbonate of soda, which afforded relief. Pains have no relation to meals. Physical examination showed a fairly well nourished woman. Heart and lungs negative. Blood pressure, systolic 130, diastolic 80. Abdomen on inspection showed numerous striae. Palpation revealed a soft abdominal wall with tenderness in epigastric and left hypocondriac regions. Gurgling sounds were frequent. The liver was not enlarged, spleen was not palpable. Left kidney not felt, right kidney palpable, slight tenderness in right costovertebral angle. Extremities—Reflexes very active.

Röntgenoscopy showed ptosis and hypotonia of the stomach. An examination of blood, urine, and stool were all normal. The condition had been diagnosed by one physician as chronic appendicitis, and by another as cholecystitis. She was told repeatedly that only operative measures could effect a cure. A diagnosis of visceroptosis was made and we instituted treatment accordingly. She was discharged cured.

CASE II.—Mrs. W., aged thirty-eight years. The chief complaint was weakness, pain in the back and palpitation of the heart for a number of years. She had been very weak for the past two months. Past illness was negative as to present condition. Patient had had an operation seven years ago for prolapsed uterus. Appetite has been poor and bowels costive. Frequent palpitations of heart, menses scant, dysmenorrhea, slight leucorrhea. The patient sleeps fairly well, but dreams considerably; has frequent flushes of face.

Present illness: Patient has had pain in the back for a number of years and weakness for past two months. Is awakened almost nightly with acute pain across lower abdomen; pain does not radiate, there is no vomiting, although at times a feeling of distention and of pressure which rises upward. No urinary trouble. No headaches. Physical examination reveals a well nourished woman, tongue somewhat coated, seven teeth capped, heart and lungs normal. Abdomen shows a median scar extending from epigastrium to about two inches above pubes. The abdominal wall is very flabby, no masses are felt, but there is epigastric tenderness on deep palpation; the colon is very easily palpated as well as both kidneys. Liver is not enlarged and spleen not palpable. Kneejerks are not over active. Vaginal examination negative.

Mrs. W. was advised operation for nephropexy as the only means of relief. She was suffering as a result of visceroptosis. Treatment was begun. After four weeks she was very much improved.

CASE III.—L. W. F., aged thirty years. The patient had had nervousness and pain in stomach for past six months. Had lost from thirty to thirty-five pounds in past year. Past history negative.

Present illness.—For past six months patient has complained of pain and tenderness in epigastric region. No



vomiting—felt bloated and belched considerably, which afforded her relief. She sleeps well, the appetite is good and bowels regular. Physical examination reveals a fairly well nourished woman. Heart and lungs normal. Abdominal examination shows a flabby abdominal wall, no masses felt nor muscular rigidity, but tenderness in epigastric and both lumbar regions. No costovertebral tenderness. Right kidney palpable, left not. Urine and stool analyses were negative. Blood examination showed a slight secondary anemia. An x ray examination revealed ptosis and a moderate degree of atony of the stomach. An examination of the stomach contents showed hyperacidity, free acid, sixty-five, total acid, eighty.

A diagnosis of gastric ulcer had been made. Treatment had been instituted accordingly, with poor results. Treatment outlined below for visceroptosis effected a marked improvement.

CASE IV.—F. K., female, married, aged thirty-three years. Chief complaint, vomiting and dizziness for past five years. Had lost sixty pounds in two and one-half years. Past illness negative. Appendectomy two years ago.

Present Illness.—Five years ago patient began to vomit and felt bloated. Complained of acid eructations, was constipated, never vomited blood, nor had acute abdominal pains, but had epigastric distress. The pains then did not radiate, but now at times they radiate around to the right shoulder. Pain and vomiting have no definite relation to meals. Appetite has always been fair. Hemoptysis five years ago. The patient has palpitation of the heart frequently. Urinary history normal, menses irregular during past six months, but there is no dysmenorrhea or leucorrhea. Symptoms have steadily increased. Physical examination reveals a poorly nourished woman, extremely irritable and nervous. Conjunctiva pale, throat congested, tongue coated. Chest—Apices depressed, poor expansion, fremitus increased over left base, hyperresonant in left apex, dull posteriorly in left base. Auscultation reveals bronchovesicular breathing in right infraclavicular region and in both bases. Heart normal. Blood pressure, systolic 110, diastolic 65. Abdomen shows a flabby abdominal wall, with scar in right inguinal region (appendectomy). No masses are felt, but there is tenderness in epigastric region and extreme tenderness in right costovertebral angle. Left kidney is palpable, also the cecum. Liver and spleen not enlarged. Knee jerks markedly overactive. Appendix had been removed two years ago, but no relief had been afforded. An examination of her urine and stool was negative. A blood examination showed a slight secondary anemia. A Wassermann was negative. A gastric analysis showed seventy-five, free acid, ninety, total; no blood.

A report of her x ray examination, given by Dr. I. W. Held, shows an arrested tuberculosis of the right lung with pleurodiaphragmatic adhesions and a very high degree of enteroptosis. Two years ago, the patient was told that symptoms were due entirely to an inflamed appendix. The appendix was removed, but after a few weeks, symptoms were renewed in exaggerated form. Patient went from physician to physician and was finally told that she had a gastric ulcer. Being too weak for an operation, she was advised to regain some of her health in a sanitarium in preparation for a gastroenterostomy. A diagnosis was made of visceroptosis. Treatment was instituted accordingly and in several months she was discharged cured.

CASE V.—M. W., female, aged thirty years. The chief complaint was nervousness, vomiting, and loss of weight for past three years. Past illness negative. Operations—appendectomy and cholecystectomy four years ago. Appetite was good and bowels regular. Palpitation of heart was frequent. Urinary history normal; dysmenorrhea and severe headache during menstrual period.

Present Illness.—Four years ago had sudden pain in right side. A physician was called and a diagnosis of appendicitis was made—appendix was "frozen." Felt well for six months when again stricken with cramplike pains and was sent immediately to the hospital. Appendectomy was performed. Patient was afforded very little relief. She began to have spells of weakness, belched considerably, and abdomen was much distended. Eructations at times were sour. There was no abdominal pain, vomiting, or blood in the stools. Constipation became marked

and there were frequent severe headaches. Condition would come on with no relation to meals. The pressure upward would cause a feeling of constriction around chest. There was no history of jaundice. Being afforded no relief by the removal of her appendix, she again consulted a physician and was referred to a surgeon. He advised an operation six months ago, and a cholecystectomy was done. Patient was relieved for two months when symptoms again returned.

Physical examination reveals a well nourished woman, tongue coated white, a number of teeth capped, heart and chest normal. The abdomen shows a longitudinal scar extending from right hypochondrium to right lumbar region. There is a flabby abdominal wall, moderate tenderness in epigastric and inguinal regions, no muscular rigidity, no gurgling sounds heard, no Murphy sign or costovertebral tenderness. Liver and spleen not enlarged, kidney not palpable. An examination of the blood, urine, and stool was negative. Wassermann negative. Gastric analysis showed free acid sixty-five, total acidity eighty. Patient was referred to an institution by Dr. G. A diagnosis of visceroptosis was made, and treatment was begun. Patient is still under treatment and is doing splendidly.

The successful treatment of visceroptosis requires the greatest possible cooperation of physician, nurse, and patient. This is best undertaken in an institution. It is essentially a rest cure and drugs have very little place in it. The patient is put to bed and the foot of the bed is elevated; in fact, everything is done to raise the posited organs and to increase the strength of the ligaments and muscles of the abdomen. Treatment is also directed toward bringing about the normal tone of the organs. For that reason, great importance is attached to the knee and chest exercises which all of the patients are urged to do. The faradic current is applied to the abdomen daily. A tight abdominal binder, so applied that pressure is from below upward, is of the greatest importance. Fats occupy a large place in the dietetic treatment, and food is given in small quantities frequently. Fluids are restricted. As many of these patients are extreme neurasthenics, hydrotherapeutic means have often been of great assistance. Medication has been left last as it is least important. Strychnine for increasing the tonus is at times used. A daily evacuation of the bowels is very essential. Saline cathartics are contraindicated and enemas should be ordered as little as possible. Bismuth has proved invaluable in many cases. When anemia is present sodium cacodylate,  $\frac{3}{4}$  grain, is given intramuscularly every other day.

Visceroptosis is a very common disease. Many of the vague alimentary disorders are due directly to this condition. Unrecognized it often brings untold suffering to the patient. As a last resort, operations are undergone with very little relief.

#### CONCLUSIONS.

1. Viscerptosis is a very prevalent gastrointestinal disease which is frequently overlooked.
2. It is most commonly confused with gastric ulcer, cholelithiasis, or chronic appendicitis.
3. As a result of mistaken diagnosis, useless operations are performed with frequently an exaggeration rather than an amelioration of symptoms.
4. The successful treatment of viscerptosis requires the greatest cooperation of physician, nurse, and patient. This is best obtained in an institutional environment.

## A NEW AND HIGHLY EFFICIENT DRESSING FOR WOUNDS.

BY ALFRED KAHN, M. D.,  
New York.

In these military times, when so much is spoken and written of war wounds, I desire to call the attention of the profession to a new material and a new technic in the treating of wounds, which I have used from time to time.

The material I have in mind for an internal dressing or drain and for an external absorptive dressing, either wet or dry, is blotting paper prepared in a variety of ways; and as an external binder to take the place of the cloth roll or bandage, punctured paper adhesive on one side for binding it over the dressing or wound. In passing I desire to state further that this adhesive roll last mentioned can be variously medicated and used over surfaces much as our present day adhesive plaster or mustard plaster. The paper, however, is much less expensive and can be more easily removed, besides having other advantages which will readily make themselves apparent to the surgeon.

The wound is prepared for dressing much as any wound is prepared, the difference being that instead of using gauze and cotton as a drain, I use blotting paper, corrugated, thin, and in strips, as a drain; and blotting paper crumpled up in my hand as an external dressing. When I am using this process, I may now either reinforce my blotting paper with a little gauze, or I may not reinforce it with gauze, or I may use a cloth roll bandage over the blotting paper, or I may use as a binder the corrugated, punctured, adhesive paper. The paper dressing makes a light, airy, and inexpensive dressing, it is easily removed, and is more readily destroyed than a cloth dressing.

Off and on, for several years, I have been using this most efficient dressing for surgical cases, especially in the packing of the mastoid cavity after the acute mastoid operation, or after the radical mastoid for a chronic suppurating ear condition. In conjunction with syringing, I often pack the paper, the material sometimes being used medicated with various antiseptics and deodorants, such as bichloride of mercury, permanganate of potash, argyrol, iodoform, carbolic, peroxide, aluminium acetate, etc. Of course the material and dressing can be variously adapted to any surgical wound other than the mastoid. I have used it in the treatment of ulcers, lacerated and punctured, and infectious wounds of various types; but I mention the mastoid specially because it is more in my province and I have had more experience with it there than in other portions of the body. As a wet dressing over contused wounds and over highly inflamed, irritated surfaces, either plain or medicated, it is excellent. In the treatment of furunculosis of the external auditory canal, where I have used it as a wet dressing soaked in a solution of aluminium acetate, I have had most excellent results. In the treatment of furunculosis associated with diabetes, and as a dressing for carbuncles, abscesses, and furuncles of the neck, I have likewise had excellent

results. In the treatment of deep, lacerated wounds, as a cigarette drain wrapped in some stiff material such as rubber tissue, it is even superior to a gauze drain. As an outer dressing it is equal, if not superior, to gauze.

50 EAST FORTY-SECOND STREET.

## CLINICAL CONGRESS WEEK.\*

BY G. R. R. HERTZBERG, M. D.,  
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The eighth annual session of the Clinical Congress of Surgeons was held in Chicago during the week of October 22 to 27, 1917. The headquarters were at the Congress Hotel. The registered attendance on the opening day was 2,500, which increased to over 3,000 before the close of the session.

Every state in the union was well represented, and several of the belligerent countries allied with us in the war sent representative delegations. England sent Colonel T. H. Goodwin and staff. France sent Colonel C. Dercle and staff. Our own Government thought the occasion important enough to send to the first evening meeting, the Hon. Josephus Daniels, Secretary of the Navy; Surgeon General William C. Gorgas, U. S. A.; Surgeon General William C. Braisted, U. S. N., and Surgeon General Rupert Blue, U. S. P. H. S.

On the staff of the British representative was one of England's best surgeons, a man whose writings we all know, and who is now responsible for the hospitals in 200 square miles of the western war zone—Sir Berkeley Moynihan. He is the representative of the tenth successive generation of his family to serve his country.

Among American surgeons who took a prominent part in the session were Majors Charles H. Mayo, William J. Mayo, A. J. Ochsner, George W. Crile, Allen B. Kanavel, Howard Kelly, Charles M. Frazier, L. L. McArthur, A. D. Bevan, and many other prominent surgeons.

Chicago's hospitals are numerous and modern in every particular. There is no slovenly work seen, and the technic in the operating rooms is universally good. Gloves are worn by all operators and nurses. An improvement in operative technic noted, and especially insisted on in bone operations, is the direct (from sterilizer to patient) method of sterilizing instruments. The instruments are placed in perforated trays with handles all one way, then put in the sterilizer and sterilized. When ready the full trays are removed from the sterilizer, placed on the instrument table and covered with a sterile towel. The instruments are taken from the tray only by the operator or his assistant. This eliminates dumping the instruments into a basin of water and the sorting out by a nurse, thus saving both handling and time. Another noticeable thing is the much diminished use of artery clamps during operations. Where it was a common sight two or three years ago to see from twenty to forty artery clamps sticking about a wound, each grasping and crushing anywhere from a shred to an ounce of tissue, now only the

\* Paper read before the Fairfield County Medical Association, Bridgeport, Conn., April 9, 1918.



bleeding vessel itself is carefully caught and tied as soon as possible. Clamps are only left on the tissue that is to be removed, and insistence is made, that in the past, many a recoverable case was lost by too strenuous a use of artery clamps.

Speed that sacrificed safety and did careless and rough work, has been replaced by slower but more careful work, work based on anatomical knowledge. Wherever possible, known main branches of vessels are isolated and clamped before cutting them, instead of cutting first and tying after the loss of considerable blood. The tendency in modern surgery is not so much to a successful or brilliant operative procedure, often followed by a dead patient, but rather to a more careful and searching attack on the pathological condition, carried out with the minimum of trauma to the surrounding tissue. This is giving lower mortality rates and fewer postoperative complications.

Chicago has forty-seven hospitals, and it is obviously impossible for one man to visit them all in one short week, but, from hearing other men's views of the hospitals that I could not visit, I came to the conclusion that they all conformed to one standard and that an exceptionally good one. Any number of operations were performed every day during congress week, these operations running the gamut of all surgical procedures, old and modern.

#### DR. A. D. BEVAN'S CLINIC.

The first clinic that I attended was that of Dr. A. D. Bevan, professor of surgery, Rush Medical College. The clinic was held at the Presbyterian Hospital.

*Radical amputation of the breast.*—Doctor Bevan demonstrated a practically bloodless method of radical amputation of the breast. The incision follows the lower border of the pectoralis major from the humerus across the breast in a broad curve. Another incision starts at the first incision about where the pectoral tendon becomes diffuse and sweeps across the breast in curve to lower point of first incision. Skin and fat vessels are carefully clamped by assistants. Skin is dissected forward to sternum and backward to serratus magnus. The axilla which was opened by first incision is now cleaned out from above downward, and especial attention is given to fat about the axillary vein. The whole mass of glands and fat is stripped down and left attached to the pectoral fascia. The lower and outer border of the pectoral major is now isolated, two sharp tenacula are placed into this border, and strong traction is made by the assistant pulling the muscle, breast and all, toward the sternum. With one sweep of the hand the space between chest wall and pectoralis is entered and widened until sternum is reached, then upward to the clavicle. Here the branches of the acromiothoracic vessels are clamped and tied as they come through the costocoracoid membrane. These are the only vessels that need be tied in this part of the operation. The sweep of the hand under the pectoralis is now carried to the humerus, the hand grasps the tendon about an inch from insertion, and the tendon is then squarely cut across. A rapid knife cut then frees the pectoral fascia from the clavicle by a downward stroke from the sternum, and then the whole mass, of skin,

breast, pectoral fascia, and pectoralis major, comes away together. The pectoralis minor may be included in this removal by including this muscle in the stripping process. The operation performed in this way is clean, rapid, radical, and with practically no loss of blood. It can be performed in less time than it takes to describe it. With two assistants operation can be done in fifteen minutes.

*Esophageal stricture.*—Doctor Sippey, Doctor Bevan's associate, presented a number of cases of esophageal stricture. The progress of the cases was demonstrated by x ray plates. Doctor Sippey has devised a method of dilating these cases which he claims (and he is supported in this by Doctor Bevan) renders any operative procedure unnecessary, providing the patient can swallow water. If water will trickle through the stricture, it can be dilated, because where water will go, a silk thread will go, and he had six cases to show that it would. Most of the cases were acid burns, one a carcinoma, and the patients sat in the operating room with silk threads hanging out of their mouths. And the strange part was that the thread could not be pulled out. In some way, as Doctor Sippey puts it, the thread becomes anchored in the intestines.

These patients are made to swallow a small ball of No. D twisted silk. One end of the silk is then tied to a tooth and the patient drinks water repeatedly. If water will trickle through the stricture, the silk will go through in about twenty-four hours and be anchored securely in the intestine. Doctor Sippey has constructed a long, flexible piano wire, threaded on one end. To this end is screwed a bulb just large enough for a hole through which to pass the silk. This bulb guided by the silk thread is then pushed through the stricture by the wire. When it has gone through, a series of perforated bulbs of increasing size are strung on the wire behind the first bulb, the whole held in place by a closely twisted spiral spring which slips onto the piano wire and is held fast by an artery clamp. In this way any size bulb can be used that the stricture will admit, succeeded by the gang of larger ones, and there is no danger of perforation, for the dilator is guided by the smallest bulb always pushed along the silk string.

Doctor Sippey also showed one case of stricture of the sigmoid which he had successfully dilated by this method.

Doctor Bevan then operated in a case of undescended testis. The operation devised by him makes a tunica vaginalis out of the coverings of the cord. The success of the operation in all these cases depends on the absolute absence of tension when the testicle is placed into the scrotum. He has operated in 300 cases with only two per cent. of failures.

*Osteomyelitis of the hip joint.*—Doctor D. B. Phemister presented a number of cases of osteomyelitis of the hip joint. He pointed out the fact that the x ray does not show any changes in bone or joint before the twelfth day. He placed great emphasis on the fact that in these cases the joint always becomes dislocated backward, and the leg should be kept in some form of extension so that when ankylosis occurs, as it always does, the leg

would be in full reduction and the patient able to walk. The disease is generally found in the neck of the femur, the head being rarely involved. The causative organism is usually the staphylococcus aureus albus.

He opens these joints from the front, making his incision to the outer side of the rectus femoris. This gives easy access to joint. All dead bone is curetted out and necessary drainage is instituted by counter openings, and the upper incision closed. Patients are then put in Buck's extension until the active symptoms have subsided, and then put into plaster cast. This method has reduced the stay of these patients in the hospital from months and even years to from six to ten weeks. Attempts to get motion into these joints by manipulation should never be countenanced. Doctor Phemister attempted to increase the motion in a case that had been healed for eighteen months, and there was a sharp recurrence of the old trouble necessitating another operation with the same siege.

#### DR. A. J. OCHSNER'S CLINIC.

*New method of anesthesia in thyroidectomy.*—The first case was a thyroidectomy for hyperthyroidism. The unique feature of this case was that the patient did not receive a particle of anesthetic after she entered the operating room. The operation was completed in about half an hour, and the patient did not struggle and only moaned once toward the end. The procedure is as follows: A half hour before the time set for operation, the patient is given morphine, one quarter grain, and atropine, 1/100 grain. She is then thoroughly anesthetized to point of complete, deep surgical anesthesia. The operating table is inclined in reverse Trendelenburg position, head high and feet low. This position, it is claimed by Doctor Ochsner, under the anesthetic and morphine, induces a cerebral anemia. The patient's face throughout is covered with several layers of toweling.

The advantage of this method is obvious, but of course can be carried out only by an operator of large experience with a thoroughly competent and trained team, for the operation must be completed within a narrow limit of time. The stomach of all thyroidectomy patients is washed out after operation with water at a temperature of 105° F. This lessens the hyperthyroid sequelae.

Doctor Percy performed the next operation for a large rectocele. A transverse incision was made across the perineum between the vagina and the anus. A careful dissection between the rectum and vagina was made until the upper limit of the rectocele had been passed. The margins of the levator ani, which now showed in the depth of the wound, were brought together in midline, and sewed with kangaroo tendon. The wound was closed in the axis of the vagina. This cures not only the rectocele, but also the lacerated perineum.

*Elastic stocking for leg ulcer.*—Doctor Percy then showed his method of applying a perfectly fitting elastic stocking. Instead of keeping these leg ulcer cases in the hospital for weeks at cost to the hospital and loss of time to the patient, they keep them only long enough to clean up the ulcer, then this elastic stocking is applied and the patients are allowed to

return to work. The ulcer will heal under the stocking. The stocking is of great value in the varicosities antedating delivery. All that is necessary are several gauze bandages and a mixture of four parts sheet gelatin, four parts zinc oxide powder, ten parts glycerin, ten parts water. The gelatin is dissolved in the water and glycerin, and the zinc oxide stirred in until a thick white paint is obtained. The mixture must be kept warm. Now put the gauze bandage loosely on the leg, and with an ordinary brush, have the nurse paint the bandage freely with the mixture as the bandage is being applied. Six or eight layers make a perfectly fitting and elastic stocking. When dry rub the stocking with talcum powder, otherwise it is rather sticky. Any discharges from the ulcer are carried through the stocking by the hygroscopic action of the glycerin, and the ulcer is said to remain clean and dry. They have placed and replaced hundreds of these stockings in the last five years at a great saving to their hospital and with universal good result to the patient.

*Lane plating on fractured femur.*—Doctor Percy then did a Lane plating on a fractured femur in which the fragments overrode an inch. His technic was even more perfect and rigid than that of Sir Arbuthnot Lane, whom I saw do this same operation in London. The direct from sterilizer to operator method of instrument sterilizing was carried out, and nothing but an instrument came near the wound, not even the gloved finger. The sutures were all tied by clamps. It was clean, rapid, admirable work. Long willows or hickory strips, such as are used to make baskets, are used by him in applying plaster casts. They have the advantage over ordinary coaptation splints, in that they are long and can be molded accurately over the curves of the pelvis and leg.

*Ochsner operation for femoral hernia.*—Doctor Ochsner now did his well known operation for femoral hernia. He says "The more scientific you are in the operation for femoral hernia, the worse your results are going to be." They get no recurrences of their femoral hernia cases and they have done thousands. He cuts down on the hernial sac, opens it, ligates it as high up as possible, cuts it off, drops the stump, and sews up the skin. It takes him about fifteen minutes from start to finish. If it works in hands not so skilled as Ochsner's, it removes the bane of hernia operations, for I think we all have mastered the operation for inguinal hernia.

*Percy method of blood transfusion.*—Next was a demonstration of blood transfusion by a method devised by Doctor Percy himself. He has constructed a large glass tube holding 500 c. c. This tube is drawn out at one end to a fine point. The other end has a connection for a bulb syringe. Some paraffin is melted inside the tube and the whole inside of tube coated with it. About an ounce of liquid alboline is placed in the tube. The two patients are prepared by opening a vein in each as in an infusion, the end of the warmed tube is pushed into the vein of the donor, and the tube fills with blood, the liquid alboline in the tube floating on top of the blood; thus no air or glass comes



in contact with the blood and no clotting occurs. When the tube is as full as the operator desires, it is withdrawn from vein and inserted into the vein of recipient, and by slight pressure on bulb is forced into blood stream. It is done quickly and under absolute control of the operator and is a very simple procedure.

CLINICS OF DR. J. R. BALLINGER AND DR. E. W. RYERSON.

Doctor Ballinger performed an operation for a meningoencephalocele. The baby had a mass protruding from the occipitocervical region as large as an orange. The mass contained brain and it was impossible to reduce it. This condition is analogous to spina bifida.

Doctor Ryerson's clinic was interesting and instructive. Several astragalectomies were done, and knockknees and bow legs were straightened in a number of children, some by open operation, others by breaking the legs with the osteoclast.

THURSDAY CLINIC OF DOCTOR M'KENNA.

At this clinic new joints are manufactured and hopeless cripples throw away their crutches and walk. Joints that have seen no motion for years are restored to almost perfect function in from two to six months. It makes no difference whether it is an elbow, wrist, hip, or knee, it can be and is made over, so as to give its owner renewed joy in a heretofore useless member. It would take too long to go into the detail of these various operations. The first principle of treatment is absolute and perfect asepsis; nothing but instruments come in contact with the wound, not even the gloved finger. No finger touches a suture; these are picked up and tied with artery clamps. The second general principle is the interposition of fascial and fat flaps between the ends of the bones. These flaps are cut from the fascia near the joint, and a pedicle is left attached for nourishment. But this is not absolutely necessary, as a transplanted fascial flap from the outer surface of the thigh will live. These flaps prevent bony ankylosis and make splendid synovial membranes for the new joints. It is really wonderful work.

Doctor Strosser showed the x ray plates of eight cases of chronic lumbago, of from two to twelve years' standing. In each there was a fracture of one of the transverse processes of a vertebra. Removal of the loose fragment cured all these cases. A history of injury was not obtainable in all the cases.

Friday was spent at Cook County Hospital, an enormous structure and up to date in every way.

Doctor Kanavel excised stomach ulcers, and took out several spleens. His work is clean, neat, and expeditious, and the most interesting part is the lecture that accompanies the work. He advises splenectomy in pernicious anemia, hemolytic jaundice, persistent large spleen of malaria, and in Danti's disease. He says that the condition underlying all these manifestations and also hyperthyroidism is in all probability a local toxemia. The enlarged spleen is not the disease, but only the end result of the malignant action of the toxic agent. If we knew what that agent was and could combat

it, it would be wrong to remove this organ. But, as we do not know its nature and we do know that in these always fatal cases a removal often means recovery, it would be wrong not to give the patients this chance.

Doctor Kanavel has made a long series of experiments with dogs, and finds that in fractures, there is perfect microscopic restoration of bone only after a period of from seven to nine months.

The evening meetings were the feature of the congress, and always of an international character. The first meeting was addressed by Secretary of the Navy Joseph Daniels. He spoke right from the shoulder about the danger to this country from the venereal diseases afflicting the men in the service. He said that last year the Navy lost 140,000 days in illness from this cause alone, and he laid strong emphasis on the statement that it was up to the medical and surgical profession to help stamp out this evil, by reporting cases, instituting quarantine, and above all, by adequate warning and education of young people. The measures adopted for its control in the service are as follows: If a man has been indiscreet, it is made his duty to report this fact within twenty-four hours after his return to duty. He is at once given a prophylactic treatment. If he fails to report his indiscretion, and develops the disease, he is courtmartialled and given a year in jail with a dishonorable discharge. There has been a decided decrease in the number of cases and the entailed loss of time since this ruling went into effect.

Doctor Ochsner spoke on the standardizing of hospitals; plans are on foot to bring a bill before the various state legislatures forcing all hospitals to conform to a certain standard of efficiency in their staffs, number of nurses, and general equipment.

Surgeon General Gorgas spoke on the medical man in the army, and how wonderfully the profession has responded to the call to colors. There are now 14,000 medical officers in the training camps; 8,000 more are needed and will be called when there is room for them.

Sir Berkeley Moynihan spoke at length on the advance in knowledge this war is bringing to medicine and surgery. During the South African war of two years' duration there were 57,684 cases of typhoid fever with 8,022 deaths in an army of less than a million. In the present war, in an army of over five million, there were in the first two years only 6,022 cases with only 292 deaths.

Colonel Russell, the originator of the typhoid vaccine, described the establishment of the laboratories and the tremendous demands made on this department, and how it was being met by the organization of new units in different parts of the country.

Tuesday evening was taken up with a symposium on wound treatment in this war. The papers were by Sir Berkeley Moynihan, Major George W. Crile, Dr. Edward Martin, Doctor Dakin, Dr. Alexis Carrel, Dr. William O'Neil Sherman, and Dr. E. W. Lee.

These papers were a spirited discussion on the merits and demerits of the Carrel-Dakin solution. Doctor Carrel gave his paper with slides showing what had been accomplished by this method, and

there is no doubt that, in his hands, it has in some cases accomplished the seemingly impossible. But there are many drawbacks. The conditions for its best effect must be ideal, the cases must be secured early, the treatment must go on uninterrupted, for if discontinued for even a short period the results are disastrous and always end in death. It never attains absolute sterility, it does obtain clinical sterility in wounds in twelve days. The method cannot be used in mobile hospital units, for if interrupted it means death to the patients. The opinion of this treatment as voiced by Sir Berkeley Moynihan and concurred in by Doctor Crile, the two men who have seen it used the most, is that "The Carrel-Dakin solution has attained its greatest success in those cases where it need never have been used." For its proper employment, in common with all other forms of treatment, the patient must be absolutely at rest, treatment must be begun early, and the widest possible excision of the wound must be practised. And herein lies the secret of all successful wound treatment, absolute physiological rest of the part and free excision of the infected areas. The first few months of the war were heartbreaking to the military surgeons. It seemed as if all their previous knowledge of wound treatment was as nothing in the wind of the present storm. All wounds became infected if not already so when they came to hand. Patients died awful deaths from trivial wounds who had been carefully treated according to accepted standards. It was just one riot of awful, stinking, rotten pus, with, apparently, no way to check it.

Then came Carrel with at first, his free incision, Dakin solution, and bihourly flushing. This in a measure showed the way.

Then some of the surgeons began to notice that even severely wounded men, who had survived the hemorrhage and the shock, and had lain out in No Man's Land for several days, and whose wounds had become flyblown and were full of maggots, were in much better shape as regarded sepsis and eventual recovery, than those whose wounds were not in this condition. The reason was searched for and found to be in the fact that flies lay their eggs in putrescent and devitalized tissue, the developing maggots feed on this putrescent matter in the wound and remove it, reducing absorption of toxins and lessening the pabulum for bacterial growth. When this was sufficiently understood, the next step was taken. The wounds were excised, at first gingerly and with many misgivings, but as case after case proved the correctness of the theory, the confidence was gained that herein lay the crux of all the previous trouble. The whole wound, no matter what its condition, is excised in one piece whenever possible, well into the normal tissue, regardless of mutilation, for in wide excision and only in that lies the safety of the patient.

While this method of dealing with these horrible infections was gradually being evolved and improved, Rutherford Morison, in charge of several base hospitals under Sir Berkeley Moynihan had compounded a mixture which he named Bipp, consisting of equal parts of bismuth, iodoform, and paraffin. This he sprayed into the incised clean

wounds, and was so impressed with the rapid healing, that he went a step further. He took several of these unspeakably foul wounds, excised them according to the method that had been developed and sprayed them with the Bipp, and sewed them up tight. He got union by first intention, a marked advance over the precarious Carrel-Dakin method.

Sir Berkeley Moynihan was impressed by the results obtained by Rutherford Morison, but upon analyzing the various steps of the procedure, he came to the conclusion that so small a quantity of Bipp was used by Morison, that he did not believe it had much to do with the healing of the wounds. So, as he expressed it, in a moment of exaltation, he instituted at one of his hospitals the bipping of these wounds without the Bipp. In other words, after excision he sewed them up as any other clean wound, and eighty per cent. of the wounds healed by first intention.

So out of chaos has come order, and instead of relying on antiseptic surgery in these cases, they are brought back into the realm of aseptic surgery, and eighty per cent. heal by first intention. Even gas gangrene has been conquered by these measures. The inflexible rule now is, if possible, cut out the wound in one piece. If this is impossible, every part of the wound is cut out, so that not a particle of the old wound surface remains, and as Doctor Crile said, "It makes one's hair stand on end when first seeing what has to be done." But it is the one essential thing, do the work the maggots did, only do it quicker and in a thorough manner.

The statement was made by all the writers, that doctors in civil life, have absolutely no conception of the horrible condition that these wounds get into, in a few hours. The reason for it lies in the Flanders mud which is everywhere. The men sleep in it, work in it, eat in it, they become coated with it outside, it is an ooze that pervades everything, no one can escape it. It even becomes the missile that inflicts the wound. When a high explosive shell explodes, it transmits enormous energy to everything that it strikes, and often through a small opening in the skin, a large quantity of this mud is driven with sufficient force to shatter bones. It is this mud that carries the deadly contagion of these horrible infections, and the reason is clear. For centuries the fields of Flanders have been subjected to intensive cultivation, and being easy to get, human excreta has been largely used as fertilizer. This had caused the soil to be impregnated with all the intestinal flora of the human family, as proven by the bacteriologists, and these organisms cause these intense and rapid pathological changes never seen before in wounds.

It was the consensus of opinion that if the elements concerned in wound healing could be reduced to the figure 100, the part played by any antiseptic would be less than ten, the remaining ninety parts would be represented by the physiological resistance of the patient and complete excision or free mechanical exposure of all parts of the wound and removal of all dead tissue with free drainage.

In those wounds where excision and closure are impossible, recourse must be had to some antiseptic. The ideal antiseptic for war wounds has not yet



been found, even the best one has some disadvantage. In our older disinfectants, the speed of the disinfection depends on the concentration of the disinfectant. This means, that if a quick and positive antiseptic action is to be obtained, a degree of concentration must be employed which always causes injury or death to the tissues. This fact was demonstrated early in the war, and in the papers by Doctor Dakin, Dr. E. K. Dunham and Doctor Lee, the various steps that were taken to evolve an antiseptic that would not have this drawback were clearly portrayed.

The Dakin solution was the first one evolved. It proved unreliable; except in expert hands, the solution is very unstable, and if not absolutely neutralized, the free alkali does damage to the tissue. It is explosive in its action, not continuous as it should be. It was the best they had for a time, but not good enough.

The so called flavine compounds, also hypochlorite solutions, were tried and found wanting. Then Doctor Dakin produced chloramine. This proved more effective, but was unstable, and the permissible concentration was only five per cent. Then Doctor Dakin evolved the last, and so far the best antiseptic, dichloramine-T. This has only one drawback—water must not touch it—for upon its action with water depends its antiseptic action. It may be used in a concentration of twenty per cent. Its preparation for use is easily carried out by any one. It comes in the form of a dry white powder. The proper amount is rubbed up with enough chloroform to make a rather thick emulsion. This is then stirred into a eucalyptized oil. It is now ready for use. It may be painted on to the wound with an ordinary brush, or sprayed into every crevice with an ordinary atomizer. The only caution necessary, and that must be absolute, is that the receptacles and the wound must be absolutely dry.

The dichloramine-T, in the presence of water, gives up its chlorine quickly, and this gives the antiseptic action. When it is dissolved in oil, this action goes on slowly, but is continuous until complete decomposition has taken place; the secretion in the wound furnishes the necessary moisture to enable the slow and continuous elaboration of chlorine from this compound. Surgeon General Gorgas, who had requested a report from the British Medical Board, received the answer by telegram at this meeting. It stated that in a series of 1,200 cases, there was an average gain of over four days in clinical sterilization over all other antiseptics, and only six deaths from sepsis in this series of cases. It can be used in all cases requiring an antiseptic, requires no complicated apparatus, and the solution in oil is stable if the bottle is kept corked.

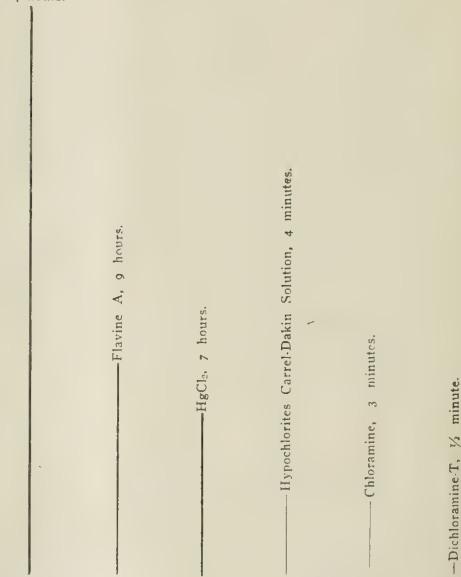
The diagram shows the relative speed of disinfection by the various chemicals employed.

Sir Berkeley Moynihan stated that it was impossible to convince Tommy Atkins that the Germans were not using explosive bullets in their rifles. At first, even all the medical officers believed they were using them, for it appeared, these rifle bullets, especially at short range, were explosive in their effect, especially on bones. After a great deal of grilling of captured officers, and denial by them,

exhaustive experiments with captured German rifles and ammunition were made. It was found that the German service rifle shooting the full steel jacketed Spitzer bullet has a muzzle velocity of 3,000 feet. This bullet in its flight has three distinct motions, forward in a straight line, then an axial rotation imparted by the rifling of the barrel, and a third motion not heretofore recognized, a circumduction with the point of the bullet forming the fixed apex. When fired at short range, upon striking any resistance, the apex or point of the bullet is, for a fraction of a second, arrested, the body of the bullet not being in a straight line with the point, the bullet turns over and the tearing effect of the dum-dum is produced. If the bullet flies a long way, 1,000 yards or more, the circumduction is lost and the bullet steadies down and upon striking, does not turn over, but merely causes a perforation.

The chest will be opened in the future for injury of the lung and pleura as freely and as safely as the

Phenol  
24 hours.



Sterilization.

TIME INDEX, LABORATORY EXPERIMENT.  
Doctor Dakin and Doctor Dunham.

abdomen is now being opened. This epoch making paper on War Surgery of the Lung and Pleura, was by Sir Berkeley Moynihan. The mortality of chest wounds has been reduced to twenty per cent., where before the new method of handling these cases, the mortality had been forty-six per cent. Out of a hundred men receiving chest wounds, twenty-five die before reaching a clearing station, fifteen die before reaching a base hospital, and five die before reaching a general hospital. Shrapnel and shell wounds are much more fatal than rifle wounds, because the lung is usually torn at a distance from the passage of the missile through the chest; an in-

jury by *contre-coup*, so to speak, due to the blow delivered on the resisting pleura at the moment of entrance of the shell fragment. These cases are nearly all fatal as shock and hemorrhage are excessive.

It is in the cases of small penetrating wounds of the lung with retention of missile or missiles within the lung, that the great progress has been made. It must be remembered, that in most cases, the injury, even though only a single bullet has passed, is an injury by multiple missiles, for as pointed out before, the high power projectile, and especially the rifle bullet, upon impact, converts everything in its path into secondary projectiles. So bits of clothing, paper, buttons, spicula of shattered bone, pieces of tissue, even coins and pipe stems, in fact anything that is in the way of the bullet has imparted to it a terrific motion, and each particle in turn becomes an added injury inflicting projectile. The result is, that a single perforating wound of the pleura and lung is seldom seen, but the usual injury consists of the entering wound, and multiple lacerations of the lung with all kinds and numbers of particles imbedded in the lung tissue itself. The method of treatment is as follows: If the patient is quiet, does not cough, or spit blood, he is left alone. If he is restless, has short hacking cough, or spits blood, the following procedure is undertaken:

The patient is etherized in the ordinary way, having received a hypodermic of morphine sulphate, one quarter grain, and atropine, 1/100 grain, half an hour before the operation. An incision along the fourth rib starting at the sternum is made and carried to the anterior axillary line, the rib is freed along its entire length, the costal cartilage is cut, and the rib is fractured in the axillary line and either bent up or removed. All bleeding is now stopped. The ribs are retracted as widely as possible, and the pleura is dissected from the ribs as far as possible, up and down, inside the chest cavity. The adhesion between pleura and chest wall bleeds freely, but it must be separated or it will be impossible to close the pleura. When the bleeding has ceased, the pleura is opened nearly the entire length of the incision, the hand is put into the chest cavity, swept around it, the lung is grasped and all of it is brought up and spread out on the chest. The lung is kept warm and moist by towels and saline. Often adhesions are encountered between the parietal and visceral layers of pleura. These are easily separated. Then the search for the foreign bodies in the lung tissue is made. Even the smallest spicula of bone or foreign matter is easily detected with the fingers, by pressure on the lung as it lies on the chest wall. It gives one very much the same sensation, as do the calcareous particles in a new sponge when being squeezed. As each foreign particle is detected, the lung tissue is made tense over it, a small incision is made, and the particle removed. The wound is then sewed up, just as you would sew up liver, kidney, or any other tissue. When every particle has been removed, the tear made by the bullet is examined, dead tissue removed freely, and the tear is repaired by suture. The whole lung is then dried, sponged rapidly with ether, and dropped back into the chest cavity. The pleura

is sewed up, and the chest wound closed, without drainage. The ether with which the lung is sponged, vaporizes within the chest and prevents too rapid an expansion of the lung and consequent hemorrhage. If the lung does not expand in forty-eight hours, an aspirating needle is introduced and the ether vapor is aspirated. This is the operation that has reduced the mortality of gunshot wounds of the chest from forty-six per cent. to twenty per cent.

This paper proves that no matter what emergency confronts the doctors in France there will always be some one who will rise to meet the emergency and conquer it. And as these men conquered the Flanders' mud in their wounds, so Sir Berkeley Moynihan has conquered that heretofore *terra incognita*—the injured lung.

40 SOUTH STREET.

## RETROPHARYNGEAL ABSCESS.

*With a Report of Three Cases.*

BY JOHN J. LEVBARG, M. D.,  
New York.

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In this condition a collection of pus is situated either well up in the nasopharynx and behind the soft palate, or very low down, and if not discovered this pus may borrow further down and involve the cervical structures. This condition is most frequent in infants in the winter, as diseases of the nose and throat are then most common and it occurs mostly in the simple form, i. e., the lymphatics are involved. In adults usually the cellular tissues are at fault. The simple form is a suppurative inflammation of the lymphatic glands lying in front of the cervical vertebrae and it usually occurs in infants of tuberculous or syphilitic parents. It may follow an attack of influenza, measles, or scarlatina.

In children our attention may not be called until pus is well formed and there are symptoms of severe dyspnea, regurgitation of food, and choking; in others the symptoms may begin insidiously, the condition looking more like a chronic abscess. The diagnosis is usually made on inspection by the bulging or the asymmetry of the pharyngeal wall, or by fluctuation on palpation. If left alone an acute process will run a few days and discharge spontaneously. This is dangerous as some of the pus may get into the lungs and cause a pneumonia.

CASE I.—Baby, A, L., Italian, four months old (breast baby). Mother stated that the baby had been crying for the past eight days, that the cry was harsh in tone and the resonance nasal in character, and that the child could not nurse properly. A physician was called in and upon examination diagnosed it as teething, with slight bronchitis, but still the baby failed to improve. The child's parents consulted three other physicians, who made the same diagnosis. The mother, seeing no improvement, brought the child over to the children's department of the Beth David Hospital, and Dr. F. Shapiro referred her to me for examination of the child's ears. Examination of the ears was negative, but on inspection of the throat I found a bright red asymmetry of the pharyngeal structures and upon palpation felt distinct fluctuation. I advised operation, and



upon a free incision obtained a profuse, greenish, fetid pus. The next day I found child greatly improved and mother informed me that child slept quietly and nursed more freely. Child fully recovered.

CASE II.—Girl, F. C., two years old, examined by me at her home. Upon examination found baby croupy, and it seemed to me that it was a simple case of diphtheritic croup. I injected 10,000 units of antitoxin. Next day showed no improvement. Advised hospital, and child was admitted to the New York Throat Hospital, and I asked the doctor in charge to watch for retropharyngeal abscess. The next day I was advised by the doctor that child had developed an abscess and would be operated that day. After incision, child showed very little improvement; the condition was becoming worse instead of better. It was then advised that the child should be intubated, and with the permission of the New York Throat Hospital I took the child immediately to the Willard Parker. Instead of intubating, Doctor Dixon found an abscess deep and low down, and with a good incision evacuated pus. Child recovered.

CASE III.—Girl, three years old, Italian. Upon inspection a bulging tumor was found on the pharyngeal wall. This had been increasing in size slowly for the past six months. Child had a slight temperature at night, perspired a good deal, and was very anemic in appearance. A sister, nineteen years old, died of tuberculosis. Father and mother were alive and healthy. Examination of blood was negative. Case was referred for tubercular abscess to Hospital for the Crippled and Ruptured.

1425 MADISON AVENUE.

## NASOPHARYNGEAL POLYPI.

BY ALBERT E. POHLY, M. D.,  
New York.

While nasal polypi are of comparatively common occurrence, nasopharyngeal polypi are rare. They originate most often in the maxillary sinus but may occasionally originate in the sphenoidal sinus or posterior ethmoidal cell. The polypus is pear shaped and histologically does not differ from the ordinary nasal polypus. Authorities differ on the tendency of the polypus to recur after removal and in case of recurrence the maxillary sinus should be opened.

I have had the good fortune to see two cases of nasopharyngeal polypus. Both cases occurred in young girls.

CASE I.—M. S., twelve years old, born in New York, came with a school nurse to St. Mark's Hospital Dispensary some seven years ago, complaining of difficulty in breathing, especially at night when lying down; the nurse told me that the patient was stupid and absent minded in school. On examination I found a large nasopharyngeal polypus extending just beyond the soft palate and uvula. I took her into the hospital and under general anesthesia removed the polypus with a Jarvis snare through the nose. A few months later I saw the nurse again and she told me that M. was now the brightest girl in her class.

CASE II.—C. M., a young girl of eighteen, born in Hungary, was referred to me by Dr. A. Gumbart in April, 1918. About a year ago she noticed an irritation in her throat causing her to cough. She also had great difficulty in breathing, especially at night; and suffered from headaches and pain in the back. On examination I found a very large nasopharyngeal polypus hanging down behind the soft palate touching the tongue. I took her into the St. Mark's Hospital and under a general anesthetic tried to remove the growth, but did not succeed, as the polypus disappeared behind the soft palate while she was lying down. The next morning she came to my office and under cocaine I removed the growth through the left nostril with a Jarvis snare. The polypus was  $3\frac{1}{2}$  inches long and  $\frac{5}{8}$  inch wide. All her symptoms disappeared after its removal.

640 MADISON AVENUE.

**The Protein Nature of Antitoxins.**—W. N. Berg, biochemist, and R. A. Kelsner, veterinary inspector, of the United States Department of Agriculture, have just completed a series of experiments with tetanus antitoxin whose ultimate object was to determine the chemical nature of antitoxins in general, and the possibility of their preparation in the pure state.

No antitoxins have as yet been separated from their associated proteins. The well known tetanus and diphtheria antitoxins contain nearly all the immunity units present in the original serums, but only a part of the proteins. The failure of all attempts to obtain a protein free antitoxin has led some to the conclusion that the antibody or group of antibodies which constitutes the antitoxin is one of the serum proteins, and hence cannot be completely separated from protein. On the other hand, the concentration of antitoxin that can be obtained by concentrating the antitoxic serum without a corresponding concentration of protein is regarded as an indication that the antitoxin may be a body of nonprotein nature.

If tetanus antitoxin is of nonprotein nature the experimenters thought that it should be possible to prepare artificial digestion mixtures containing the antitoxic serum or derived globulin in such a manner that the protein would undergo digestion without loss of antitoxin. If, on the other hand, the antitoxin is a protein, and its power to neutralize the corresponding toxin is a function of the intact protein molecule, then the antitoxin would be destroyed in every case where the proteins had undergone cleavage, whether the cleavage was caused by proteolytic enzyme or other chemical agent. The toxin might possibly be destroyed by the chemical agents used. Proteolysis was determined by chemical measurements, and inoculation experiments on guinea pigs indicated any loss of antitoxic units.

The results indicate that tetanus antitoxin is a substance of nonprotein nature. But the stability of the antitoxin is so dependent upon that of the protein to which it is attached, that whenever the protein molecule is split, the antitoxin splits with it.

The results are summarized below:

1. Tetanus antitoxin in 0.5 per cent. sodium carbonate solution was slowly and completely destroyed. At the same time no significant chemical changes in the proteins were detected.
2. In solutions amphoteric or faintly acid to litmus paper, trypsin destroys the antitoxin and at the same time the associated proteins are digested. The rates of antitoxin destruction and protein splitting were substantially the same.
3. The results were the same with solutions containing trypsin and 0.5 per cent. sodium carbonate solution.
4. Tetanus antitoxin in 0.2 per cent. hydrochloric acid was completely destroyed in three or more days. During this time no significant chemical changes in the proteins were detected.
5. In neutral solutions pepsin did not affect the antitoxin.
6. In pepsin-hydrochloric acid, proteolysis and antitoxin destruction proceed simultaneously.

# Medicine and Surgery in the Army and Navy

## MOBILIZING THE SPAS AND HEALTH RESORTS OF OUR NATION\*

By N. PHILIP NORMAN, M. D.,

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This country faces a medical problem, in complexity, magnitude and seriousness, never before encountered in its history. That problem is the efficient disposition of its soldiers who have become incapacitated because of surgical, medical, neurological and mental diseases engendered by and incident to the extraordinary stress and strife of this war.

To solve this problem, the following plan has been outlined in the July, 1917, issue of *Mental Hygiene*, by Major Pearce Bailey, M. R. C., U. S. Army, chairman of the War Work Committee for Mental Hygiene. It is proposed to keep only soldiers suffering from ailments that will soon react to treatment and who can be returned to their organizations in a short time, in the overseas hospitals. It is obvious that it would be impracticable to maintain large base hospitals and special hospitals overseas because of the difficulty of transporting adequate facilities for their construction and maintenance, and of supplying the extensive medical and nursing care necessary. Therefore, it is planned to transport home the majority of the afflicted. These cases will be received in a special depot at the port of debarkation and there will be diagnostically classified by an examining board composed of specialists. After definitely establishing a diagnosis, this board will refer cases to the distributing board which will either discharge those adjudged physically or mentally unfit for further service or refer suitable cases to general hospitals, special hospitals, convalescent camps, and reeducation centres for treatment. After the necessary treatment and observation, they will finally be surveyed by the board of review, which will effect the ultimate disposition of all cases.

We are realizing that our successful evolution in this conflict depends upon the proper understanding and application of "efficiency." The present day conception of efficiency constitutes the excellence of disposition of problems and the conservation of assets, potential or kinetic, for the further dynamic evolution of the individual, the institution, the state and the nation. This being true in the efficient disposal of the incapacitated we solve a portion of the problem of requisite hospital facilities in a most excellent way by utilizing our well organized and equipped spas and health resorts, so best converting our potential assets into kinetic assets for the good of the individual, the institution, the state, and the nation.

For the efficient treatment of the incapacitated our specialization must have no confines. Orthodox treatment must not satisfy our therapeutic needs. At best, orthodox medicine is inadequate to cope with diseases promulgated by the stress, strife and dra-

matic incidents of the war, so intense that they are beyond all possible conception of nonparticipants. It is necessary that we reach beyond the limits of the commonplace and orthodox, and after having reached, that we intensify and amplify the special forms of treatment that heretofore have been available only to the wealthy because of their expense, and intimately known only to those members of the profession who, by reason of their scientific attainments, treat that fortunate class of patients demanding supertherapeutic resourcefulness for the relief and cure of their varied ailments.

This article suggests that the nation mobilize these institutions and utilize them for the good of the incapacitated. It is obvious that great sums of money would be saved if these institutions were drafted into the service of constructive restoration of the incapacitated. To build special hospitals that would be as comfortable, well equipped and organized as the existing institutions would require time, expense and unnecessary effort. The sites of predilection for such institutions are occupied by institutions hereinafter named. Why, then, build and organize new institutions that will be practically worthless to the nation after the war?

That these spas and health resorts are efficiently organized and managed is attested to by the fact that they have flourished in past years in active competition with European spas. That their therapeutic principles are based on sound physiological fundamentals is admitted by anyone whose knowledge justifies an opinion on the subject; that their therapeutic efficacy is established is attested by their reputation which is in direct proportion to results effected. In selecting hospital bases from the number of available spas and health resorts, several factors must be taken into consideration. The chief ones are briefly: 1, equipment for special work; 2, natural resources, commendable for special work; 3, capacity; 4, kind of special work or class of patients best treated at each place; 5, proximity to the port of debarkation; 6, accessibility to the port of debarkation; 7, elevation; 8, climatic conditions.

In this article, we classify as spas institutions having a natural mineral water for bathing purposes; as health resorts, those places having drinking waters, desirable geographical location and suitable equipment, using artificial or plain water for bathing purposes. Therefore, the following institutions are designated as spas: 1, The Glen Springs, Watkins, N. Y.; 2, The Saratoga Springs, Saratoga, N. Y.; 3, White Sulphur Springs, White Sulphur Springs, W. Va.; 4, The Hot Springs, Hot Springs, Va.; 5, The Hot Springs, Hot Springs, Ark.; 6, Mount Clemens, Mich.; 7, French Lick Springs, French Lick, Ind.

And the following are designated as health resorts: 1, Jackson Health Resort, Danville, N. Y.; 2, Clifton Springs, N. Y.; 3, The Hotel Chamberlain, Old Point Comfort, Va.; 4, Asheville, N. C.; 5, Aiken, S. C.

To avoid useless repetition, discussion of feature treatments will be given and other treatments noted

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so as to give an idea of equipment and facilities for treating other conditions that may complicate the primary condition treated by feature treatments. For example, under the heading of The Glen Springs, the Nauheim technic and indications for carbonated brine bath therapy are discussed. Saratoga Springs, because it has a like therapeutic usefulness and because of its richly carbonated waters, merits the remaining discussion of the Nauheim method—the physiological action. These two places feature the same treatment and the discussion is divided so that it may not appear that favoritism is shown. The mineral water of the Glen Springs contains the chief chemical constituents and a strong radioactivity with a weak saturation of carbon dioxide gas; the waters of Saratoga are strongly saturated with carbon dioxide gas and are radioactive but are weak in the essential chemical constituents. Discussion of physiological action may be said to be too lengthy; but the readers' pardon is begged, the author attempting to clarify the conceptions of some few to the extent that the idea of mystery or empiricism, usually linked with hydrotherapy, may be obviated by explaining the physiology of the bath in question.

Criticism has been avoided as far as possible and the little that had of necessity to be mentioned, is more explanatory than critical.

#### THE GLEN SPRINGS, WATKINS, N. Y.

The Glen Springs is situated at Watkins, N. Y., at the head of Seneca Lake. It is located in a park that consists of more than 100 acres of woodland and lawn. There are miles of shady and well built walks throughout this park. The paths are measured, graded and furnished with frequent signs showing the distance and elevation from the hotel. They are utilized in the Oertel hill climbing exercises.

An attractive nine-hole golf course is within a short distance of the main building. South of this park is found a famous gorge known as Watkins Glen. Because of its natural beauties and its unique geological formations, architecturally expressed in its crude arches, galleries, pools, grottos, amphitheatres and waterfalls, this marvelous gorge ranks in importance with the natural wonders of the world. This glen is owned by the State of New York and is accessible at all times during the year.

Seneca Lake, known as "the gem of the finger lakes," is thirty-six miles long and from two to five miles wide. It maintains, at a depth of 200 feet, a uniform temperature of seven degrees above freezing throughout the year. Because of this relatively low temperature, evaporation is slight and the air unusually free from humidity. The records of the Weather Bureau, extending over twenty years, give the mean temperature for midwinter as 23° F., and for midsummer as 69.8° F. For similar seasons, the mean total precipitation was, respectively, 2.5 and 3.95 inches. Elevation, 750 feet.

The first floor of the main building is devoted to public rooms—a spacious lounge room, music room, lobby, dancing parlor, library, and other attractions. The roof garden covers the north wing of the main building. It is a quiet place and affords most rest-

ful environment with superb views in all directions. All floors are connected by elevators.

For the maintenance of this establishment, a complete power plant with accessories is operated. Natural gas is the fuel used for the power plant and cooking. A dairy farm adjoins the park and is under the direct supervision of the Springs company.

The mineral water that has served to establish the fame and reputation of this spa, and deservedly earned for it the name of "The American Nauheim," is a brine spring originating about 1,600 feet below the surface. It is a radioactive, ferruginous, iodo-bromo, muriated brine, similar in analysis to the water of Bad Nauheim, but about five times as strong. It is free from calcium sulphate. The important ingredients of this brine are the chlorides of calcium and sodium, the combinations of these two salts being essential to the Nauheim bath. Other ingredients are the chlorides of magnesium, potassium, and ammonium; iron bicarbonate, sodium bromide, sodium iodide, and some carbonic acid gas, both free and half bound. The total mineral content of this brine is about 10,525 grains to the gallon.

The radium emanation was determined by Professor John S. Shearer, Department of Physics, Cornell University. He reported that its radioactivity was high and constant, 68.6 mae units. This water has the property of recharging itself after its emanation has been exhausted by physical means. This property is due to the radium salts in solution.

The Nauheim treatment method at The Glen Springs will be elaborated upon so as to emphasize that, in the treatment of the cardiorenal and circulatory diseases and disfunctions, the method embraces more than hydrotherapeutic measures. Therefore, in speaking of the treatment, the following measures are inclusive in varying combinations, to fit individual requirements: mechanotherapy, Oertel hill climbing exercises, Schott resistance exercises, graduated calisthenics, electrotherapy, eliminative baths, the various rubs and massage. It is recognized by the more progressive members of the profession that there is no form of treatment in the range of medicine which, when applied to chronic cardiac and circulatory dysfunction, can show a larger percentage of improved, and sometimes cured, patients than this method.

It is necessary to preface the brief remarks on indications, physiological effect and technic by emphasizing the fact that the success of this mode of treatment depends upon the exact determination of the feasibility or unfeasibility of its application in a given case, and upon a physiological conception of the dynamic forces at work during a bath. Irreparable harm may be inflicted upon a patient if this treatment be entrusted to the unskilled, who think that it is just the question of a bath, which symbolizes to their perception nothing more or less than a ritual of immersion reputed to benefit the immersed.

The determination of the fitness of a given case for treatment by this method entails a careful study of the history, physical condition, blood pres-

sure, urine, blood, polygraphic tracings in some cases and functional tests to determine the amount of reserve possessed by the myocardium. It is not in the province of this article to discuss in detail the indications and contraindications of this treatment, or to describe in minutiae how indicatory or contradictory conclusions are evolved. For the benefit of those interested, reference is made to an article by the author in the March 23 and 30, 1918, issues of the *NEW YORK MEDICAL JOURNAL*, where this method is described in detail.

Briefly, the conditions for which the Nauheim treatment is adapted, are as follows:

1. Myocardial weakness and circulatory disorders incident to chronic valvular heart disease in which a failure of compensation is threatened; selected cases of cardiac dilatation and hypertrophy from various causes; the pseudoanginas, whether of psychoneurotic or endocrine origin; cases of true angina in which there is not excessive myocardial and vascular degeneration; the so called toxic hearts; conditions underlying disorders of the heart beat manifested by rapid and irregular heart beats, sinus irregularities, paroxysmal tachycardias, premature contractions, auricular fibrillation; derangement of arterial tension; arteriosclerosis and other degenerations incident to age, strain and stress. 2. Secondary cardiac involvement: following acute infections such as typhoid fever, influenza, scarlet fever, tonsillitis, rheumatic fever, and pneumonia; following severe hemorrhages or surgical operations; accompanying constitutional diseases, as the so called chronic rheumatism, the anemias and the diseases of the endocrine system. 3. Functional nervous diseases with somatic expression of cardiac and circulatory dysfunction, usually secondary to an endocrine disturbance; the vagotonias and sympathicotomias.

The general effect of this form of treatment upon suitable cases may be summed up as follows: a diminution in the size of the heart; a permanent strengthening of the heart muscle (the baths being essentially a circulatory gymnastic): sometimes the disappearance of a murmur; slowing of the pulse, increasing systolic phase; equilibration of blood supply, thereby regulating blood pressure and increasing the nourishment and functional activity of the various organs, depleting the congestion of internal organs and decreasing the relative ischemic condition of the skin, due to spasticity of the superficial blood vessels; a diuretic action and a sedative effect upon the nervous system.

The technic constitutes at times a preliminary course of treatment so as to prepare a case under observation for the baths. The baths are given in tubs and range in duration from four to twenty minutes and in temperature from 99°F. to 78°F. There are five series of baths. The first, or preliminary, series is a noncarbonated brine bath about eight minutes in duration and at about 98°F. to 99°F. The other four series are carbonated, the degree of carbonation increasing with the number of baths given, excepting in some cases of pronounced arteriosclerosis in which a palliative effect is the objective. The temperature decreases as the carbonation and brine strength increase. After the

bath the patient is required to rest for one hour in a quiet room and is instructed to sleep, if possible. It is the custom to give these baths in the morning. The afternoons are devoted to accessory measures such as electrotherapy, massage, the various rubs and exercises and eliminative treatments.

In the severer cases, it is advisable that after-treatment be taken following the Nauheim treatment for the purpose of building up the general strength so as to fit the patient for the resumption of his duties and occupation. This consists mainly of a carefully regulated diet, graduated exercise, eliminative hydrotherapy and mental hygiene.

To my mind, there is no place in this country that rivals the efficacy of The Glen Springs in the treatment of selected cases of circulatory and cardiac disorders. Its method of treatment has been evolved from years of observation and experience. As long as this institution has been established, it always has featured this treatment for the above named disorders. There is but one other place in this country possessing natural advantages for the treatment of heart and circulatory diseases, that being Saratoga Springs at Saratoga, N. Y. This is now under the supervision of the State of New York and, though still primitive, bids fair to come to the front in the next few years.

In addition to the Nauheim treatment, many other conditions are treated at The Glen Springs. The Nauheim brine is utilized without carbonation in varying temperatures and strengths for the purposes of elimination, sedation and tonic effect. It has been found to be particularly beneficial in the treatment of the neuroses and disorders of metabolism and in restoring health and vigor to the overworked and overworried. This institution is well fitted with appliances for giving the various showers, douches, packs, cabinet baths, electrical baths, continuous flow, Vichy and Aix baths. No comment will be made upon these as I wish to emphasize only the method for which this spa is particularly commendable.

There are four drinking springs. Three are mineral and possess tonic, alterative, radioactive and diuretic properties. Another is a pure deep-spring water with a capacity of more than 100,000 gallons a day.

There is no spa in this country endowed with natural advantages that qualify and commend it for special work more than The Glen Springs. It is accessible from practically any port on the Atlantic seaboard. Its capacity, roughly estimated, is for about 300, but possibilities for increased capacity are many. Cardiopaths will be afforded the best of opportunities for the improvement and cure of their complaints at this spa.

#### SARATOGA SPRINGS.

Saratoga Springs is located at Saratoga, N. Y., and occupies a central position in the state. It is hardly necessary to expatiate upon the scenic beauty of the place and its environs, for most have heard of this place, famed for so long as a health resort in early days, then as a sporting centre, and latterly again as one of the country's most valuable spas. The important features that commend Saratoga as a spa are the number of mineral springs to



he found in a comparatively small area. Unfortunately, for many years the springs have been subjected to the most destructive type of commercialism, which retarded their development and growth. Fortunately, the legislature of the State of New York in 1909 realized that this natural asset should be conserved and, as a result, the state reservation was created. Provisions were formulated for the control and protection of all natural assets. In 1916 a further step was taken when the reservation was transferred to the jurisdiction of the conservation committee. The reservation comprises approximately 450 acres of land including 122 springs and wells. Since the conservation plan has been in effect, many of the most valuable springs, depleted by excessive pumping, have been, so to speak, rejuvenated. Their capacity has been restored to an apparently inexhaustible quantity, and without deterioration of quality.

No attempt will be made to describe each spring as to its chemical composition and therapeutic action, as it is obvious that space is not adequate in this article and time, too limited. Remarks will be confined to essentials and to representative springs of the most important spring groups. The waters are classified as being either saline or mildly, medium and strongly saline-alkaline, with a moderate amount of iron. They are all naturally carbonated; the degree of carbonation, however, varies over a great range. The constituent properties that commend these waters are: carbonic acid gas; the inorganic salts, chiefly sodium chloride, the alkali bicarbonates, the chlorides of lithium and potassium, moderate quantities of iron and traces of sodium sulphate and nitrate; and radioactivity.

In studying the analysis of the various springs, it is noteworthy that the same constituents are present in each one, but in proportions varying the combination so that no two springs may be said to be the same. The carbonic acid gas renders the water palatable and facilitates the copious intake without effort.

Hathorn No. 1 has long been famed as the celebrated Hathorn laxative. In addition to its laxative properties, it is claimed that it is the strongest diuretic of all the Saratoga waters. Hathorn No. 2 possesses similar qualities to No. 1, with the exception that the medicinal properties are not as strong. Coesa is laxative, antacid and diuretic. Congress No. 2 is mildly laxative, chalybeate and alterative. Geyser is chiefly antacid and diuretic. Polaris, Karista, Emperor, and Lincoln are chiefly antacid and diuretic and promote digestive secretion. At Saratoga drinking of the waters constitutes a part of the cure and is of almost as much importance as the bathing, yet in relative value is not to be compared with the hydrotherapeutic and accessory measures. By bathing in and drinking the waters, prescribed to suit the individual need, the following conditions are benefited: disorders of the digestive tract, the subacute and chronic rheumatism, arthritis, the neuritides, anemias, exhaustions following infections and operations, alcoholism, selected cases of arteriosclerosis, cardiac and circulatory disorders. Unfortunately the Saratoga Springs lack the most essential chemical

constituent of the so called Nauheim bath—calcium chloride. If it possessed this constituent, it would be a par rival of Bad Nauheim.

Carbonic acid gas, being the most important property of Saratoga's waters, deserves a brief mention of the part it plays in the physiological action of a Nauheim bath, as well as an explanation of how this action is effected. Critics have been given to making humorous remarks and deprecatory assertions and assuming scornful attitudes toward the stated effects of carbonated baths. However, it must be said that their attitude differs but little from that of most critics who usually know but little of the subject or object criticized. He revels in destructive and cynical ridicule; yet it is significant that he offers no suggestion for construction and his own efforts are not creative.

First, one must understand what is meant by the term "point of thermic indifference or comfort." This expression is a means to define a degree of temperature of a given medium to which the nude human body, at rest, may be exposed without reacting to thermic stimuli of either heat or cold. It is that temperature at which heat production and heat loss equilibrate. In air, this point of thermic comfort is approximately 85°F. In water, it averages about 93°F. In carbonic acid gas it is 75°F. Therefore, in giving a water bath below 93°F. the thermic stimulation of cold is felt and it is obvious that in cardiorenal dysfunctions, vasomotor disturbances, arterial hypertension or any condition in which there is a predisposition to congestion or an associated congestion of internal organs, harm would be inflicted because of the increase of the internal organ congestion and the lack of peripheral reaction because of the chilling of the periphery. However, it is possible to give baths under these conditions with the aid of carbonic acid gas saturation of the water. This is possible because the carbon dioxide, in minute bubbles, clings to the skin and may be said to form an envelope about the body. Therefore, coexisting side by side, one finds small areas of skin covered by water and like areas protected by the carbon dioxide bubbles. The point of thermic indifference of carbon dioxide being about 75°F. and the bath temperature, say 85°F., thermic stimulation of heat will be imparted by the carbon dioxide gas because the water in which it is saturated is of a temperature ten degrees above the gas's point of thermic comfort. The water, being eight degrees below its point of thermic comfort will impart a thermic stimulation of cold. However, this thermic effect of cold is neutralized by the coexisting thermic effect of heat produced by the minute and numerous gas bubbles clinging to the skin and the end result may be summed in the expression that the patient had a cold bath that was warm.

Therefore, the physiological action of the bath is, first, on entering the bath tub, say at 85°F., a sense of chilliness with a contraction of superficial capillaries and arterioles; then, a sense of warmth as soon as the body is enveloped and the reaction of the skin which is intensified by the chlorides of sodium and calcium, causing the superficial capillaries and arterioles to dilate. The skin absorbs mi-

nute amounts of the salts and gases, and this produces a general rubefacient action on the skin which continues for a time after the bath. The effect upon the heart is first to whip it up, because of the thermic stimulation of cold on the sensory nerves, causing the primary contraction of superficial blood vessels thereby increasing the peripheral resistance and resulting in a rise of blood pressure; and as a secondary effect, after the reaction, to lessen arterial tension, and decrease peripheral resistance, thereby lessening the cardiac efforts and equalizing the circulation, with a decrease of internal congestion. The effect upon blood pressure, however, may be varied in accordance with temperatures, the colder the bath and the milder the degree of carbonation, the greater the cardiac stimulation, and the arterial tension, of course, is relative.

It seems apropos at this time to mention the part that sodium and calcium chloride play in the physiology of a Nauheim bath. That the success of Nauheim therapy is due to these two salts and carbonic acid gas saturation is admitted by any one whose observations have been intelligent enough to justify an opinion on the subject. The salts aid very much in keeping a bath at a uniform temperature. They, especially calcium chloride, produce a decided rubefacient action on the skin with dilatation of the superficial capillaries and arterioles. They penetrate the superficial layers of the epidermis and continue the rubefacient effect for some time after the bath. That the natural mineral water, with the proper constituents in solution, is superior to the artificial bath is explainable when one devotes time to acquaint one's self with the physiological action of radium emanation on the human organism. The Nauheim method of Glen Springs is followed in a general way at Saratoga, including the accessory measures, excepting details as pertaining to the method developed at this spa to meet existing conditions. Therefore, remarks concerning technic, etc., will be limited to the other disorders benefited at this spa.

Three bath houses are maintained by the State and are well equipped with adequate appliances for the various baths and accessory measures. Here is to be found a feature treatment in the way of carbon dioxide baths, especially used for the treatment of rheumatism and allied conditions. The functional nervous disorders derive much relief and much benefit from the carbonic acid gas baths. The patients live in hotels nearby and report to the bath houses at appointed times for treatment. Of course, this is disadvantageous, especially during the winter season and in inclement weather. Another disadvantage is that patients are not under the immediate care of their physicians at all times and facilities for close observation and supervision are rendered difficult unless the physicians have their offices in the bath houses.

In the institutional plan, patients are colonized and this facilitates the observation of bath reactions. There, from observations of reactions to a treatment, the next bath prescription is determined as to strength, duration, temperature and interval. Dietary supervision is obviously impossible

under this plan and too many of us know the mania of patients for breaking diet rules and limitations. However, under military control a great many of these disadvantages could be obviated, and we must not discount the value of Saratoga, one of the national assets, because of these disadvantages.

This state reservation, with its many springs of therapeutic value in the treatment of conditions that are most unsatisfactorily treated by orthodox measures, deserves earnest consideration as a potential national asset. With its ample hotel facilities that could be remodelled to suit requirements and its accessibility to the most important ports of the Atlantic seaboard, thousands could be well housed and treated at this spa. The approximate capacity at the present time is 5,000. The bath houses will accommodate an average of 100 to 150 patients an hour. The average elevation is 325 feet, and the annual mean temperature is 48°F.

(To be continued.)

## MEDICAL NOTES FROM THE FRONT.

BY CHARLES GREENE CUMSTON, M. D.,  
Geneva, Switzerland,

Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London, etc.

### BACTERIOLOGY OF GAS GANGRENE.

Not long since, the Italian physician G. de Angelis carried out some very instructive researches on the microbic flora of gas gangrene. These researches included ten cases of this infectious process, seven of them being considered genuine examples of the disease; the remaining three were looked upon as false gas gangrene. The latter offered a particular type of suppurative process with the development of gas. The results of these researches may be summed up briefly as follows:

Besides gas gangrene in the true sense of the word, there are other forms characterized by the presence of suppurating or necrosing foci, of localized extent, and having a relatively mild evolution without tendency to diffusion. The bacterial flora present in these localized forms of the process is absolutely different from that of true gas gangrene. It comprises almost exclusively the ordinary pyogenic organisms, such as the staphylococcus, streptococcus, colon and typhoid bacilli, to which are added some aerobic or anaerobic gasogenous saprophytes. Consequently, in contradistinction to what occurs in ordinary true gas gangrene, the development of gas is only a phenomenon of secondary importance.

The bacterial flora of true gas gangrene is most varied and there is no specific type of organism for this process. Usually, anaerobic bacteria, combined with the ordinary aerobic germs, are found, but exceptionally one may find only aerobic organisms, of which some are gasogenous. In true gas gangrene, the organism most commonly encountered is the perfringens, in sixty-six per cent. of cases, after which comes the septic vibrio, thirty-three per cent. The perfringens may be the only anaerobic organism present, but it may be associated with other nonpathogenic anaerobic germs, such as the putrificus coli or the bacillus



clostridium foetidum. In the more serious cases, which were usually fatal, the perfringens alone was present. On the other hand in a case where the patient recovered, the perfringens was associated with other nonpathogenic anaerobic bacteria.

The above remarks do not apply to the septic vibrio, for which the gravity of the infection appears to depend entirely on the degree of virulence of the germ itself. From this it would appear that the special pathogenic power of the perfringens is to cause gas gangrene, and therefore its importance is greater in this respect than that of other bacteria.

A bacteriological examination must be made in every case of gangrene because a prognosis can then be reached and the proper treatment applied. If the perfringens alone is present, the prognosis is very serious and immediate energetic therapeutic measures must be used. If, on the other hand, the perfringens is associated with other anaerobic germs of a nonpathogenic type, the prognosis is better, while the treatment may be less radical. The same indications cannot be derived from bacteriological examination when the septic vibrio alone is present, because in this case the gravity of the infection depends entirely upon the degree of virulence possessed by the vibrio.

#### INTOLERANCE TO ANTITETANIC SERUM.

I will now refer to the important work done by Tizzoni on anaphylaxis and intolerance for antitetanic serum, a subject which has not been studied sufficiently. The initial injection of antitetanic serum, be it a prophylactic or curative dose, can always be given with impunity, but if, on account of the gravity of the wound, prophylactic injections must be repeated, it is better to give the second injection as soon after the initial one as possible and at all events before the lapse of ten days.

When a prophylactic injection is given more than ten days after the preceding injection, the disturbances which may accrue are never of very serious moment. They usually consist in local anaphylactic phenomena, the so called minor anaphylaxis. Therefore, no hesitation is permissible as far as giving a second prophylactic injection is concerned.

Before removing foreign bodies which have been embedded for a considerable length of time in soft structures, a prophylactic injection should be given, whether or not the patient has received an initial injection at the time of the injury and regardless of the lapse of time since it was given. The injection given before a surgical interference prevents the lighting up of a latent tetanic infection, because the toxin may very well have remained inoffensive because of its inclusion within the fibrous envelope which develops around retained foreign bodies and appears to be an efficacious barrier to the diffusion of the toxin.

When, in the treatment of confirmed tetanus, phenomena of minor anaphylaxis appear, the injections of the serum may be stopped if the patient has received a sufficient quantity and if the tetanic phenomena have commenced to regress. Otherwise, the injections of serum should be continued in fractional doses, at the same time employing local

and general carminatives for the seric disease. If the prophylactic injection has been given a considerable length of time before the beginning of the treatment of the tetanus, a prophylactic injection should always be given a few hours before administering the curative dose. Intravenous or intraspinal injections of the serum should never be attempted unless the subcutaneous administration proves itself insufficient in therapeutic action.

If, in spite of these precautions, serious anaphylactic phenomena develop, a condition which rarely is observed, all known means at our disposal should be employed against the anaphylactic shock, particularly artificial respiration and cardiac stimulants. When because of an individual intolerance, which is most exceptional, the patient cannot be made accustomed to the serum injections even when given subcutaneously and in small doses, the serum should be given per rectum once or twice daily at the dose of from fifty to 100 c. c.

#### MEDICAL NEWS FROM WASHINGTON.

*New X Ray Army Ambulance.*—Lieutenant-Colonel Raymond P. Sullivan, M. C., and Major Franklin H. Martin, M. R. C., Promoted to Colonels.—Promotion of Naval Medical Officers in September.—Universal Enrollment in Volunteer Medical Service Corps.

WASHINGTON, D. C., September 2, 1918.

Improvements in the army mobile x ray outfits, designed by Colonel Christies, chief of the x ray division of the Surgeon General's Office, and Major George C. Johnson, his assistant, are giving general satisfaction, and after trials in this country fifty of the new type have been sent to France.

The motor vehicle in which the apparatus is installed is a standard army ambulance with a few modifications, and among other features is a dark room wherein plates and films can be developed expeditiously. Unlike previous equipment for this purpose, power to generate the current for the apparatus is derived from a separate engine, instead of from the vehicle propelling engine. Recently at Camp Meade, Md., one of the outfits made between sixty and seventy exposures a day for several days.

Prior to that time, the vehicle made a 900 mile trip from Washington to Hamilton, Ontario, where a meeting of the British medical association was being held, the journey being taken partly as a road test. The machine made an average for the entire trip of twenty-four miles an hour, which means that for much of the distance it made a speed of forty miles. The car stood the test satisfactorily and it arrived at Hamilton in practically perfect condition. The car is about to be sent to Fort Oglethorpe, Ga., for instruction use at the medical officers' training camp.

The crew consists of one officer and two enlisted men, all of whom have comfortable sleeping accommodations connected with the vehicle.

\* \* \* \* \*

Since appointment of Brigadier General Merritte W. Ireland, Medical Corps, as assistant surgeon general, with the rank of major general, for service in France, interest has centered on the filling of the other places of high rank for medical

officers provided by recent legislation, including two from the regular army with the rank of brigadier general, and two with the rank of major general, and four with the rank of brigadier general to be appointed from the Medical Reserve Corps, but so far no indication has been had as to the identity of the appointees.

Lieutenant Colonel Raymond P. Sullivan, medical corps, in charge of the surgical division of the Surgeon General's Office, and Major Franklin H. Martin, chairman of the general medical section of the Council of National Defense, have been promoted to colonels.

\* \* \* \* \*

After much delay, the Secretary of the Navy has directed the convening of boards to select staff officers of the navy for promotion to the grades of rear admiral, captain, and commander.

The board to select medical officers will meet on September 3, and it consists of Medical Directors Cary T. Grayson, Edward R. Stitt, and George H. Barber, with Assistant Surgeon Arthur C. Stanley, retired, as recorder, to select for the rank of rear admiral, and the same board with the addition of Medical Directors A. M. D. McCormick and L. W. Spratling to select for the ranks of captain and commander.

The board will select for permanent promotion seven for the rank of captain and fifteen for the rank of commander, and for temporary promotion two to the rank of rear admiral, fifteen for the rank of captain, and forty-one for the rank of commander.

As a result of recent promotion of "running-mates" in the line, certain staff officers below the rank of commander become due for promotion by seniority. In the medical corps of the navy, the following are thus due for promotion: To the rank of commander (permanent), Passed Assistant Surgeons R. W. McDowell, L. C. Whiteside, George C. Thomas, Micajah Boland, J. R. Phelps, A. L. Clifton, H. W. B. Turner, R. B. Henry, L. W. Johnson, A. H. Dodge, C. W. Smith, G. F. Cottle, W. L. Mann, jr., Roy Cuthbertson, G. B. Whitmore, D. H. Noble, J. G. Ziegler, G. F. Clark, W. M. Kerr, J. B. Pollard, and G. A. Riker; to rank of lieutenant commander (temporary), Passed Assistant Surgeons W. W. Hargrave and C. S. Stephenson; and to rank of lieutenant (temporary) over one hundred assistant surgeons commencing with A. A. O'Donohue on the list.

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Blanks for the use of physicians and surgeons throughout the country in becoming members of the Volunteer Medical Service Corps, have been prepared and they will be distributed shortly to local organizations of the Council of National Defense.

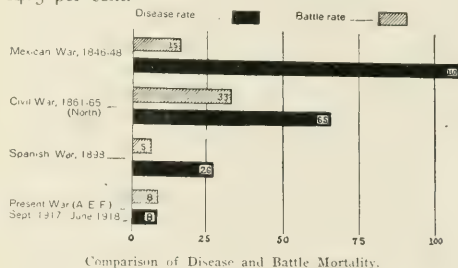
Dr. Franklin H. Martin, chairman of the general medical board of the Council of National Defense, has been instrumental in perfecting the details of the organization, which is controlled by a central governing board composed of the surgeon generals of the army, navy, and public Health Service and other prominent officials and medical men.

It is the earnest desire of the governing board

that every physician and surgeon in the country, man or woman, promptly execute the blank prepared and send it in to the board. The board thus will be enabled to classify the members of the medical profession and to place them where needed, either in some branch of the military or naval service, or in civil practice, if an assignment is deemed necessary.

#### United States Battle and Disease Death Rates.

—The *Official Bulletin* is the source of information for the following data: In the Mexican War, as is shown in the accompanying diagram, more than seven American soldiers died of disease to every soldier killed in battle. Eleven in every hundred fell victims to imperfect sanitation. In the armies of the North during the Civil War, the battle mortality increased more than 100 per cent. over the Mexican War average, while the mortality from diseases was reduced nearly eighty-five per cent.; but the disease mortality was still nearly double the battle mortality. The Spanish-American War witnessed a reversal of the downward curve, with more than five deaths from disease to each in battle. During the first ten months of American participation in the present war the records of the American Expeditionary Forces show an exact parity between battle mortality and disease mortality, with a combined mortality which, if projected throughout a year, would be only a little more than half of the battle mortality and less than a third of the disease mortality of the Civil War. Reports from the Allies show that of all the soldiers sent to the hospitals only forty-five in every 1,000 die; this includes those who die of disease as well as those who die of wounds. Of soldiers wounded in action more than eighty per cent. return to active service. It is necessary to discharge for physical disability only 14.5 per cent.



Comparison of Disease and Battle Mortality.

**Meningococcus Carriers.**—Medical Inspector P. S. Rossiter and Assistant Surgeon A. J. Minaker publish in a recent issue of the *United States Naval Medical Bulletin*, April, 1918, the results of the examination of 8,518 men as meningococcus carrier at the U. S. Naval Training Station at San Francisco. Recent reports indicate that there is in the community at large a varying percentage of carriers of the meningococcus who, under certain conditions of crowding and inadequate ventilation, transmit the organism to others. Out of this number they found 261 carriers, or 3.16 per cent.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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*A Weekly Review of Medicine*

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### THE SUPPLY OF NURSES.

At the opening of the war, the hospitals of the British territorial forces had nurses in the proportion of one to 5.7 beds. In the regulations for 1915, the ratio of nurses was one to 8.5 beds. In the larger civil hospitals of England, the ratio of nurses ranged from one to 2.5 to one to four beds. All these are graduate nurses, fully trained. But as the demand for nurses has increased, it has been found necessary to supplement the graduate nurses by volunteer assistants, and in this way it has been possible to raise the proportion of nurses above the low point of 8.5. The general practice in the British hospitals is to give two volunteer assistants to each trained nurse. These volunteers, after six months or a year of service, become very proficient and have proved of great value.

In the German army three classes of female nurses are recognized: the professional, fully trained nurse, the auxiliary nurse who receives six months' training, and the volunteer nurse's aid, who receives a six weeks' course of training,

supplemented later by special courses as opportunity offers. Within forty-eight hours after mobilization in 1914, 5,000 graduate nurses and about 1,200 assistant nurses reported for duty in Germany, besides large numbers of those who had taken the six weeks' course of instruction. These, after four months' experience, were promoted to the class of "sister" and were given opportunities to complete the course of instruction required of professional nurses. After a two years' course these were graduated as army nurses and wear a full uniform. Those, who are usually spoken of as "Red Cross nurses" or "volunteer nurses," work under the supervision of older professional nurses who have received full training. They are the best type of young women, twenty to twenty-five years of age, well educated, intelligent, anxious to learn and to serve. In commenting on these volunteers, Major John R. McDill in his *Lessons from the Enemy* says:

They are the only material from which reliable war nurses in large numbers can be developed in any country. The older, trained, professional nurses cannot be relied upon as a class to carry the burden of all the work of war hospitals, demanding long and irregular hours, changing of stations, sometimes involving hardships and new environments in a foreign country with a foreign language. The mature, experienced, trained, professional nurse should bear the same relation to the younger army nurses that officers do to their soldiers. Their positions should be those of superintendents, chief nurses, dietitians, anesthetists, or matrons, and all should be selected with reference to their ability to manage young people and to instruct them during their courses of training. The latter qualities are most important and should be insisted on or discontent, unhappiness, and failure in discipline will seriously disturb the service.

The rapid increase in the forces of the United States has prompted a call for 25,000 additional nurses by Surgeon General Gorgas, but it is doubtful whether we can spare from civil life 25,000 fully trained nurses without seriously impairing the efficiency of our civilian service. Indeed, it is already difficult to find a trained nurse for private work who is disengaged.

General Gorgas has undertaken to meet the situation by providing for the engagement of student nurses in certain army hospitals, where they will receive systematic instruction leading to a diploma, should the hospitals be continued long enough. If the hospitals should be closed on account of the termination of the war before the

student has completed a three year course of training. she will be given a certificate which will entitle her to a credit in a civilian training school for the time she has spent in training in the military training school.

While this plan is an excellent one in many respects and will do something toward supplying the necessary number of trained nurses, it is open to the objection that it makes no provision for the utilization of that vast number of intelligent, well educated women of leisure who would gladly serve in the hospitals for the period of the war, but who have no desire to devote their lives to the profession of nursing. This class has been made use of in the British hospitals to a large extent as volunteer assistants. These are put under the supervision of trained nurses and thus broaden the usefulness of these nurses. Germany also has found it necessary to call others than the fully trained nurses as set forth above.

The members of the American Hospital Association have become alarmed at the prospect of the disintegration of the civil hospital service through the demands of the army and have petitioned the Surgeon General not to carry out the plan which has been proposed of taking over a certain number of advanced and intermediate medical and nursing students for training in the army school of nurses. The New York Hospital Conference has petitioned the Surgeon General to standardize a six months' intensive training course for nurses of a highly practical character whose students will be in a position to be of immediate aid in the army. It is understood that the original program of the Surgeon General, which contemplated the utilization of fully trained nurses only, has already been modified and that the proposal of the New York Conference will probably be approved.

The United States would do well to profit by the example of other nations in this matter and make some provision for the utilization of the thousands of intelligent and devoted women who would gladly give their services in the army hospitals but who could not be induced to undertake a three year course of training looking toward qualification as a professional trained nurse. The program laid out by the Surgeon General is an excellent one as far as it goes. We need army training schools for nurses, but we must go further than this and avail ourselves of the services of the women who do not care to enter the professional training school, whether that school be in the civilian hospital or in the hospital under military discipline. We must also find a place—

there is none provided yet—for the large number of so called practical nurses who now perform such valuable services in home nursing and many of whom have already sought in vain to enter the army medical service, being barred by a lack of the prescribed training school diploma.

### MONOTONY AND HEALTH.

The word "lugubrious" applied to the present war by some prominent English writers is especially appropriate, and its lugubriousness is due chiefly to its monotony. It is for this reason that so much must be done to break this interminable succession of splashes of trench mud, explosions of shells, rain of bullets, and recuperation in camp. The time spent in camp is the most monotonous part to the soldier, or would be without the efforts being made to keep him amused. Never were these efforts so needed and never did they play such a rôle in maintaining the health of the troops.

War is a business which has for its object the sundering of soul and body—to use the old and unavoidable terminology. It is the business of medicine to cement body and soul, and the more closely they are associated, the more of health is present. The war is helping to dissipate old views of life and to make clearer the oneness of the human organism, its body mindedness or its mind embodiedness, as we may care to consider it.

As was carefully pointed out by the speakers at the association meeting in Chicago, there is nothing new in the abnormal conditions met with in the men at the front, and much of the abnormal is begot of monotony of the daily experience. We at home should remember that very much of the abnormal in ordinary life is also due to monotony, and it is the business of the physician and nurse to combat these in domestic life as much as in the army. We all need a change, and often when we are ailing it is all we do need. Perhaps cyclic phenomena in human conduct, such as periodic alcoholism, are the result of nothing more than the unbearable craving for a decided change, and some other experience might be substituted for the spree.

Nor does this principle apply solely to what we are pleased to term mental ailments. How often the sick room is lacking in change; the bed is kept in the same spot, the objects in the room are never shifted, old subjects of conversation are worn threadbare, etc. How often the visit of the physician is a source of the utmost help solely



because it breaks the monotony of the day. Perhaps it is as a breaker of monotony that the doctor does most good, and certainly his success is much to be measured by his ability as, shall we say, a variety artist. Variety is more than the spice of life, it is a vitamine of healthy existence.

#### METABOLISM IN NERVOUS TISSUES.

Although muscle and liver are perhaps the most potent elements in the general metabolism of the body, all tissues, of course, have a share in it. Up to very recently brain and nerve tissue were thought to play most insignificant parts in metabolic processes. Nevertheless, various substances have been recommended as brain foods on the assumption that the brain had a special affinity for them, and that they stimulated growth of brain tissue. Cephalin, lecithin, nuclein, phosphorus, fatty acids, etc., have been among the substances recommended. It is true that these substances are prominent constituents of nervous tissue, but there is as yet little clinical or physiological warrant for supposing that the ingestion of these substances can influence growth or activity of nervous tissues. Data on the influence of diet or other substances on nervous tissue are very meagre. Starvation seems to have no effect. It seems that the weight of these organs is maintained at the expense of muscle, adipose tissue, etc. In young animals underfeeding does not affect medullation. On the other hand, the feeding of certain foods such as polished rice or food containing a relatively low amount of protein and high carbohydrate will cause polyneuritis and pellagra respectively with the nervous degenerations accompanying these diseases.

Metabolic activity is quite marked in brain tissue. While water forms a very large part of the nervous tissue content, the protein and lipid content take part in the metabolic activities. Protein is found chiefly in the cellular part of the brain, the cortex, while the lipoids predominate in the white portions. Sodium, potassium, magnesium, etc., present in nervous tissue as dissociated ions or in combination with organic tissue, have a marked influence in nervous function, particularly in the propagation of nerve impulses. The phosphatides contribute to this function by being oxygen carriers. Chemically they are unsaturated fatty acids. They are colloidal in nature and have an instability toward heat, and therefore undoubtedly play a great part in the vital processes. A great many enzymes have been isolated in nervous tissue, but they probably

play a very minor part in this metabolism. Metabolic activity in the brain may be influenced by a great many circumstances. Hyperthermia, asphyxia, convulsant drugs stimulate, while hypothermia, chloroform, morphine, diphtheria toxin, etc., depress. Increase in nervous activity augments nitrogen catabolism; diminished nervous excitability lowers the amount or the intensity of protein disintegration. In regard to nervous activity, the consumption of oxygen by nervous tissue is as great as by muscle, which is of course the organ of internal respiration where the ultimate exchange takes place. It is the large amount of unsaturated substances with autooxidative properties present in nervous tissue that indicates the great amount of oxidation going on there. The large amount of these oxidative substances in the nervous tissue would in themselves account for the metabolic activity even without the intervention of the enzymes.<sup>1</sup>

There is little doubt that brain and nervous tissues are not inert as far as the metabolic activity of the body is concerned. There is now ample evidence that in metabolic diseases such as pellagra, polyneuritis, etc., the brain symptoms are due to metabolic disturbances taking place here as in other parts of the body. Metabolic disturbances in brain and nervous tissue must be borne in mind not only in these specific conditions but in any pathological conditions; they must be taken to explain the mental and nervous symptoms present in nearly all diseases. More extensive study of the composition and the chemical changes taking place in the brain normally and in disease will clear up much of the confusion of ideas concerning the brain metabolism.

#### TUBERCULIN IN DISEASES OF THE EYE.

Though the therapeutic employment of tuberculin in other parts of the body has fallen into deserved disuse, thanks to the unjustified overconfidence of its enthusiasts, there are no doubt certain conditions in the eye where its use, if not a specific, is of well recognized value. Some of the poor results claimed from its use are properly blamed on those who administered it, as it is a very powerful agent, which when not properly used is capable of doing a great deal of harm. Hence its dose, mode, and frequency of administration are to be very carefully considered before treatment is instituted; and while we may not fully agree with Verheyden (*British Journal of Ophthalmology*, April, 1918) that the treatment of the patients is best given in a hospital, it is

<sup>1</sup>Hygienic Laboratory Bulletin, No. 103.

not to be denied that extreme care is to be exercised, whether the patient is a hospital case or an ambulatory one. The old tuberculin is used, or the bacillary emulsion, the initial dose being as small as one five thousandth of a milligram, or even one ten thousandth, such small doses being obtained by gradual dilutions with a normal salt solution to which one half of one per cent. of a lysol solution had been added, until the desired strength of the solution is obtained. After the first injection, and frequently even after the subsequent ones, there may be a reaction either at the site of the injection (local), or in the eye (focal). This should serve as a contraindication to the continuation of the treatment until the signs of the reaction subside: the dose is then gradually and cautiously increased. A reaction during the course of treatment would indicate a return to a smaller and safer dose. In fact, it is advisable to examine carefully both the exterior of the eye and the fundus with an ophthalmoscope after each injection. The adjuvant treatment, such as dionin, yellow oxide salve, subconjunctival saline injections, the routine employment of atropine, and so on, is not to be neglected by any means.

Eczematous or what used to be called scrofulous affections of the cornea, with or without invasion of the conjunctiva, are the cases, *par excellence*, which are benefited by tuberculin treatment. A plea is made for a more frequent and methodical use of tuberculin in these cases, which frequently resist the old established methods of treatment, and in which corneal opacities of various degrees of density are apt to be left, with consequent impairment of vision. The ready response of these cases to the treatment is a clear indication that the affection is tubercular in nature. This is not at all at variance with the gradually prevailing views on this disease. For the last quarter of a century the etiology of eczematous eye affections has claimed the attention of ophthalmologists, and an undoubted relation has been established between tuberculosis and these diseases. The prevailing notion is that the eczematous nodule is a local manifestation of a toxemia arising from a tubercular focus situated somewhere in the body; this has been found to be the case in a great many of the patients examined, though no tubercle bacilli were ever found in the nodule itself. It is also claimed that in a certain class of patients suffering from phlyctenular disease the opsonic index for tubercle was lowered and that it gradually rose with improvement in the condition. A great percentage of these cases respond to both the von Pirquet and the Moro tests. Cridland quotes Be-

lenky-Raskin to the effect that out of one hundred cases of phlyctenular disease subjected to the von Pirquet and Moro tests, the first was positive in ninety per cent. and the second in eighty-five per cent. of the cases. Cases of episcleritis and scleritis of obscure origin are also greatly benefited by the tuberculin treatment, thus proving that some at least of these cases are of tubercular origin. As they are usually very resistant to treatment, and are apt to be followed by very serious consequences to vision, the improvement under this treatment is a distinct gain. A more or less similar improvement has been noted in affections involving the iris and the ciliary body (iritis and iridocyclitis): in these cases, when recent, and before profound organic changes have been established, improvement under tuberculin was undoubted.

#### COMMISSIONS FOR BANDMASTERS, BUT NOT FOR PHARMACISTS.

In a recent issue of the *Spartanburg, S. C., Herald*, announcement is made of the issuance of commissions as lieutenants to three band leaders. Pharmacists complain, and with some degree of justice, that they are still without recognition in the Army. Since the physical welfare of the troops is admittedly a matter of primary importance, it would seem reasonable to expect that the pharmacists would receive commissions rather than band leaders, but so long as the Surgeon General opposes the organization of a corps of pharmacists with commissioned rank, it is improbable that such a corps will be organized by Congress—though indeed we believe that the organization of the dental corps was not recommended by the Surgeon General. In view of the excellent service which has been rendered by the pharmaceutical corps in all the European armies except that of England, Congress would be justified in ignoring the wishes of the Surgeon General in this matter. In at least one instance, that of the elaboration of a formula for an application to neutralize mustard gas poisoning, the Chemical Service Corps has received credit which is due to a pharmacist working in that corps. The very great improvement in the specifications for medical and surgical supplies which has taken place since the United States engaged in this war, is due largely to the advice of the expert pharmacists who represented the manufacturers of medicinal products. There are a number of excellent pharmacists in the service, a few of whom have been given commissions in the Sanitary Corps, but the best results cannot be achieved by these isolated appointments. The Navy has recognized the need of a higher grading for the pharmacists and has given at least temporary commissions to some of its chief pharmacists. It is to be hoped that the Surgeon General will distinguish his term of office by a reconsideration of his present views on the subject and recommend the introduction of a pharmaceutical corps in the Army.



## News Items.

**Positions in the State Department of Health.**—The Civil Service Commission of the State of New York will hold examinations on October 5th for a number of positions in the Division of Laboratories and Research of the State Department of Health. For full particulars and application blanks address the Civil Service Commission, Albany, N. Y.

**A Chair of Tuberculosis at Edinburgh.**—Edinburgh, the birthplace of the modern teaching of anatomy and pathology, is again the pioneer in the establishment of a chair of tuberculosis. Sir Robert Philip, whose reputation is world wide, delivered the inaugural address at the recent institution of the chair with the topic Present Day Outlook on Tuberculosis.

**Psychopathic Institute in Winnipeg for Returned Soldiers.**—A psychopathic institute is to be established in Winnipeg, Manitoba, for the care and treatment of soldiers who return from the war suffering from mental disorders. Two years ago the provisional government voted \$50,000 for the work, but this sum was found to be insufficient and the additional money needed is to be appropriated. The work of construction will be started at once.

**A Red Cross Hospital in Jerusalem.**—The American Red Cross Society has established a general dispensary and hospital, with a children's clinic, in Jerusalem, and at the request of the government of Jerusalem the organization has taken over two orphan asylums with four hundred children. Three hundred Russian refugees, thousands of Armenian refugees at Port Said, and many homeless families near Jerusalem are also being cared for in Jerusalem by the Red Cross.

**Courses in Bacteriology for Laboratory Assistants.**—The special three months' course in bacteriology to train laboratory assistants for immediate war service, both here and overseas, began on Wednesday, September 4th, at the University and Bellevue Hospital Medical College and other medical colleges throughout the country. The courses, which are open to both men and women, were arranged at the request of Surgeon General Gorgas. The course at New York University was arranged by Dr. William H. Park, director of laboratories of the Department of Health, and his assistant, Dr. Anna W. Williams.

**Physicians Urged to Buy Radium.**—Dr. Richard B. Moore, of the U. S. Bureau of Mines, in an address delivered at a meeting of the American Institute of Mining Engineers, on Tuesday, September 3d, urged the physicians and surgeons of the country to buy up all the radium that is not needed for war purposes. There are only about three ounces of radium in existence at this time, according to Doctor Moore, and it will be six or seven years before new deposits of ore can be mined. Radium, Doctor Moore said, was being used on the faces of watches, clocks, and electric light push buttons, which is obviously dissipating the supply of a material of medical and military value.

**Volunteer Medical Service Corps.**—Membership blanks in this corps are now being mailed to all legally qualified men and women doctors in the United States. The General Medical Board of the Council of National Defense urges that every doctor not already in government service fill out, sign, and return the blank sent him to the offices of the Central Governing Board, Council of National Defense, Washington. This is a volunteer movement instituted among the members of the medical profession in order to have a record of those doctors who are not members of the Medical Reserve Corps, and who will pledge themselves to apply for a commission in the Medical Reserve Corps of the Army, the Naval Reserve Force, or for appointment in the Public Health Service, when called upon to do so by the Central Governing Board; and to comply with any request made by the Central Governing Board. It is estimated that at least 50,000 doctors will be necessary eventually for the Army. There are now 28,674 medical officers commissioned in the three services. This record of doctors will afford the government the means of obtaining quickly men and women doctors for any service required.

**Oregon State Medical Association.**—At the recent annual meeting of this association the following officers were elected: Dr. Charles M. Barnee, of Portland, president; Dr. Frank E. Boyden, of Pendleton, first vice-president; Dr. Louis Buck, of Portland, second vice-president; Dr. Benjamin A. Cathey, of Condon, third vice-president; Dr. Andrew J. Browning, of Portland, secretary; Dr. Jesse M. McGavin, of Portland, treasurer.

**Gifts and Bequests to Hospitals.**—A bequest of \$15,000 to the Germantown Dispensary and Hospital for free beds in memory of Frederick J. Kimball; her mother, Elisa M. Needles, and her father, William Norwood Needles, was made in the will of Helen Mary Hathaway Graf-flin, of Germantown. The will includes a number of private bequests and provides that any balance left from the \$80,000 estate shall be divided between Johns Hopkins University and Johns Hopkins Hospital. She left \$15,000 to the German-Franklin Square Hospital, of Baltimore, and to the Maryland Society for the Prevention of Cruelty to Animals.

**Personal.**—Colonel Raymond P. Sullivan, recently promoted, has been appointed chief of the surgical division of the Surgeon General's Office, succeeding Colonel William H. Moncrief.

Surgeon J. A. Nydegger, United States Public Health Service, has been detailed to supervise the Baltimore Quarantine Station, which was recently placed under federal control.

Doctor Delorme, director of the School of Military Medicine, has been elected vice-president of the Paris Academy of Medicine, to succeed the late Professor Pozzi.

Lieutenant Frank Harrison MacGregor, Medical Department, United States Army, has been awarded the Military Cross and cited by a British general for his services during the operations from July 21st to July 28th, northwest of Nanteuil.

**Medical Students in the United Kingdom.**—According to a statement from the General Medical Council, there is no shortage of potential doctors in Great Britain and Ireland. The student registration for 1917 exceeded that for any year since 1891. The grand total for 1916 was 6,103; for January, 1917, 6,682; October, 1917, 7,048; May, 1918, 7,630. Of the 1918 students 2,250 are women. Although the number of women students is definitely on the increase, the total is not so large as had been expected. The increase is more decided in Ireland than elsewhere, the increment after Ireland being most noticeable in the London district. The number of women students for each of the five years is as follows: First, 665; second, 619; third, 484; fourth, 275; fifth, 207. In Ireland the number of women students is as follows: First, 114; second, 104; third, 73; fourth, 30; fifth, 12.

**Effect of the War upon the Population.**—The birth and marriage rates for the first six months of 1918, compared with the first six months of 1917, show that New York city is already beginning to feel the effect of the enlistment and drafting of so many young men of marriageable age. According to reports published by the Department of Health of the City of New York, from the first of January to the first of July, 1918, there have been 410 fewer births in New York city, and 2,804 fewer marriages, than for the same period of 1917. The experience of New York city in this follows closely that of Europe since the war started in 1914. Sir Bernard Mallett, Registrar General of England, states that in England and Wales the birth rate has fallen. The rate for 1917 showed a decline of twenty-four per cent. over that of 1913, or a total of 668,346 fewer births. He feels that it will be a long time before the birth rate again reaches the figure which obtained before the war, and states that, serious as this loss is to the coming generations in his country, there is reason to believe that Great Britain has suffered less than the other belligerents. Germany has lost in potential lives the equivalent of 4.5 per cent. of its total pre-war population, Austria five per cent. and Hungary seven per cent. Sir Bernard Mallett calculates that the present war has cost the belligerent countries of Europe not less than twelve and a half millions of potential lives at the present time. He says that every day the war continues means a loss of seven thousand potential lives to the United Kingdom, France, and the Central Powers.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### VICIOUS CIRCLES IN RESPIRATORY DISORDERS AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B.S., M.D.,  
Philadelphia.

(Continued from page 388)

#### PULMONARY TUBERCULOSIS.

The vicious circles established in hemoptysis of tuberculous origin have already been referred to under a separate heading. In addition to these there are a number of others that may arise in tuberculosis—some of great importance, as they may exert a marked general influence on the course of the disease. Certain facts relative to the incidence of tuberculosis may be mentioned. Poverty and its results, viz., overcrowded living quarters, an insufficient diet, ignorance and filth, are well known as factors favoring an increased incidence of the disease; on the other hand tuberculosis as a cause of poverty was shown by Kingsbury, 1912, to have led to an appeal for charitable assistance in no less than thirty-four per cent. of a series of 1,600 families in New York city. These facts definitely suggest a vicious circle, poverty favoring tuberculosis while tuberculosis, in turn, promotes poverty. Again, overstrain, as Baldwin, 1913, specifically stated, may inhibit the mechanism of protection against tuberculosis and not only lead to spreading of an old tuberculous infection but render possible a fresh infection. Such augmented or new infection, we may add, increases the susceptibility of the individual to overstrain under continued labor, thus completing another vicious circle which tends to aggravate the disease and, incidentally, may combine with the preceding circle by reducing or interrupting the income derived from the subject's daily occupation. A third probable factor to be borne in mind is the influence of an unstable or defective nervous system. Individuals with a delicate nervous makeup are known to fall readily a prey to the disease, and the defective nutrition resulting from nervous or mental disorders has been thought to open the door to tuberculous infection. In the developed disease nervous disturbances may take part in an actual vicious circle.

The prejudicial influence of the several factors just referred to on the incidence and progress of tuberculosis is confirmed by the equally marked favorable influence of opposite conditions, which prevent or interrupt the vicious circles. Good food and an ample diet reduce the incidence of tuberculosis and oppose its progress when established. Fresh air, whether inhaled in the course of the daily work or employed as a curative measure, again greatly promotes resistance. Muscular exercise, where engaged in under conditions such that it will not overstrain but actually strengthen the body tissues by promoting cell nutrition, serves a useful purpose, but where pushed to the degree of excessive fatigue, or where any exercise adds to the already morbid cell consumption, as in the well

established disease, must be replaced by rest, which effectually interrupts the vicious circle.

In fully developed, open tuberculosis several important vicious circles relating to the disposal of the infected material coughed up may become established. Essentially these are all manifestations of failure of the natural process of protection by elimination, the primary object of which is to get rid of loosened tissue, bacteria, and secretions through the respiratory channels without infecting the latter. A salient example of failure of this process of protective elimination is met with where a cavity empties its contents into a bronchus. The importance of this particular incident in the course of tuberculosis is clear when we confront two statements of MacCallum, 1913, viz., that "one can at autopsy almost invariably pass a probe from any tuberculous cavity directly into a bronchus," and that emptying of the cavity contents into a bronchus "is usually the first step in the wide involvement of the lung in the tuberculous process." The violent respiratory movements and cough induced by the material lying in the bronchus, acting in conjunction with gravity, lead rapidly, according to MacCallum, to a distribution of the tubercle bacilli in bronchi previously not infected, with corresponding enlargement of the diseased area. This, in turn, not only tends to weaken the resisting powers of the body against further progress of the disease, but gives opportunity for the formation of new cavities, from which further rapid extension is likely to occur, a vicious circle being thus completed and the prognosis as to duration of life rendered more unfavorable. Manifestly no direct measure for overcoming this vicious circle is at our disposal, except in so far as reduction of coughing to a necessary minimum may be helpful in this direction. The main treatment of this circle may be said to be prophylactic, all possible efforts being made to detect and check the disease before cavity formation has occurred.

Vicious circles resulting in rapid extension of the infection are by no means limited, however, to the process of cavity formation. During paroxysmal cough, even in the absence of cavities, sputum may be aspirated into previously healthy bronchi, promote infection there, and increase the cough, forming another vicious circle. Again, infective sputum may lead to the production of a secondary disease focus in the larynx, whence secretions may be aspirated not only in the affected but also in the sound lung, thus accelerating the morbid process. Similarly, involvement of the trachea may result in extension to the opposite lung. Entrance of sputum into the pharynx or, by swallowing, into the stomach and intestine, may initiate one or more vicious circles, if not by establishing new tuberculous lesions, at least by setting up functional disturbances, such as, e. g., may be associated with pharyngitis, gastritis, fermentation in the alimentary tract, and diarrhea, which may seriously weaken the resisting powers of the body. Mere absorption of



the irritants of the sputum into the circulation may, as stated by Lawrason Brown, 1913, cause anemia, neuritis, and atrophy and fatty degeneration of the muscles, including the heart—all conditions constituting in a sense, part of a vicious circle, the resisting powers being impaired, the amount of diseased tissue and sputum increased, and toxic absorption correspondingly accentuated, thus completing a circle.

In the treatment, the possibility that any of the morbid conditions referred to may be reinforced in its harmful effects through the operation of a vicious circle should be borne in mind; as already pointed out, where such a circle can be artificially broken, gratifying curative, or at least retardant, results are likely to accrue. Excessively violent paroxysmal cough should be curbed, medicinally or otherwise; laryngeal involvement constantly watched for and suitably treated if it appears; all measures favoring easy and rapid elimination of sputum instituted, and the dangers of swallowing sputum carefully explained to the patient and guarded against. Postural measures may assist greatly in facilitating expectoration, as may also simple respiratory exercises between meals. The cilia of the respiratory passages should be availed of as completely as possible in their natural function of sputum raisers, cough, with its tendency to beget further cough, being correspondingly reduced and repressed.

(To be continued.)

**Subcutaneous Homohemotherapy.**—J. A. Sicaud (*Presse médicale*, June 13, 1918) points out the feasibility and utility of this procedure, not as a substitute for blood transfusion, but in the treatment of hemorrhagic and hemophilic diatheses or certain anemic states. It consists in injecting subcutaneously whole blood from another human subject. It is held superior to other methods of blood or serum administration in being simpler, in not requiring citrate or other chemicals, in avoiding the delay entailed by separation of serum, in more ready asepsis, in greater therapeutic efficacy because the blood cells are included, and in obviating anaphylaxis. The donor is generally a member of the family, free of syphilis, tuberculosis, malaria, and diabetes, and in good general condition. The apparatus required is limited to hypodermic needles four cm. long and of 0.9 to one mm. diameter; two or three sterile twenty c. c. glass syringes; one or two thirty c. c. porcelain dishes, sterilized and paraffin coated; a rubber tube and hemostat, and a vessel of distilled, sterilized water. With the subjects in the recumbent position iodine is painted over some area of the recipient's abdomen and a needle passed into the cellular tissue. With a band around the donor's arm, the most prominent vein is punctured and blood collected in the porcelain dish. The syringe is filled from the latter, at once adapted in the needle in the recipient's abdomen, the injection quickly made, the syringe washed with distilled water, and the process repeated until as much as eighty or 120 mls of blood have been injected. To prevent reflux of blood through the needle in the intervals between injections it may be plugged with the tip of a

small glass syringe. The injections are painless and produce a hematoma which becomes absorbed in the course of three to five weeks. No trouble from infection or cystic transformation was ever experienced; absorption ran its usual course even in weakened or debilitated subjects. Three infectious cases with purpura and internal hemorrhages treated in vain by injections of horse serum recovered rapidly after homohemotherapy—100 c. c.—repeated on four successive days. In two hemophiliacs in whom horse serum had caused anaphylactic reactions the treatment was well borne and permitted safe dental extraction and an operation for appendicitis, respectively. Some cases of cryptogenic chloranemia and three cases of extreme posthemorrhagic anemia were also treated, with rapid results in the latter and slower improvement in the former.

**Management of Constipation among School Girls.**—M. E. Brydon (*Virginia Medical Monthly*, June, 1918) comments on the frequency of constipation among otherwise normally healthy school girls, and ascribes it to five causes, viz., dietary indiscretions, insufficient exercise, insufficient ingestion of fluids, lack of regularity in defecation, and cathartic drugs. The first of these consists in the ingestion of enormous amounts of sweets, pickles, crackers, and other prepared foods looked upon as a necessary adjunct to the monotonous school fare. Most of this material is readily assimilated and lacking in residue. In the treatment, a list of foods rich in cellulose is given, viz., cabbage, tomatoes, onions, spinach, corn, string beans, lettuce, cucumbers, asparagus, wheat and rye bread, and the coarser cereals, oatmeal, corn meal, and hominy. Bran is a valuable help and should be used as an addition to cereals, breads, etc. Some fruit should be taken at each meal, if possible, and before retiring. To be avoided, in a general way, are excess of eggs or milk, sweets, pastries, nuts, cheese, crackers, new white bread, hot bread, toast, macaroni, rich stews and gravies, most chafing dish products, condiments, and soda fountain drinks. The reasons for these dietetic recommendations are carefully explained. As regards lack of exercise, most girls, in spite of having gymnasium work twice a week, lead almost sedentary lives. A half hour walk, covering a certain distance, must be added by the girl patient in her daily schedule. Invariably these patients do not drink enough water. The necessary corrective suggestion is best effected in the form of questions, bringing out the fact that the body loses twelve glassfuls of water a day, while the fluid in solid foods only makes up about four. Irregularity of defecation is overcome only by impressing the proper mental attitude on this point on the patient. As regards drugs, their dangers should be explained as impressively as possible, and the girl required always to report if she needs a laxative, as well as at regular intervals. In those already inured to the laxative habit castor oil is given, three minims three times a day, increased one drop daily until a good daily movement results, then reduced one drop daily to complete cessation. Suppositories, enemas, abdominal massage, and calomel are to be avoided.

**The Treatment of Acne Vulgaris.**—James W. Miller (*Urologic and Cutaneous Review*, July, 1918) examines the scalps of these patients very carefully. When the scalp shows seborrhea a preliminary shampoo of a solution of potassium carbonate (14.2 grams to the litre), followed by the use of green soap tincture once a week and the daily use of a sulphur pomade, should be employed. The following is a good formula:

Sulphur precip., .....	dr. i;
Sodii bibor., .....	dr. v;
Aque rose, .....	dr. iii;
Cerate alba, .....	dr. i;
Petrolatum, .....	dr. v.

All comedones are to be carefully expressed. Before expressing them it may be well to apply a hot towel to the face for a period of ten minutes. Pustules must be opened and drained, best done with a von Graefe cataract knife. The hyperkeratotic layer must be removed by sulphur. One of the best preparations is lotio alba. When stimulation is evidenced by a mild dermatitis, cold cream or calamine lotion should be substituted. Vaccine treatment is used at times. If the acne vaccine uncombined does not give results, the staphylococcus vaccine may have to be added. The initial dose should be five million of the acne vaccine, which is increased to one hundred million. The initial dose of the staphylococcus vaccine is one hundred million, which is increased to a billion or more. For acne indurata or blind boil, Bier's suction cup should be used. The diet should be carefully restricted. Plenty of water should be taken between meals. Exceptionally the x rays or the Kromayer lamp may have to be employed.

**Local Reactions in Arsenical Treatment.**—Lacapère (*Presse médicale*, May 13, 1918) states that Herxheimer's reaction appears not only in the secondary stage of syphilis, but also, less strikingly in the primary and tertiary stages. The chancre becomes congested after the first injection and yields a copious serous discharge before undergoing retrogression. In the tertiary stage similar reactions are observed, e. g., in gummata, in tabetic oculomotor paresis, in laryngitis with stenosis, in specific myocarditis or nephritis, etc. Paretics often develop curious excitement after an injection, due to reactive cerebral congestion. Tabetics exhibit on the day after an injection what they describe as "fireworks pains"; this is repeated for months after each successive injection, because the spirochete is so firmly established in the nerve roots; but finally the tendency to reaction disappears. In all instances these reactions are produced as long as the spirochete remains, but diminish in intensity as the spirochetes become reduced in number. The reactions are so constant as to be a positive sign of the syphilitic nature of a lesion. In subjects in whom arsenical treatment is just being begun, the reaction varies, in general, with the dose injected. It begins suddenly and reaches its height about one day after the injection. Its duration does not usually exceed one or two days, but there are exceptions. It is slower in passing off in long standing tabes than in the case of secondary eruptions. It may assume great intensity where in the course

of treatment the arsenical dose is too rapidly increased. Infinitesimal initial doses and slow ascent should be the rule where manifest or even latent nervous lesions exist. To overcome the developed reaction where it entails danger, as in cases with cerebral, cardiac, or renal lesions, adrenalin is best. As soon as such symptoms as delirium, mental hebetude, cardiac arrhythmia, increased albuminuria, etc., appear, subcutaneous injections of one milligram of adrenalin should be given, and repeated two or three times a day in severe cases. Before subsequent arsenical injections one half to one milligram of adrenalin should be preventively administered.

**Glucose Applications in Certain Superficial Infections.**—T. H. C. Benians (*British Medical Journal*, June 15, 1918) points out that most pathogenic bacteria are able to ferment glucose with the production of a definitely acid medium. Many of the toxic products of bacteria are best formed in an alkaline medium and their production is inhibited by an acid reaction. The tryptic digestion of proteins which causes the stinking discharges of wounds and in infections is inhibited in an acid medium. On the strength of these facts Benians has tried the local application of glucose solutions in the following conditions: In bromidrosis it was effective in the only case on which it was tried. In ozena the application of twenty-five per cent. solution of glucose to the interior of the nose twice daily has led to the production of an acid nasal secretion, the partial or complete destruction of the specific bacilli, and the disappearance of the foul smell and the crusts. Better results, however, seem to follow the similar use of glycerin. Some cases of chronic otorrhea seem to have responded well while others have not. Long standing purulent vaginal discharges have been cleared up completely in most cases by douching twice daily with twenty-five per cent. solution of glucose, or by the nightly introduction of a vaginal suppository containing twenty-five per cent. of glucose in a gelatin base.

**Embedded Missiles in the Walls of Large Vessels.**—R. Le Fort (*Bulletin de l'Académie de médecine*, June 11, 1918) notes that while the elastic fibres of large vessels easily arrest almost spent missiles and shell fragments are very frequently found in vascular sheaths, secondary or late hemorrhages from ulceration of a projectile through a vessel are rare. The fact is that a missile wears into or perforates a vessel only where the latter is unable freely to escape from the former. This is seldom the case with small or medium sized missiles; practically the only ones which could become embedded in a vessel wall. Diffuse secondary hematoma is observed, however, as a result of compression of a vessel on a sharp foreign body because of external violence, excessive massage, or muscular contractions. Late vascular ulceration is almost always due to infection; most bullets and metallic fragments, even after being embedded for years, carry on their surface pathogenic organisms from which infection may arise. Vascular walls defend themselves against foreign bodies in three ways. In the first, operative especially in the case of large veins, a part of the circumference of the vessel and



the missile itself become surrounded by a mass of connective tissue. In the second process, the projectile is surrounded by fibrous tissue separated from the elastic layers of the vessel, usually an artery, by a plane of cleavage, an actual serous bursa resulting which eliminates all the risks of friction. Thirdly, a small missile may be included in the thickened arterial wall itself, the latter preserving a soft adventitia free of adhesions. These methods of vascular defense protect against both hemorrhage and obliteration of the vascular lumen. The arterial pulsations not only offer no obstacle to protection, but facilitate the return of function by favoring liberation of the vessel wall. Thrombosis and obliteration are apparently no more frequent than late hemorrhage. Partial penetration of a retained missile into the lumen of a permeable vessel, except in aneurysm, must be exceedingly uncommon. These effectual protective dispositions should be borne in mind when one is attempting to decide whether or not to remove a missile long embedded near a vessel. Pulsation of a retained projectile is not, in itself alone, an indication for operation.

**Blood Transfusion.**—Dupuy de Frenelle and Paychère (*Presse médicale*, May 13, 1918), in conducting transfusion, employ merely a 125 or 250 ml receptacle with its lower end bent at an obtuse angle and brought to a point. Special ten to twenty mil ampoules of anticoagulant solution are previously prepared. The following solution was used with complete success:

R Sodii chloridi, .....	4.75 grams;
Glucosi, .....	60.00 grams;
Sodii citratis, .....	50.00 grams;
Aquæ destillatæ, .....	500.00 grams.

**Fiat solutio.**

The glucose is of value to promote leucocytosis, as a diuretic, as an antisepticemic, and to increase the density of the solution, thus keeping it constantly in the lower portion of the receptacle where clotting usually occurs. The glucose also adds to the solution a degree of viscosity which is of importance. The specific gravity of the ten per cent. citrate solution is 1.072. To obtain a solution of the same specific gravity as the blood, a formula containing ten grams of citrate per 120 grams of solution would be required.

**Blood Transfusion in Hemophilia Neonatorum.**—R. Lewisohn (*American Journal of Obstetrics*, June, 1918) states that the mother's blood is just as efficient for transfusion in these cases as that of any other donor. The mother should, indeed, be used as donor in every case, Cherry and Langrock having shown that it can be employed safely without hemolytic tests in newborn infants, whereas the father and other blood relatives require a careful test to prevent hemolysis and agglutination. This fact is of the greater importance because it is almost impossible to obtain enough blood from the infant for the necessary tests. Furthermore, valuable time is saved, the mother being always available. Of eight cases treated by the author, six were permanently cured by a single injection. The citrate method can be safely used in the newborn; no reaction or chill occurred in any case. The infants are usually brought to the hospital by the father on the second day after birth. A member

of the house staff is sent to the patient's home and returns with 100 mls of citrated blood from the mother. A superficial vein in the elbow region of the baby is then exposed by a very small incision. The blood, heated to body temperature by immersion in warm water, is then introduced through a fine cannula. In a number of cases transfusion stopped the bleeding immediately and permanently after subcutaneous injections of serum had failed to reduce the bleeding. Serum and intramuscular injections of blood may be tried, as they seem to stop the hemorrhage in a certain percentage of cases. If bleeding recurs, however, immediate transfusion is indicated.

**An Emergency Method of Transfusion of Citrated Blood.**—P. Thévenard (*Presse médicale*, May 9, 1918), in an extremely urgent case resorted, in the absence of special transfusion apparatus, to a very simple technic, which yielded excellent results. Into a graduated receptacle for saline solution, previously sterilized, is placed an appropriate amount of sodium citrate, e. g., 1.5 grams for 500 grams of blood. The blood is collected directly into the receptacle. The outlet communicates, through rubber tubing, with an injecting needle having a short bevelled portion. If a graduated receptacle is not available, any receptacle with an outlet can be used, its capacity having been determined before use by means of water poured from a litre bottle. The donor is placed on a bed near the recipient, tincture of iodine is applied at the bend of the elbow, and the blood is obtained in requisite amount by the old fashioned method of venesection. Meanwhile the receptacle is constantly shaken or the blood agitated with a sterile rod or instrument to distribute the sodium citrate well through it. The blood is then at once transfused into the recipient by intravenous injection. The latter is generally administered in one of the veins at the elbow, but where more convenient the external saphenous at the malleolus can likewise be utilized. With the receptacle placed about 1.5 metres above the bed, 500 grams of blood will flow into the recipient's vein in about ten minutes. In this procedure local anesthesia is not required. If necessary the receptacle can be replaced by a sterile funnel of known capacity and the vein puncture made by a large hypodermic syringe needle.

**Preoperative Purgation.**—Max Minor Peet (*Journal A. M. A.*, July 20, 1918) contends that preoperative catharsis has very little in its favor and survives by virtue of its being a routine practice. It has many disadvantages among which are: the physical and mental depression which follow catharsis; loss of sleep preceding the operation; the exertion required in the repeated use of the bed pan; the loss of intestinal and body fluids which is greater than can be compensated for in several hours by the use of the Murphy drip; increase in sensitiveness of the lower bowel and its reduced ability to tolerate the rectal tube and saline or tap water; increased postoperative thirst which is more difficult to relieve in the purged patient on account of the preceding; the appearance of the condition of hypotonicity of the small intestine through the removal of the normal stimulus of semisolid mat-

ter, the loss of fluids and the temporary increased peristalsis; and, finally, the alteration produced in the intestinal flora with the preponderance of fermentative organisms. The patient who has had a laxative or purge before operation is more prone to the development of gas distention, postoperative ileus and severe gas pains than the one not so treated. Comparative observations for the past six years have shown that patients receiving a simple enema before operation are in much better condition than those receiving laxatives or cathartics and have much less thirst, nausea, vomiting, gas pains, and abdominal distress. The experience of all surgeons in those cases demanding operation immediately, before there has been time for the administration of a cathartic, is also in agreement with these comparative observations. In fact, theoretical, experimental, and clinical evidence is all in favor of the abolition of purgation as a preoperative procedure.

**Medication in Children.**—Herman B. Sheffield (*Medical Record*, June 22, 1918) writes that digestants are rarely needed in children while the bitter tonics are not commended except *nux vomica* in small doses. Quinine may be given by the intramuscular method in severe malarial fever in five grain doses dissolved in fifteen minims of water two or three times daily. Of the iron preparations the tincture of the chloride, the syrup of the iodide, the solution of the peptomanganate and the dried sulphate are preferred. Syrup of the iodide of iron and codliver oil are well taken by young children. As to alternatives, iron arsenate, one quarter to one grain, is beneficial in the anemias, while Fowler's solution may be pushed in the neurotic type of chorea. Except in luetic affections the syrup of the iodide of iron and the syrup of hydriodic acid should be preferred to the iodide of sodium and potassium.

**Treatment of the Wounded by Means of Electricity.**—H. J. Seeuwen (*Archives of Radiology and Electrotherapy*, June, 1918) has treated paralysis, paresis, neuralgia and neuritis with the faradic, galvanic or sinusoidal current. Every case of recent paralysis is carefully tested and subjected to one month's treatment, even if there is no response to electric current. Splints are used to keep the paralyzed muscles relaxed. When a muscle does not respond at all the interrupted galvanic current is used. Neuralgia is treated with the galvanic current combined with the whirlpool bath and massage for the limbs. Facial neuralgia is at times treated with a galvanic current of great intensity, from sixty to 100 milliamperes. For cases of neuritis the electric treatment consists of galvanic baths of from fifteen to twenty minutes' duration. A current of twenty to forty milliamperes is sufficient and for the last two or three minutes slow interruptions with a metronome and a milliamperage just sufficient to contract the muscles are given. Treatment must be carried on over a long period of time, from ten to twelve months. Hysterical paralysis is best treated with suggestion and strong faradic current applied with a roller or the brush. Paralysis following injury to the brain or the spine is treated by massage and general and local applications of electricity.

### Comparative Efficiency of Local Anesthetics.

Torald Sollmann (*Journal of Pharmacology and Experimental Therapeutics*, February, 1918) asserts that the wheal method of testing local anesthetics in the human subject, is the most accurate, and can be applied directly to injection anesthesia, though not to surface anesthesia, for which the corneal test is not suitable. The author's tests showed that for injection anesthesia, cocaine, novocaine, tropacocaine, and alypin are about equally efficient. Beta-eucaine is one half and quinine and urea hydrochloride one fourth as active. Apothesine, antipyrine, and potassium chloride are but one eighth as active. There are fairly large differences in the duration of action, but these are insignificant when compared with those resulting from addition of epinephrine. The latter prolongs the action very greatly, except with tropacocaine; it does not, however, change the minimal efficient concentration. Addition of sodium bicarbonate to cocaine or novocaine does not increase the activity, in contrast to its effect in surface or intraneural anesthesia. Mixtures of cocaine, novocaine, and quinine and urea hydrochloride give somewhat deficient summation without potentiation, and are therefore without advantage. Mixtures of the anesthetics with potassium sulphate give only simple summation; this would be of some advantage in reducing the amount of anesthetic required.

### Quinine and Metallic Ferments in Malaria.

J. Bouygues (*Presse médicale*, May 13, 1918) states that subcutaneous injections of quinine in doses of three grams a day yield very favorable results during the febrile periods in Macedonian malaria. In the intervals of apyrexia, however, the remedy seems useless. Some cases of the disease completely resist large doses of quinine. The two main causes of this quinine resistance appear to be albuminuria and some ordinary infection coexisting with the malarial infestation. Frequently there are digestive and hepatic disturbances, as shown by persistent headache, simple diarrhea, coated tongue, rapid pulse, subicterus, and slight urobilinuria. Addition of treatment with electraurool, collobiase of gold or platinum or collargol given intravenously to the quinine proved of great service in the cases resistant to quinine. The doses of collobiase of platinum and of collargol mentioned as having been used are two and ten mils, respectively. The immediate effect of such an injection is a febrile reaction greatly resembling the actual malarial paroxysm. This is followed by a subjective feeling of well being and within ten or fifteen hours by a drop in temperature, generally to a point below normal. The secondary effect is a stage of normal temperature lasting thirty-six hours or longer, or even permanently. Where the disturbance recurs, it is invariably less severe than before, and the general condition is greatly improved. The effect of the injection is looked upon as an artificial crisis similar to that of pneumonia; there results the same copious sweating, diuresis discharge of urea and uric acid, loss of chlorides, and general euphoria. The only contraindication to the metallic ferments is myocarditis with feeble heart action. The quinine was always continued for at least one day after the injections of metallic ferments.



# Miscellany from Home and Foreign Journals

**Traumatic Shock.**—Brechot and Claret (*Bulletin de l'Académie de médecine*, May 28, 1918) do not regard as fundamentally different the hemorrhagic, toxic, and infectious forms of shock. The hemorrhage, intoxication, and infection are mere complicating conditions. The true criterion of nervous, traumatic shock is not only a reduction of blood pressure, but a reduction of the differential or pulse pressure, i. e. the difference between the systolic and diastolic pressures. The extent of diminution of the pulse pressure is of prognostic significance. Of seven shocked wound patients where the pulse pressure on admission was at least thirty mm. of mercury with the Pachon instrument, six recovered and the seventh died after thirty-six hours, not of shock, but of peritonitis. Of seven cases with a pulse pressure of twenty-five mm. or less, but one recovered, and this only with the help of adrenalin, which rapidly increased the pulse pressure. Above twenty-five mm. the prognosis remains favorable in the absence of infectious complications. At twenty-five mm. precisely, the prognosis is doubtful, and becomes the more unfavorable the less persistently the patient reacts to camphorated oil, saline solution, adrenalin, and perhaps pituitrin. Below twenty-five mm. the prognosis seems to be fatal. Another sign of shock, likewise apparently related to vasomotor paralysis and the resulting exsmosis, is a marked rise of intraspinal tension. Among seven wound cases in grave, pure shock, Claude's apparatus showed tensions ranging from  $30\frac{1}{2}$  to fifty, and averaging 39.6.

**Bacteriological Examination of Chancres.**—L. Tribondeau (*Paris médical*, June 8, 1918) emphasizes that microscopic examination of a chancre for detection of the spirochete of syphilis or Ducrey's bacillus is easily carried out by any physician and can be done in less than five minutes. The procedure is of extreme importance because it is the only one permitting of early, efficient treatment of the true chancre and abortion of the disease before secondary symptoms appear. The public should be impressed with the fact that any genital ulceration, however insignificant in appearance, should be shown to a physician without the least delay and should not be treated with even mild antiseptics until the bacteriological examination has been made. In obtaining material for examination the chancre should be wiped clean with moist, then dry, pledgets. In its most suspicious and indurated parts, at its margins, a few small parallel scarifications, two or three mm. long, should be made with a scalpel or vaccinating instrument, and the secretions brought up by pinching and flattened out with the instrument on two glass slides. These are to be dried without heat or other artificial form of fixation. In the Fontana-Tribondeau procedure three reagents are used: First, a mixture of pure acetic acid, one mil, commercial formaldehyde solution, two mils, and distilled water, 100 mils; secondly, a mordant solution of one gram of tannic acid in twenty mils of water; thirdly, Fontana's solution, consisting of crystalline silver nitrate, one gram, in twenty mils of distilled

water with ammonia gradually added until the brownish precipitate first formed becomes decolorized and passes into a slight opalescence. In staining the slide for spirochetes, hemoglobin is thoroughly removed with the first solution; the preparation is next washed with strong alcohol and fixed by igniting the alcohol on the slanting slide and almost at once blowing it out again; then the mordant solution is poured on and the preparation heated until it steams but does not boil; the slide is now removed from the flame, but the solution not poured off for thirty seconds more; the preparation is next washed for thirty seconds with tap water, rinsed quickly with distilled water, Fontana's solution applied and first allowed to act a few moments in the cold, then renewed and heated until steam begins to arise; the stain is allowed to act fifteen seconds, then discarded; finally, the slide is washed with distilled water for a few seconds, dried with filter paper, and examined under oil immersion. The specific spirochetes are distinguished from others by their gracile form and fine undulations. For staining the Ducrey bacillus on the second slide, polychrome blue with ammonia is recommended.

**Adrenalin Test of Cardiac Resistance to Stress.**—Loeper, Wagner, and Dubois-Roquebert (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 7, 1918) believe this test serviceable for ascertaining in any individual the capacity of the heart to withstand the stress imposed upon it in active military service. The procedure consists in injecting one milligram of adrenalin and securing a tracing of the cardiac outline with the x rays, immediately before and one-half hour, one hour, and one hour and a half after the injection. The first and third observations are the crucial ones, the peripheral vasoconstriction induced by the adrenalin, and its reaction on the size of the heart, often attaining a maximum one hour after the injection. Tests were made in over one hundred subjects. In normal individuals the heart outline obtained one hour after the injection was identical with the first outline, though occasionally after an hour and a half the outline showed a slight reduction in size, ascribed to the secondary constricting action of the drug on the heart muscle. In undoubted cardiac impairment the test regularly showed a striking enlargement of the heart, amounting to one cm. or one cm. and a half one hour after the injection. In seventeen out of twenty-three cases the enlargement involved the entire heart; in six the left ventricle alone. In the clinically more doubtful cases, viz., those of tachycardia, dyspnea, or erethism without appreciable disease of the myocardium, or pericardium, the adrenalin test permits of making a decision as to the actual availability of the heart for military exertions. The results of the test cannot be clinically foretold, cases of arrhythmia and extrasystole at times showing no cardiac dilatation where those of simple tachycardia or fatigue give a positive test. Dilatation under adrenalin is thus thought to indicate a weakness of the heart muscle, either intrinsic or of nervous origin, and

arising from myocarditis, simple fatigue, or a valvular lesion. The test is positive sometimes in valvular disorders, especially in mitral lesions; in three out of ten cases of aortic insufficiency it was negative. Among cases of aortitis and aortic ectasia the aorta was observed to dilate under the influence of the adrenalin.

**Thyroid Instability of Maximal Degree.**—Léopold Lévi (*Presse médicale*, June 10, 1918) reports the case of a woman aged thirty-three, 164 cm. tall, and weighing but forty kg., who exhibited alternately, and at times even in conjunction, pronounced symptoms of hypothyroidism and hyperthyroidism. Under the influence of the nocturnal reduction in temperature, the patient passed into a condition verging on myxedema, while in the post menstrual period her condition suggested Graves's disease. Intervening between periods of hypothyroidism and hyperthyroidism were normal periods, the latter amounting, however, only to a few days in each month. The instability witnessed is ascribed to variations in the circulation through the thyroid, inducing alternate states of inertia and overactivity in its function. A partial hyperemia of the gland awakens a paroxysmal hyperthyroidism upon a substratum of hypothyroidism. The patient also presented evidences of lowered ovarian activity and of adrenal instability. She showed all the earmarks of a lack of nervous equilibrium and of angioneurosis, —in brief, a state of neuroendocrine instability in which participates to a predominant degree instability of the thyroid itself.

**Edema with Chloride Retention, Sequel to Dysentery.**—M. Labbé and M. Marcorelles (*Presse médicale*, June 10, 1918) report two cases of this description. In the first the edema appeared in the stage of decline of an attack of dysentery of intermediate severity. In a few days the edema ascended from the feet to the scrotum, prepuce, abdominal wall, and lower thorax. The urine was scanty, but contained no albumin, sugar, nor casts. The lungs and heart were normal, and the liver small, the conjunctivæ, however, showing a subicteric hue. Under a diet of milk and vegetables, with salt restriction, and theobromine, the output of urine rapidly rose to above normal and the edema promptly disappeared. That chloride retention had existed was indicated by the elimination of thirty-seven grams of salt in a single day during the period of diuresis. The cause of the edema might have been a disturbance of the hepatic functions, the case then belonging to the group of hypodysenteric hepatitis studied by Le Damany, in which the liver cell creates the chloride retention as does the renal cell in hypodysenteric nephritis. The dysentery might, however, also have been the cause of the edema. In the second case anasarca again appeared as a complication of dysentery, in this instance a severe case with profound anemia. Treatment was similarly effectual. In this patient there were no traces of hepatic disturbance, and the cause of the edema was quite obscure. Cases of edema with chloride retention occurring in the course of severe, nondysenteric enterocolitis in children have been reported by a number of pediatricians.

**Involvement of the Cervical Cord through Vertebral Luxation.**—Roussy and Cornil (*Presse médicale*, May 13, 1918) report the cases of two soldiers who showed immediate quadriplegia, the one after dislocation of the atlas and axis with fracture of the odontoid process, the other following backward luxation of the fourth cervical vertebra. The second case developed sphincter disturbances. After a period of spinal coma, lasting six weeks in the first patient and four months in the second the quadriplegia underwent retrogression in a crossed manner, return of motion taking place simultaneously in the upper extremity of one side and the lower extremity of the other. Ten months after the injury motor recuperation was almost complete in both cases, the first patient still showing traces of left sided hemiplegia and distinct hyperesthesia in the great occipital distribution, the second a right sided brachial monoplegia and hyperesthesia of the third cervical. These cases, corroborate the observations of Marie, Bénisty, Claude, and L'hermitte to the effect that quadriplegia from involvement of the cervical cord is far from being always as grave as it was thought before the war. The early clinical signs often greatly exceed the actual lesions, and a prompt unfavorable prognosis may prove erroneous.

**Visceral Manifestations in Congenital Syphilis.**—H. Barbier (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 7, 1918) directs attention to certain nervous symptoms encountered by him in numerous cases of inherited syphilis, viz., attacks of vomiting or of abdominal pain, and incontinence of urine. The vomiting attacks are most common among patients between the ages of five and ten years. The attack starts suddenly, while the child, perhaps, is playing or talking, and without relation to meals. Usually it begins early in the morning. It is preceded by prodromes, generally a frontal headache, sometimes very severe, which appears a few hours or even days before the vomiting. The headache disappears, as a rule, rather rapidly after vomiting has set in. Sometimes there are also nervousness and peevishness. Sleep is less sound than usual. Vomiting may be repeated a number of times, up to twenty times a day; in the latter event blood may appear in the vomitus. The attack as a whole may last from a few minutes to two or three days. When the vomiting ceases, the child returns to its playthings. The attacks are not periodic; many of the patients have two or three a year, but longer intervals may elapse. At times a transitory meningeal syndrome supervenes, with somnolence, irregularity of breathing and heart action, and disturbed reflexes. The cerebrospinal fluid yields a positive Bordet-Wassermann reaction, but the blood reaction is variable. The attacks tend to diminish toward puberty, but are previously amenable to systematic antisyphilitic treatment. Barbier gives binioidine or small doses of potassium iodide by mouth, avoiding inunctions which he has found dangerous in these cases. Sudden attacks of enteralgia with liquid stools, passing off suddenly, and enuresis occurring alone or in conjunction with gastric attacks in children of four or five years, are other manifestations of inherited syphilis.



**Cerebrospinal Fluid in Nervous Commotion.**—Mestreztat, Bouttier, and Logre (*Bulletin de l'Académie de médecine*, May 14, 1918) studied the condition of the cerebrospinal fluid in a large number of cases of nervous commotion due either to the air disturbance attending explosion of a shell or to a localized shock, without external wound. Over eighty per cent. of such cases showed a manifestly abnormal cerebrospinal fluid, characterized by hyperalbuminosis unaccompanied by pronounced other changes, chemical or cytologic. This condition indicates some degree of nervous disintegration, without participation, however, of the meninges and without infection. The number of cells per microscopic field being diminished—doubtless by dilution, the intraspinal pressure being high—a significant condition of albuminocytologic dissociation results. The increase of albumin in the spinal fluid generally begins within two or three days and passes off after a few weeks or months. Study of the fluid is of diagnostic service, e. g., in cases of wound or severe contusion of the scalp, in which the pressure of a marked accompanying nervous commotion might otherwise be overlooked. Absence of changes in the spinal fluid does not definitely exclude nervous commotion, but their presence, and especially the characteristic course of the disturbance, conclusively prove that commotion resulting in organic changes has actually been produced. The information thus obtained is of importance in relation to medicomilitary and medicolegal decisions. Alcoholism, malaria, meningeal reactions of auricular origin, and central nervous syphilis, should be excluded as causes of any changes in the cerebrospinal fluid found in the individual case.

**The Effect of Painting the Pancreas with Adrenalin upon Hyperglycemia and Glycosuria.**—Israel S. Kleiner, Ph. D., and S. J. Meltzer, M. D. (*Journal of Experimental Medicine*, June, 1918) attempted to confirm the results of Herter and his coworkers on the sugar producing effect of adrenal substance when introduced intraperitoneally. The present work does not unqualifiedly bear out Herter's views. Three of twelve experiments by Kleiner and Meltzer in which the pancreas was painted with adrenalin showed no glycosuria, and the remaining nine did not indicate anywhere near so high a degree as Herter reports. They cannot support the chief contention of Herter that the "pronounced nature of the glycosuria following intraperitoneal injections appears to be mainly attributable to the adrenalin which comes into contact with the pancreas," particularly as when the pancreas was isolated from the rest of the peritoneal cavity the glycosuria was about one third, and the rise in blood sugar about two thirds, that obtained by painting the unisolated pancreas. It therefore appears that the increase in sugar is not of pancreatic origin following the painting of that organ by adrenalin. Kleiner and Meltzer suggest the possibility that Herter's results might have been due to the escape of adrenalin to the celiac ganglion, and further, that in their own experiments the larger production of sugar after painting the unisolated pancreas may be owing to the fact that a large part of the adrenalin escapes to the peritoneum.

**Parotid Enlargement among Troops.**—C. Mattei (*Presse médicale*, June 13, 1918) states that among a large number of men referred to military hospitals with a diagnosis of mumps, only forty per cent. proved to be true cases of mumps, while ten per cent. were false parotid enlargements; the remaining fifty per cent., apart from rare instances of parotiditis complicating infectious diseases such as typhoid and scarlatina, were cases of continuous parotid enlargement, without general disturbance or any other clinical manifestation. These are patients admitted often two or three times within a short period, presenting one, or more generally both, parotids more or less prominent. The enlarged glands are firm to the touch and feel lobulated. There is no adhesion to the skin, no filtration of the surrounding cellular tissue, and no pain nor trismus. The enlargement appears insensibly and thereafter rarely varies, the men being sent back to the front after a few weeks with their parotids exactly as before. The condition might be termed an hypertrophic cirrhosis of the parotids, but whether it is due to mouth infection, certain unsuspected general infections, an intoxication, or some other cause is as yet unknown. Of fifty cases carefully studied, none had a clear history of mumps earlier in life, nor did any develop an orchitis in the course of the protracted parotid enlargement. Arabs and the Indochinese are known to be predisposed to parotid swellings which subside upon the advent of spring. The soldiers suffering from parotid swelling are generally over thirty years of age.

**Polyneuritis and Hyperesthesia in Poliomyelitis.**—J. C. Regan (*Archives of Diagnosis*, July, 1918), from experience with numerous cases in New York during the epidemic of 1916, is convinced that a polyneuritic form of the disease occurs. The condition resembles very closely an acute multiple neuritis. In the differential diagnosis it is important to remember that the latter affection is rare in childhood, and occurs only after the acute specific fevers, especially diphtheria. The main distinguishing features are the history of the onset, the clinical symptoms, the findings upon analysis of the cerebrospinal fluid, and the progress and termination of the disease. A distinct lymphocytic increase in the spinal fluid—over forty cells per cubic millimetre—strongly favors poliomyelitis. The so called acute infective neuritis is frequently due to the virus of poliomyelitis, though hitherto unrecognized as such. Polyneuritis as a symptom occurs in probably over one-half the cases of poliomyelitis, usually appearing in the early paralytic stage when the initial hyperesthesia begins to subside: it may last a week or two, or rarely, for months. The upper limbs usually escape. The condition is best detected by pressure over the involved nerves, especially the sciatic, and by passive motion. The movements in eliciting an ankle clonus and Kernig's sign are notably painful. A position of talipes equinus may be voluntarily assumed. Marked polyneuritis is exceptional in tuberculous and cerebrospinal meningitis—a differential feature. Hyperesthesia is almost constant in the preparalytic stage and is very marked in the parts later to become paralyzed. It is not a specific sign, however, as it may occur in any form of meningitis.

# Proceedings of National and Local Societies

## ASSOCIATION OF AMERICAN PHYSICIANS.

The President, Dr. F. H. WILLIAMS, of Boston, in the Chair.

*Thirty-third Annual Meeting, Held in Atlantic City, N. J., May 7 and 8, 1918.*

*(Continued from page 399.)*

**The Serum Treatment of Meningitis.**—Dr. SIMON FLEXNER said that the serum treatment of epidemic meningitis began in 1907, coincident with the decline of the severe wave of epidemic meningitis which spread over Europe and America in 1904-5. Weichselbaum had found that the meningococcus was the etiological factor. Figures were obtained as to the mortality of the disease, according to localities, and the fluctuations in mortality and incidence according to districts. A definite basis was established for a conception of the value of therapeutic measures. There was no agreement as to mode of penetration of the germ to the meninges. If blood cultures were made in persons in the first days of the disease, positive cultures were often obtained. The significant point was obvious—either the meningococcus first got into the blood and from thence invaded the meninges, or, perhaps secondary infection of the blood occurred. At certain periods of the disease metastatic infections occurred; with involvement of the meninges were seen lesions of joints, thorax, eye, etc. On the whole the opinion had been held that the blood infection was secondary, and that the meningeal infection was lymphatic, by direct extension. Practice, based on the older opinion, was influenced by clinical observation on cases observed for hours, days, or weeks before diagnosis of meningitis could be made, when infection of the central nervous system was well established. Under these circumstances, antisera, to be effective, must be injected directly into the subarachnoid spaces. If the antiserum, however, was effective in the meninges, it would probably also be so in the blood. Many cases could be aborted by early intravenous injection of the serum. According to Dopfer's work in 1909, the meningococcus was not a fixed form, but involved a group. Two strains might be distinguished culturally, but not clinically. Each strain had a number of variants. Specific therapy, to be effective, must be truly specific. The dose must be in accordance with immunological relationship and antibodies must be adopted to the antigenic properties of the organism. A movement was on foot to substitute a monovalent serum for the polyvalent meningococcus serum now used, just as soon as the exact type of organism could be ascertained.

**Intravenous Serum Treatment of Cerebrospinal Meningitis.**—Major W. W. HERRICK, of New York, said that in the military cantonment life there had been an unusual opportunity for clinical research and this had been used as a means of making and keeping men fit for active service. Epidemic cerebrospinal meningitis cases had been seen early and so it had been possible to control them

effectively. The disease was not primarily a meningitis, but took the form of sepsis in the blood stream which later localized in the meninges. Forty-five per cent. of the cases were discovered in the premeningeal stage, with generalized infection and no local involvement. About two weeks after the blood stream infection, meningitis developed. One patient, the head nurse in the ward, who had polyarthritis due to meningococci, was treated with antiserum intravenously and made complete recovery. Complications of the diseases were many—pleuritis, orchitis, pericarditis, arthritis, etc. Cases in early stages responded at once to intravenous treatment. The method of treatment was similar to Cole's method with lobar pneumonia. The patient was given a desensitizing dose at the earliest possible moment, then after a dose of morphine and atropine, a test dose of serum intravenously. The serum was introduced slowly at a rate of not more than one c. c. per minute. If untoward signs appeared, the treatment was suspended, but renewed a little later. A 150 c. c. dose had been given in serious cases. Treatment with large doses had proved of value; patients receiving 500 c. c. did better and there were fewer deaths. If the intravenous treatment was to have any success at all, the serum had to be used boldly and in large amounts. The intraspinal method had not been neglected, but it was not used in the premeningitic stage. The combined treatment had been successfully applied. In serious cases, with the patient unconscious and covered with a rash, recovery to the point of being out of danger had taken place within forty-eight hours. The largest intravenous dose that had been given was 705 c. c., and the greatest number of injections, ten. Disappearance of the meningococci occurred within a few days. There was very little of the delirium which had characterized the 1904 epidemic. If the cases were diagnosed early and treated by the intravenous method, and the later cases treated by the combined method, the mortality could be kept down to fifteen per cent. These epidemics would in future therefore be considered with more equanimity than they had been in the past.

**A Potent Antimeningococcic Serum.**—Captain H. L. AMOSS, M. R. C., discussed three essential points: The passage of immune bodies from the blood to the spinal fluid; the mechanism of infection and the essential properties of the antimeningococcic serum. The passage of immune bodies in poliomyelitis had been studied and was considered possible only under conditions of increased permeability of the choroid plexus. This would perhaps be true of the meningococci. Increased permeability was measured by the agglutinin reaction of the cerebrospinal fluid; with a greater degree of inflammation the agglutinin would go through in greater concentration. After an intraspinal injection there was disappearance of agglutinin from the blood in seven hours. There was noticeable a blocking effect on the immune bodies in the cerebrospinal fluid after intravenous injection, though this had



not been definitely measured. Unless the permeability of the meningochochoid plexus was increased there was no passage of antibody. A certain accumulation of immune bodies was first necessary in the blood stream to produce this effect of increased permeability. A virulent culture of meningococci introduced intraspinously would cause meningococcemia in a few hours but it remained to be seen whether the organism in the blood stream would produce meningitis. This did not follow, although the organism remained viable for forty-eight hours. Meningitis was not produced in the monkey by this means, but it should be remembered that the monkey was a comparatively insusceptible animal. Antiserum reactions were always complicated by differences in the strains. The sera produced by the parameningococcus were very different from those produced by the meningococcus. To get a potent serum, the antibody zone should be raised. Less specific antibodies as well as the agglutinins were necessary factors. In sera which gave markedly different results in treatment, there was no difference to be detected except that of agglutination. In making a monovalent serum the difficulty of getting cultures was a great drawback, not more than fifty per cent. of cultures being obtained. It was doubted whether a high enough titre could be obtained with the monovalent serum to warrant the efforts spent in its production.

Dr. WILLIAM H. PARK, of New York, said that the laboratories producing serum were in great difficulties as to how to get the best. Doctor Amoss had said that the agglutinating properties were the chief differences in the antisera and the agglutinating power was a measure of the curative power. This was not the case with the pneumococci. Why should the agglutinating power be a measure of the curative power? The anti-infectious power was the curative power. The agglutinating power did not show whether the serum matched the strain, nor did the complement fixation test. In the treatment of cases at the Board of Health Laboratory in New York, they had not been able to prove that the serum produced from a large number of strains differed in curative power. That, it was thought, was borne out by the pneumococcus serum where the best were those weak in agglutination.

Dr. HENRY KOPLIK, of New York, said that the differences in the civil and military aspects of the disease were interesting. Granting that, as Doctor Herrick had said, there was at first generalized sepsis, in some instances this was so mild as to be inappreciable. In a majority of cases of children in civil life, the localized manifestations would call for more intensive treatment than that for general sepsis. Several cases had recently been seen, however, where the constitutional element was more predominant than the meningitic element. A child, in apparently good health, was taken with a convulsion, was covered with petechial rash, became unconscious and then died. No meningococci could be shown in the smear nor in the cerebrospinal fluid. Such cases could be reached by intravenous injection. In spite of the low mortality from the disease, these methods would be of value.

Dr. S. J. MELTZER said that he had expected to

hear from Major Herrick how the epidemic terminated and the reason for it. This was an omission of a very important point. In regard to the passage of the infection through the choroid plexus, he could not understand why the choroid plexus alone was affected; if the blood stream was reached and the arteries, the cord and the parts below the cord would be involved.

Dr. LEWELLYS F. BARKER remarked that complications like polyarthritides, pericarditis, etc., came late in the disease. If bacteriemia were present, complications of that kind might ensue. In the gonococcal bacteriemia after urethritis there often occurred a polyarthritides which later became suppurating. Infection might occur early and only become apparent late in the disease. In addition to giving intravenous treatment when general sepsis was present, it could be used to combat local infections and to discourage any foci that had become established as the result of the bacteriemia.

Dr. EMANUEL LIBMAN, of New York, thought an advantage might be gained by using combined intravenous and intraspinal treatment even in mild cases. Recently he had seen a small group of cases with panophthalmia and loss of sight which might not have occurred if treatment had been instituted.

Dr. AUGUSTUS WADSWORTH, of the New York State Board of Health, said that there was great variation in the potency of the sera produced by different laboratories. It was important for the physician to know the potency of the serum as indicated by the agglutinin reactions and the complement fixation test. The only complete statistics were those of the Rockefeller Institute. They kept in touch with the distribution of the serum and clinicians who used it and received reports on all cases. Regulations now required that the potency of the serum be recorded.

Major LITCHFIELD, M. R. C., Camp Upton, said the use of intravenous injections in all cases had been adopted very early at the camp. He would utter a word of warning: Young men were apt to be overconfident when they had given many injections without ill effects being seen, but with the growth of the antipneumococcal and antimeningococcal therapy, trouble would be encountered and accidents would occur again and again if desensitization was not carried out.

Dr. SIMON FLEXNER recommended in civil life applying the principles taught by military practice. When meningeal involvement existed the combined treatment could be used. The extent to which antibodies might pass from the general circulation to the choroid was an important question. In reply to Doctor Meltzer, he would say that Doctor Amoss had spoken of the meningochochoid complex, not of the choroid alone as having affected permeability. The measurement of antibodies was not perfected as yet and any test had to be used that would bring out the important point of specificity. If the organisms produced disease, this had to be counteracted. The only test showing specificity was agglutination.

Major W. W. HERRICK, M. R. C., said it was important to keep in mind any focus of infection in the body. The intravenous treatment cleared up

the picture entirely. The intraspinal method was used when the meningitis was established. The subcutaneous method was used on infants. Doctor Meltzer asked how the epidemic terminated. It had not yet terminated. In regard to potency of the serum, physicians should know both type and potency. Several types were necessary so that if the case failed to respond to one, it might be changed quickly to another. The price should be standardized by the government. Major Litchfield's advice as to care in injections was very timely. The syringe had been abolished and a device for giving one c. c. per minute adopted. In this way accident was avoided.

**Thrombosis of the Coronary Artery.**—Dr. J. B. HERRICK, of Chicago, stated that death need not immediately follow obstruction of the coronary artery. Cases on accurate diagnosis were more common than had been supposed. Patients were arbitrarily divided into four groups: Those with instantaneous death; those in which death soon followed; those in which death occurred weeks or months later; also a hypothetical group—in which symptoms were very slight, being merely an obstruction of the twigs of the artery. The third group was important. In such cases, patients had frequently had angina pectoris and they described the occurrence of the coronary obstruction as the most acute and prolonged attack they had ever had. The pain usually was referred to the epigastrium. Occasionally it simulated an acute abdominal syndrome and careful differentiation was necessary, as otherwise unnecessary operations were sometimes performed. In experimental work on this subject, it had been found that dogs could live weeks and months after the ligation of the coronary artery or might finally even recover. In certain ligations, the lesions were produced in the myocardium. They were most marked in the endocardial or subendocardial locality, or conductive region of the heart. Such phenomena as auricular or ventricular fibrillation were produced with changes in the electrocardiogram in the T-wave. This work might interpret abnormalities in the human electrocardiogram and later work might serve to show just which branch of the coronary was obstructed. The work, it was hoped, would be confirmed by autopsy findings and study.

Dr. GEORGE DOCK of St Louis, gave a case history of a patient, a man of sixty-one, who had never had occasion to consult a doctor for any illness and had been doing active work for forty years. He held an administrative position at a university. He ate heavily, but took little exercise. He was apparently vigorous, but was arteriosclerotic. He denied syphilis, and had no scar, but the Wassermann was four plus and it was found that he had a marked arteriosclerosis. After a Christmas dinner he was returning to his house and climbing a small hill, when he felt a very severe pain radiating down the left arm and was obliged to stop. The physician who attended him said it was angina pectoris and high blood pressure, and gave him nitroglycerin. The man went to work until January 6th, when he had another attack and was brought to the hospital. He had air hunger to

a marked degree and the larynx worked with extreme violence. Morphine and atropine relieved the symptoms. He did not recover from the orthopnea. Later he developed hydrothorax. Doctor Robinson took the electrocardiogram and without knowing that a diagnosis of coronary thrombosis had been made, stated that the absence of the T-wave would suggest coronary obstruction. The patient died of double hydrothorax twenty-three days after the first attack of angina pectoris. Post mortem examination showed very marked syphilitic arteriosclerosis.

Dr. H. A. CHRISTIAN referred to the two groups of patients mentioned by Doctor Herrick. The first, those with symptoms below the diaphragm, simulated abdominal conditions. These were frequently operated upon. A diagnostic point was the remarkable fall in systolic blood pressure; the diastolic pressure was little altered. The pulse pressure was strikingly small. The second group was that in which thrombosis took place with very few symptoms; the patient, while ill, did not present a characteristic picture and death was caused by rupture through the softened heart wall and hemorrhage. From a pathological study, it was evident that a chronic thrombosis had taken place, but it had produced very few symptoms.

Dr. S. J. MELTZER spoke on the experimental side. It should be kept in mind that human cases were not identical with ligation cases. Ligation affected other tissues. It might be nervous structure (in spite of the myogenic theory) or it might be the conductive system. One could not be sure that the ligation was thorough enough or permanent enough. It would be well to repeat the old experiments from a new light, to occlude the coronary artery without ligation. To Doctor Meltzer's objection that experimental ligation cases did not duplicate the diseased condition of the patient, Dr. J. B. Herrick replied that it was not possible to duplicate exactly the diseased condition as it occurred in man. The method of ligation of the coronary with silk was used, the dog was etherized and tracheal insufflation was performed. A great field for experimental work in the way of producing chronic obstruction was thus opened. In the human subject, the occlusion of the coronary was not always complete. In animals many remained healthy for some months with occlusion.

**Myrtol and Eucalyptol Poisoning.**—Dr. LEWELLYS F. BARKER, of Baltimore, made this report, saying that in view of the fact that myrtol, a preparation closely allied to eucalyptol, was used in treatment of putrid bronchitis, it was worth while to mention that symptoms of poisoning had been recorded from these preparations. Eucalyptol poisoning had followed both overdoses and small doses of the drug; some persons had an idiosyncrasy for it. Two different syndromes were noted in the after effects: first, nervous system involvement with collapse; second, dermatitis. In the nervous type the patient became seriously ill shortly after the dose. Vomiting, diarrhea, and coma might follow. Vomiting should be induced to prevent further absorption of the poison. Skin lesions were often associated with the nervous lesions. Several fatalities had been



reported from time to time. A greatly increased use of eucalyptol had resulted from its employment as a solvent for the Dakin solution, dichloramine-T. It would be interesting to know if any ill effects had been observed from its use. Doctor Flexner remarked that paraffin had now supplanted eucalyptol as a solvent for dichloramine-T.

**Myelocytic Leucemia as Influenced by Splenectomy.**—Dr. H. Z. GIFFIN, of Rochester, Minn., said in the history of splenectomy for myelocytic leucemia few cases with recovery had been reported. There was a ninety-three per cent. mortality. If reduction of the spleen by means of radium could be effected, before operation, the mortality could be considerably lowered. Twenty cases were now reported in which preliminary radium treatment had been given. Of these, nine patients had died after varying lengths of time. Of the living patients the disease had apparently progressed as it would without splenectomy. The only advantage of the operation was an addition to the comfort of the patient.

**Röntgen Ray Diagnosis of Peptic Ulcer.**—Dr. JULIUS FRIEDENWALD, of Baltimore, and Dr. F. H. BAETJER, of New York, presented this report of 753 patients who were examined first clinically and then sent for x ray examination, without note of clinical findings, to see how closely the x ray findings corresponded. There were three groups: First, those operated upon where the diagnosis was proved; second, cases with positive x ray and clinical signs; and third, doubtful cases. It was found that duodenal ulcer was easier to diagnose than gastric ulcer. The functional signs were important for diagnosis, hyperactivity indicating presence of an ulcer. Complications, such as abdominal adhesions were apt to mask the findings and the clinical history must be considered before making diagnosis. On the other hand the x ray would often clear up misleading clinical signs. In the differentiation between gastric ulcer and malignant conditions, the clinical history had to be carefully weighed. Indurated ulcer often tended to become malignant, but a microscopical examination at operation was necessary to clear up the diagnosis. Absence of x ray signs excluded ulcer from the diagnosis. It was shown by the x ray that a long period of complete rest was necessary in order that the ulcer might heal.

Dr. L. F. BARKER, of Baltimore, said that in regard to the motility of the stomach as shown by the x ray, they always made a rule at an examination to have plates taken at short intervals, so as to get a better idea of the gastric function. It was difficult to make a diagnosis between pyloric obstruction and malignancy. Other evidence was needed in addition to the x ray; a laparotomy was often necessary.

Dr. T. R. BROWN, of Baltimore, considered the fluoroscopic examination of the stomach the ideal method. The series of pictures showed the exact function of the stomach. He had used the fluoroscope in ten thousand cases and the percentage of correct diagnoses was as great as with the x ray.

Dr. F. H. BAETJER said that the röntgenographic diagnosis was in accordance with the clinical find-

ings in seventy-five per cent. of cases. It ought to agree up to one hundred per cent. The adhesions of chronic appendicitis often gave confusing symptoms. The reflex activity of the stomach from other conditions could not be ruled out. The stomach could not be considered as a fixed organ; it was variable as to its position and motility. What was normal for the individual must be considered. The x ray could never give exact findings of the stomach as it could of fixed organs. Diagnoses could not be made from x ray findings alone; these must be associated with all the other clinical signs.

**Healing of Peptic Ulcer.**—Dr. B. W. SPRY, of Chicago, read this paper. The protection of the ulcer from the digestive action of the gastric juice, by hourly feedings and the early giving of alkalis, formed the basis of treatment outlined. This treatment had been applied to 2,000 cases, of varying duration from one month to thirty years. The average duration was four years. The ulcers were of varying degree of penetration. The ulcer healed rapidly by cicatrization. It could be said that operative procedures had a definite mortality which weighed against this method of treatment. Unless the cases were to be operated upon, healing must take place. Three points were connected with the healing of ulcers: What were the causes of ulcer; what prevented their healing; what could be done to promote healing? By answering these questions one could arrange a rational method of treatment. As to cause, the mucous membrane of the stomach, from lowered resistance (perhaps vascular or perhaps from bacterial invasion) became digested and an ulcer was formed. Pepsin had a solvent action on albumin sensitized by free acid. In ulcer cases, therefore, it was necessary to destroy the digestive action of the juice. This could be done by the method outlined. In pyloric obstruction ninety per cent. of the patients had been relieved in from one to three weeks.

**Case of Bulimia.**—Dr. GEORGE DOCK, of St. Louis, in presenting this report reminded his hearers that the textbook descriptions of this condition agreed mainly upon the polyphagia, and that goitre was supposed to be a factor in this condition. In the case presented, the patient, an architect, aged thirty-six, was obliged to eat abnormally to avoid intense headaches which developed when he felt hungry. Apparently he had no regular eating time, but always carried with him a quantity of toasted bread cubes and six to eight shredded wheat biscuits. The history was vague. He was well until twenty-one, then began to suffer from eructations of gas, a condition which he called "gastritis." At twenty-two he had paralysis of the right arm. He now weighed 215 pounds. Gland extracts had no effect on his condition. He was a large man, but with no pathological distribution of fat or hair. There was evidently a slight neuros-thenic element in the case. Upon examination it was found the man had marked nasal obstruction by polyps, with suppurative of both antra and extremely bad teeth. There was a slight polycythemia. The Wassermann test was negative. The stools were very large and full of undigested fibre. Bulky vegetables were supposed to relieve the patient's

hunger better than meat. In twenty-four hours he consumed about 7,000 calories. The stomach and alimentary canal were normal, but rather large. The patient showed marked impatience with tests that interfered with his eating. No metabolic, intestinal, or pancreatic diseases were discovered. The marked sinus disease suggested irritation by an impulse such as known in itching diseases. Treatment was instituted and consisted of removal of bad teeth and draining of the sinuses, which were full of foul pus. After this the headaches, and abnormal appetite disappeared within one month. The patient had a normal weight and was without symptoms. It was a platitude in medical teaching that diagnosis meant covering the whole condition of the patient. In this case there seemed no connection between the disease and the cure; the condition was mentioned as being unusual in its cause and treatment.

**Comparative Food Value of Protein, Fat, and Alcohol in Diabetes Mellitus.**—Dr. H. O. MOSENTHAL, of Baltimore, in this paper said it was desired to maintain the protein tissue in spite of using a carbohydrate free diet. The patient was put upon 1,000 calories with a constant proportion of protein and fat. Then 500 calories of protein, fat or alcohol were added. Three periods were used: fat period, alcohol period, protein period. Finally there was a control period. On 1,000 calorie diet there was a constant loss of nitrogen. When 500 calories of fat were added there was no great improvement in the nitrogen balance. The fat was assimilated, but did not spare the protein. The same held true with alcohol. The alcohol possibly saved the body fat but not the nitrogen. The results with protein addition were strikingly different. The positive nitrogen balance was very marked indeed with 1,500 calories. There was thus opened up a method of therapeutic treatment for these patients, which seemed to be brought about in a way which did not occur in the ordinary individual. The previous diets had evidently affected the protein. Two patients who had not taken the alcohol did not get the results. The fat and alcohol had been used to conserve the fat of the body, while the protein preserved the protein.

**Fractional Examination of the Duodenal Contents.**—Dr. MAX EINHORN, of New York, reported this subject. The duodenum, it was stated, played an important rôle both physiologically and clinically. In this organ the acid contents of the stomach became alkaline. The duodenal juice was studied with regard to alkalinity: First, in patients under duodenal alimentation; second, in those who had duodenal instillation with water. The tubes being already in place, examinations were easily made. Fluid food was used, beef bouillon: thirty-two persons were examined. Fasting duodenal contents were aspirated. Beef bouillon was then introduced and the contents aspirated again. The degree of alkalinity and the amount of amylolysin and trypsin were determined. Cases were graded according to acidity. It was supposed that alkalinity would be less with hyperacidity of the stomach, but this did not hold good.

(To be concluded.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Proteomorphic Theory and the New Medicine.* An Introduction to Proteal Therapy. By HENRY SMITH WILLIAMS, R. Sc., M. D., LL. D., Member of the National Committee for Mental Hygiene, and of the Hygiene Reference Board of the Life Extension Institute; successively Pathologist to the Iowa State Hospital at Independence; Assistant Physician to the Blackwell's Island and Bloomingdale Asylums, and Medical Superintendent of New York Infant Asylum and the Randall's Island Hospitals, New York City. New York: The Goodhue Company, 1918. Pp. viii-304.

This elaborated monograph, in which the author sets forth his theory of the proteomorphic or proteal treatment of cancer and the application of it as a practical measure, is of wide interest. It reveals a careful examination and consideration of his subject as he has occupied himself with it scientifically in the laboratory and in clinical practice. He has chosen for it so wide a basis of comparative study of the results heretofore achieved in laboratory research and experimental therapeutic work that it would stand alone in interest and in scientific merit as a review of investigation, discovery, and therapeutic use of the principles and facts of protein hydrolysis, immunization, and the mechanism through which these are carried out. Upon such a background he bases his own discoveries, theories, and his attempt to make these practical and effective in all conditions where he believes the diseased condition may be suspected or proved to be the result of a disturbance of the protein metabolism of the body so that insufficient proteolysis is taking place. His interest and attention have been chiefly given to this in regard to cancer, which he believes to be explained under such an hypothesis, "as a systemic condition characterized by the development of neoplastic cells of a somewhat embryonic type, in conjunction with an excess of leucocytes in the blood and a deficiency (actual or relative) of red blood corpuscles."

For he considers this state of the cells of the blood to be the cause to a large extent of the disturbance of the protein metabolism. In order to substantiate this he discusses at length the production of antibodies, the probable defense hydrolysis of all cells of the body and the setting apart for this work of cells whose function is particularly this defense, in which they to a marked extent support and supplement the other cells. These are the leucocytes and the red corpuscles, and each has its special function in this process, the red cells completing the process begun by the leucocytes.

Cancer under this conception is not viewed as the result of a specific pathological entity, but rather of a specialized condition produced by the failure of the successful carrying out of the proteolytic process by both leucocytes and erythrocytes. Thus a state of veritable malignancy may be attained by any neoplastic growth not sufficiently overcome by the cooperation of the cells whose function it is to defend the organism against such proliferation. The malignant effect lies not in the neoplastic growth but in the products liberated in the system by imperfect hydrolyzation of these cells by the body enzymes. Therefore the whole therapeutic theory becomes one of increasing this protein hydrolysis by the parenteral introduction of foreign proteins and protein byproducts, to constitute antigens stimulating the defensive activities of the system against such a condition.

It is possible only briefly to indicate the author's careful and detailed discussion of this whole principle as worked out step by step in the history of investigation and discovery in biochemistry, and his cautious presentation of claims as to its applicability, theoretically and clinically, to the problems of cancer. His survey is a broad one, not only historically and in the consideration of the possibilities which lie within the theory and the proteal therapy; but he also considers the various factors within the organism which play their part in metabolism and its disturb-



ances or assist in the reestablishment of a sufficient protein hydrolysis. These, among other things, are the influence of the hormones from the endocrine glands and vasomotor influence. He might have added something still further in regard to the action of psychic influences largely through these mechanisms supplied by the vegetative nervous system. These influences bear perhaps strongly upon the production of cancer as well as of other disorders, asthma, psoriasis, and so on, to which he believes the protein therapy applies. The book is well worthy of careful study, both in its broad perspective and because of the carefulness and restraint with which the author presents his theory and reports his experience.

*Diseases of the Heart.* With a Chapter on the Electro Cardiograph. By FREDERICK W. PRICE, M.D., F.R.S. (Edin.), Assistant Physician to the National Hospital for Diseases of the Heart, London; Late Lecturer on Polygraphic Methods at the Medical Graduates' College and Polyclinic. With 245 Figures. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1918. Pp. 470.

This book is unique in that it lays special emphasis on the use of the sphygmograph and ink polygraph as an aid in diagnosis. A special chapter on the electrocardiograph is added at the last, since, as the author says, the general practitioner would find little use for it in routine work. Sphygmographic tracings are used throughout the book and substantiate only too clearly the fact that general use should be made of these appliances. It is refreshing to find so thoroughly scientific a work written in such a clear and lucid style.

The first chapters discuss in detail, with illustrations, the anatomy of the heart, and many cardiac cycle diagrams are demonstrated. The interpretation and significance of physical signs and murmurs are discussed. In the chapter on the venous pulse the making of cardiograms and phlebograms is explained by the use of either a tambour attached to a Dudgeon's sphygmograph and a smoked paper drum, or by the use of MacKenzie's ink polygraph. Chapters are given on the prognosis and treatment of functional disorders of the heart, on sinus irregularity, extra systole, heart block, auricular fibrillation, auricular flutter, and paroxysmal tachycardia. The essential cause of heart failure lies in the weakness of the myocardium. The best test of the heart state is the functional efficiency test, that is, how the heart responds to exertion. The author says that partial heart block occurring in infectious diseases may be the only sign of myocardial involvement and should be watched for. Some polygraph records are given that show this. Chronic valvular diseases are also fully considered, and there are chapters on pericardial affections and myocardial diseases, which last the author considers the most serious of all.

The book, in its clearness and definiteness, takes one back to the physiological laboratory. But in addition to the new methods it handles with great thoroughness the more ordinary methods of diagnosis. Its advantage lies in its manner of illuminating a subject so often left befogged in the discussions and controversies of a book of less experimental method.

*How to Enlighten Our Children.* By MARY SCHARLIEB, M.D., M.S., Author of *A Woman's Words to Women*, etc. New York: Fleming H. Revell Company, 1918. Pp. 192.

Much practical common sense is here combined with a clear scientific presentation of important considerations for parents in the sexual training of their children. The facts are presented in their everyday bearing upon the growth and development of the child of either sex. Particular emphasis is laid upon the increase of growth and development at puberty with the problems that present themselves then and throughout the period of adolescence. Particularly clear and fearless and sane is the discussion of the relation of the child's development to its socially sexual function and its preparation for marriage and reproduction with training to avoid the dangers which beset this pathway. This includes a particularly clear discussion of syphilis and gonorrhea and their relation to the parents' responsibility in training, as well as the existence and extent of syphilitic and gonorrheal injury to the un-

born and the developing child. Eugenics is mentioned in a brief and practical manner.

The tone of the book, even with its scientific value, yet lays too much emphasis upon some rather overstrained points of view, which have proved themselves more effectually dealt with in a more direct fashion based upon very definite genetic facts. There is not sufficient recognition of the fact that children are unfolding very definite sexual impulses, even if not of an adult type, throughout the years before puberty; there is not, for instance, enough penetration into the instincts and impulses which make for unnatural practices, such as masturbation. The discussion of this condition is somewhat limited, and its physical results are somewhat overemphasized, while the psychical results are not dwelt upon to any extent. The tendency throughout the book is to emphasize the external or physical, in spite of the fact that there is need of a more penetrating psychology in this study of development.

## Births, Marriages, and Deaths.

### Died.

- BANKS.—In Nashville, Tenn., on Tuesday, August 6th, Dr. David F. Banks, aged sixty-four years.  
BOYNTON.—In Los Angeles, Cal., on Tuesday, August 2d, Dr. Sumner Hamilton Boynton, aged seventy-two years.  
BROOME.—In Los Angeles, Cal., on Tuesday, July 23d, Dr. William John Broome, aged thirty-four years.  
BRYAN.—In Corning, N. Y., on Saturday, August 24th, Dr. Edward W. Bryan, aged eighty-six years.  
CLARDY.—In Hopkinsville, Ky., on Saturday, August 10th, Dr. John D. Clardy, aged ninety years.  
CLECKLEY.—In Augusta, Ga., on Sunday, August 4th, Dr. Marsden A. H. Cleckley, aged eighty-six years.  
COLCORD.—In Port Allegany, Pa., on Wednesday, August 7th, Dr. Joseph B. Colcord, aged fifty-six years.  
DARROUGH.—In Kansas City, Mo., on Friday, August 9th, Dr. John Niven Darrow, aged thirty-one years.  
DAY.—In Newark, Ohio, on Tuesday, July 30th, Dr. Henry Day, aged seventy-nine years.  
DIETRICH.—In St. Joseph, Mich., on Tuesday, August 13th, Dr. William A. Dietrich, aged sixty years.  
GIBBS.—In Mason City, Ia., on Saturday, August 17th, Dr. Harry Emmons Gibbs, aged thirty-six years.  
GREENFIELD.—In Westfield, Pa., on Saturday, July 27th, Dr. Arthur M. Greenfield, aged sixty years.  
HALSTED.—In New Brunswick, N. J., on Wednesday, August 28th, Dr. Byron David Halsted, aged sixty-seven years.  
JEFFREY.—In Mount Kisco, N. Y., on Monday, September 2d, Dr. Alexander MacLean Jeffrey, aged fifty-nine years.  
KEMPSTER.—In Milwaukee, Wis., on Thursday, August 22d, Dr. Walter Kempster, aged seventy-seven years.  
KENT.—In West Liberty, Ohio, on Sunday, August 11th, Dr. Guy Jacob Kent, aged forty years.  
KING.—In Mayesville, S. C., on Wednesday, July 17th, Dr. Claude Evans King, aged forty-six years.  
MARTIN.—In American Red Cross Hospital No. 4, Liverpool, England, on Sunday, July 28th, Lieutenant William Joline Martin, M. R. C., U. S. Army, of Wilksburg, Pa., aged forty years.  
MASSMAN.—In Chicago, Ill., on Monday, August 12th, Dr. John Massman, aged seventy-nine years.  
NORTON.—In Lake Village, Ark., on Friday, August 9th, Dr. Marion Madison Norton, aged forty-five years.  
PERKINS.—In Lynnhaven, Va., on Saturday, July 13th, Dr. Richard C. Perkins, aged ninety-five years.  
PETERS.—In Kokomo, Ind., on Thursday, July 4th, Dr. Daniel C. Peters, aged fifty-eight years.  
REAM.—In Effingham, Ill., on Saturday, August 24th, Major William Roy Ream, M. C., U. S. Army, of San Diego, Cal., aged forty-one years.  
SOUTHWARD.—In Carey, Ohio, on Tuesday, August 6th, Dr. James D. Southward, aged fifty-seven years.  
SPIEGLEBERG.—At Chateau-Thierry, France, on Monday, July 15th, Lieutenant Sidney Lehman Spiegleberg, M. R. C., U. S. Army, of New York, aged thirty-seven years.  
THOMPSON.—In New York, on Thursday, August 29th, Dr. William L. Thompson, aged forty-one years.

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## Original Communications

### THE RELATIVE VALUE OF PASTEURIZED AND CERTIFIED MILK.

*Especially in Relation to a Limited Outbreak of Intestinal Infection at Atlantic City, and the Value of the Certificate of the Milk Commission of the Pediatric Society of Philadelphia.*

By SOLOMON SOLIS COHEN, M. D.,  
Philadelphia.

#### THE INFECTION.

Dr. X. has four children. These, after weaning, were, during the remainder of their infancy, fed upon cow's milk, pasteurized and modified at home. They continued through childhood and youth to use home pasteurized milk in rather generous quantities. The milk was obtained from a trustworthy dealer. The children's diet, of course, was at all times properly varied. It included, among other things, a sufficient amount of uncooked fruit juices and also, during the transition period from infancy to childhood, a daily quantity, greater or less, of fresh beef juice, i. e., juice pressed from a portion of the lean round that had been heated—but not cooked—in the wire broiler. These children had their fair share of the ailments of childhood and youth, measles, whooping cough, scarlet fever, diphtheria and the like; but they did not have any gastroenteric infections. Neither did they suffer from scurvy or any other nutritional disorder or blood dyscrasia. Also, Dr. X. saw in his practice a fair number of children of various ages. Their feeding was conducted on the same lines as that of his own children. Neither scurvy nor rickets developed in any of the children so fed, nor did gastroenteric infections appear among them. Cases of scurvy, rickets, and gastroenteric infections were met with, but not among those whose feeding had previously been controlled.

Dr. X. is not a specializing pediatricist, but a general physician, or as the current term goes, an "internist."

Dr. X.'s eldest son in due time arrived at manhood and married. His daughter, after weaning, was, under the direction of a good pediatricist, placed upon milk modified at home, but not pasteurized. Instead, milk certified by the Milk Commission of the Philadelphia Pediatric Society was used; and in due time, other appropriate articles were added

to the diet. The child thrived, and escaped any serious illness, until in her twenty-sixth month, namely, August, 1917, while summering at Atlantic City, when she was suddenly seized, one hot Sunday afternoon, with severe griping pains, followed in a few hours by fever, vomiting, and purging. Dr. William J. Carrington was summoned, and diagnosed an acute ileocolitis, probably caused by milk. The stools were examined both microscopically and bacteriologically, and the results confirmed the diagnosis. Unfortunately, the milk supplied for the child had all been used and could not be studied. It was from the same highly reputable concern which had supplied the family in the city, and was likewise certified by the Milk Commission of the Philadelphia Pediatric Society. The little girl suffered so severely and became so much prostrated that the grandfather was recalled from his vacation to consult with Doctor Carrington, whose diagnosis and treatment were approved. In due time, after protracted and dangerous illness, evidently the result of virulent infection, the child recovered.

Doctor Carrington was called the same day to see the infant child of another Philadelphia physician whom we will call Doctor B. The household of Doctor B. received its milk from the same concern that had supplied Mr. X., and with the same certificate. Doctor B.'s child also had a virulent intestinal infection; and while the ultimate result was likewise a happy recovery, the illness, as in the case of the X. child, was severe and dangerous.

In the B. case, Doctor Carrington consulted with a physician whom we will call Doctor M., and was informed that there was at the time in a certain institution at Atlantic City attended by Doctor M., a small house epidemic of ileocolitis, presumably from infected milk. This institution is supplied, in part, by the same milk company which supplied the families of the two children attended by Doctor Carrington; but as no individualizing record of food was kept, it is impossible to prove—however probable it seems—that all the sick children got this milk, or that all the children who escaped received milk from other dealers.

Doctor X. wrote to the milk concern calling attention to all the facts, and asking it to try to locate the source of contamination.

The Dairies Company promptly replied, expressing regret and promising investigation. Later the



proprietor of the farm from which the milk had come, wrote denying responsibility, detailing the care he gave to his cattle and their surroundings, and citing the high average merit (the low average bacterial content) of his milk. Still later, the supplying company again wrote and stated that in view of the high reputation of the farm mentioned and the fact that no other child had been infected by the milk in question, the fault must lie elsewhere. To this the reply was made that the company's attention had already been called to one other specific and simultaneous instance of milk infection in a household supplied by it, namely, that of Doctor B.; and that as soon as Doctor X. could verify his impression that Doctor Carrington knew of still other cases he would again communicate with the company, which he did\* as follows:

DOCTOR X TO MILK CONCERN.

August 27, 1917.

Dairies, Philadelphia, Pa.

DEAR SIRs—Referring to the illness of my granddaughter at Atlantic City, apparently traceable to your milk, I beg to report that I have been informed that many children at the ——— Home were taken ill on the same Sunday night, in the same way, and that the home is partly supplied with your milk from the same dairy. The case against you seems to be conclusive. I do not pretend to apportion the responsibility, whether it is in the collection, the bottling, or the distribution.

When the milk wagon is dirty and the driver slouchy, one feels that perhaps all the minutiae of asepsis are carried out in just as slouchy and uncleanly a way (which means not carried out at all) at the distributing centres.

I would strongly urge this matter upon the personal attention of your highest officer.

Very truly yours,

X.

THE MILK DISTRIBUTOR AND THE PEDIATRIC SOCIETY.

A few days after the events related in the preceding chapter, the vice-president of the milk concern (whom we will call Mr. G.) called on Doctor X. to renew the expression of regret and incidentally, if one may use the expressive slang of the day, to pass the buck.

He made no attempt to repeat the denial of other cases. His alibis were two. 1. His corporation was a distributor, not a producer. 2. The milk was probably contaminated in the household after delivery.

In answer to the first excuse it was pointed out that the important matter is the condition of the milk when it reaches the consumer, which it is the distributor's business to safeguard. In answer to the second excuse, Mr. G. was informed of the care taken with the children's milk both in Mr. X.'s household and in Doctor B.'s household. In the course of conversation Dr. X. remarked "I much prefer ordinary pasteurized milk to the best certified milk, unpasteurized. It is safer. One of these days I shall read a paper on the subject before the Pediatric Society and try to convert it."

Whether or not as a result of this remark there shortly ensued the following correspondence:

\*The reasons for publishing this and other letters are (1) to illumine the statement of the Dairies Company that "there was no other case of illness," (2) to emphasize the dangers introduced into milk supplies by the distributor, (3) to explain, if possible, the "dragging in" by the milk concern of the Milk Commission of the Pediatric Society, (4) to show just how carefully and scientifically that body dealt with the matter.

MR. G. TO DOCTOR X.

September 21, 1917.

Doctor X., Philadelphia, Pa.:

DEAR SIR—At the suggestion of Doctor O., secretary of the Philadelphia Pediatric Society, I am enclosing copy of his letter to the writer.

Again thanking you for the privilege of the interview which the writer had with you a short time ago, we are,  
Very truly yours,

—DAIRIES.

(Per G., Vice-President.)

[Enclosure.]

DOCTOR O. TO MR. X.

[Copy.]

DEAR MR. G.—At the meeting of the Milk Commission yesterday afternoon, I was instructed to thank you for having called the attention of the Commission to the statements of Doctor X. and to your correspondence with him; and to inform you that the Milk Commission had investigated the bacterial contents of ——— Farm milk as determined at the laboratory of the Veterinary School of the University of Pennsylvania by our bacteriologist during the past ten weeks, finding an average of 900 bacterial colonies to the cubic centimetre, a very low count indeed. It would seem to us, therefore, especially in view of the fact that no other cases of illness occurred among those using the rest of the output of 400 bottles of this milk delivered in Atlantic City that day, that the probable cause of the possible harmful change in the milk must have been due to negligence in the care of the milk after its delivery.

We have no objection to your mailing Doctor X. a copy of this decision.

I have the honor to be,

Respectfully yours,

(Signed) M. O., Secretary.

10, IX, 1917.

DOCTOR X. TO DOCTOR O.

September 21, 1917.

Doctor M. O., Philadelphia, Pa.:

DEAR DOCTOR O.—I have received a copy of your letter of September 19th to Mr. G.

In the first place, it is not correct that there was no other case of illness in Atlantic City, among the users of ———'s milk, on the day my granddaughter sickened. I would refer you to Doctor B., whose child was taken ill at the same time, from the same milk; also to the physician in charge of the ——— Home, where there were several children taken ill at the same time, and probably from the same source of infection.

In the second place, I know that there was no fault in the care of the milk after delivery. This is my personal testimony, and must be accepted as such.

In my judgment, all milk that is to be carried any distance in the summer should be pasteurized. I know that this not the most modern view, but it remains true.

Very truly yours,

X.

DOCTOR X. TO DOCTOR O.

October 3, 1917.

Doctor M. O., Philadelphia, Pa.:

DEAR DOCTOR O.—I met Doctor B. at the hospital yesterday and asked him whether you had written him in relation to the matter mentioned in my letter of September 21st, commenting upon your letter of September 19th to Mr. G., copy of which was sent by him to me. Doctor B. told me that he had not heard from you.

I did not ask the Pediatric Society to investigate this matter, but since Mr. G. has initiated a one sided inquiry, I purpose seeing that it becomes thorough. To this end I would also respectfully insist that the house endemic at the ——— Home, which receives part of its milk through Mr. G.'s company, be investigated, and that Doctor M. be asked to tell what he knows about this. I would also suggest that Mr. G. give a list of the families to whom his milk was delivered during a reasonable time before and after the illness under investigation, and that inquiry be made directly of the persons concerned, as to whether or not there was any other illness caused by the milk.

I would also ask why your committee accepted Mr. G.'s

interested statement in this matter without making any further inquiry.

I am sending a copy of this letter to Doctor B. and one to Mr. G. Very truly yours, X.

DOCTOR B. TO DOCTOR X.

October 4, 1917.

Doctor X., Philadelphia, Pa.:

DEAR DOCTOR—Thank you very much for permitting me to see the correspondence concerning the near tragedy you had in your home and we experienced in ours. I shall be very happy indeed to say just what I think about this matter when the opportunity presents. When is the meeting to be held? Very sincerely yours, B.

Nothing further having been heard by him from the Pediatric Society, Doctor X., sometime in November, asked Doctor B. whether the latter had received any inquiry from the Milk Commission. He had not. Neither had Doctor Carrington nor Doctor M. A formal communication was therefore sent to the Secretary of the Pediatric Society calling attention to the unasked decision of the Milk Commission made without investigation or inquiry, and requesting that the Commission be now directed to make proper investigation and inquiry; and specifically that it call upon Doctor Carrington, Doctor B., Doctor M., Doctor X., and those persons in the households of Doctor B. and of Mr. X., who had had charge of the milk and its preparation, to state the facts within their knowledge. To this letter no reply was received, nor was its receipt acknowledged.

A second letter was therefore addressed to the President of the Pediatric Society.

On December twenty-first, 1917, the president telephoned that Doctor X.'s letter had been mislaid and asked that a copy be sent to be laid before a meeting of the directors of the Society that day. Doctor X. complied.

#### APPENDIX

Milk is daily supplied to thousands of children in Philadelphia and vicinity under the fancied protection of the Milk Commission's certificate. Is its action as set forth in this narrative an index of its usual care and thoroughness? If so, what is its certificate worth? Doctor X. still holds to the opinion expressed to Mr. G.: Distribution of milk should be supervised with the same care that is given to production. There are too many chances of contamination, too much opportunity for bacterial proliferation, between cow and infant. Certified milk as well as other milk is dangerous, if not pasteurized. With proper supplementary feeding the use of pasteurized milk involves no danger of scurvy or other nutritional disorder.

The writer is Doctor X. His personal interest in the case is strong. But the subject, surely, is not one of personal interest only.

Since the foregoing was put into type, a courteous letter has been received from the chairman of the Milk Commission, which, apologizing for delay, goes on to say:

"I regret that I was unable to be present at the September meeting of the Milk Commission, when your first communication was received, so that I am not sure what the comments were, which led to the form of the answering letter to which you took exception. . . . Our reply should have been limited

to what we knew for facts, which were, that the weekly bacteriological examinations of milk from the . . . Dairy as delivered in Philadelphia, were exceptionally low during August and September, and the conditions at the Dairy as shown by monthly inspections, were excellent. . . . You will agree with me that it is impossible for our Commission . . . to supervise the conditions surrounding the delivery of [certified] milk in the suburbs and at the seashore. . . . We can and do watch over the delivery of it in Philadelphia County, where we have the authority, because the Board of Health stands back of us. . . . The summer population at Atlantic City ought certainly to have a supply of certified milk available, and the local conditions ought to be watched; so that if you could stir up the profession there to a sense of their duty, it would be a good piece of work."

It will be seen from the above that the chairman of the Milk Commission, notwithstanding the very explicit text of the letters addressed to it and to the Pediatric Society, still remains under the mistaken impression that the matter was brought before the Commission by a letter from Dr. X. in September, 1917; and that his plea in extenuation of its failure to investigate is virtually one of want of jurisdiction.

As the narrative makes clear, Dr. X. wrote no letter to the Commission until after that body had "butted in," assuming to make a decision on a question which the chairman now states was outside its jurisdiction, and concerning which, he frankly admits, it had no information. This action, as the record shows, was taken at the request of a distributor, whose delivery methods were under suspicion. No record appears to have been made of the manner in which the subject came before the Commission, or of the statements upon which its decision was based. Is any further comment necessary?

#### OVARY: CORPUS LUTEUM,

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(Continued from page 405.)

#### SYMPTOMS CAUSED BY ADMINISTRATION OF OVARIAN AND CORPUS LUTEUM SUBSTANCE.

Just how much of the activities of the ovaries may be given a female patient by feeding preparations of the ovaries is difficult to determine, but many times the precipitated menopause symptoms of ovarian extirpation are largely ameliorated by ovarian extract.

These disturbing symptoms are vasomotor disturbances, hot flashes, sweatings, head flushings, indigestion (perhaps due also to circulatory disturbance), the addition of weight mostly in the form of fat, sometimes nervous irritability, sleeplessness, or the reverse, i. e., unusual daytime drowsiness and mental sluggishness. How many of these symptoms are due to loss of ovarian secretion, or how many to the sudden cessation of menstruation without pregnancy and consequently a storing in



the system, without physiological need, of the nutrients and salts of the blood which were previously periodically lost, has not been determined, but both are factors in the condition. The normal menopause or the cessation of menstruation without pregnancy at a younger age will cause more or less of these symptoms, and ovarian feeding may markedly improve the condition.

It should be constantly noted that not only the ovarian secretion is either lost or becomes greatly diminished in these conditions, but many other endocrine glands are disturbed, and consequently some of the symptoms are caused by their disturbance. Feeding ovarian extract, therefore, may not be as valuable as is treatment directed toward the other glands, especially toward the thyroid, which is always disturbed and may hypersecrete or hyposecrete, and cause corresponding symptoms.

Ovarian feeding may lower a high menopause blood pressure; it may awake to energy a lackadaisical woman; it may cause menstruation in simple amenorrhea, but in this condition it is not as valuable as is corpus luteum.

Toxic symptoms are rarely caused by feeding ordinary doses of ovarian extract; this is not true of corpus luteum. In undeveloped girls ovarian and corpus luteum administration have not been tried out side by side sufficiently to determine which is better. Certainly, for most purposes, the most active part of the ovary, the corpus luteum, is the gland to use.

Corpus luteum extract is certainly an active physiological and even at times a toxic preparation. It may cause menstruation in amenorrhea, but it probably cannot cause abortion. It readily causes nausea, and even vomiting, when fed in too large doses or for too long a time. It lowers the blood pressure.

There is probably no great difference between the action of the corpora lutea of pregnancy and of those of nonpregnant animals, although this is disputed. Some clinicians are sure they get better results from extracts of the corpora lutea of pregnancy. For the sake of discussion, even if preparations from corpora lutea of pregnancy are more active, it would only be necessary to give a little larger dose of preparations from glands from nonpregnant animals. Also, preparations from the corpora lutea of pregnancy would probably be more toxic. As a matter of fact, commercial preparations of corpora lutea on sale in drug shops are of a mixed variety, and the only correct dose is that sufficient for results. In other words, if one causes therapeutic success the other should, even if the dose is different; if one fails, the other should fail.

Corpus luteum extracts may cause a little dizziness or faintness. This is especially true if they are allowed to lower the blood pressure too much. The pulse rate may be increased. This extract may cause loss of weight, but it should not be used for this object, as corpus luteum should not be administered for too long a time, and thyroid extracts are safer and better for this purpose. While corpus luteum seems to contain vasodilator stuff, still it may stimulate the glands that lower blood pressure,

notably the thyroid; or it may inhibit the pituitary and suprarenals—vasopressor glands.

#### USES OF OVARIAN EXTRACTS.

1. *After extirpation of the ovaries.*—Some therapeuticians believe that ovarian extract is the best and most successful treatment after double ovariectomy. Such treatment would certainly seem more logical than the administration of corpus luteum alone, as the patient has lost all ovarian activity. She will need ovarian treatment for some time, and such treatment is much safer than continued corpus luteum treatment. The dose need not be large, and it should be remembered that the amount of secretion of any of the internal secreting glands is not large in any one twenty-four hours. A tablet representing two grains of the dried gland, administered three times a day, all tablets being crushed by the teeth before swallowing, should be sufficient. The length of time the ovarian extract should be given with this dose would depend on the amelioration of the symptoms; of course the dose of any preparation is that enough to do the work desired. If the above dose is found to be too small, it could be increased, but as soon as the disturbing symptoms of the artificial menopause have been improved, the dose should be gradually diminished to two tablets a day, and then to one tablet a day. In many instances, on account of the disturbance of other endocrine glands, a combination of extracts from two or more of these glands is better treatment. If the blood pressure is not high and the patient is adding weight, and the heart is not fast, and there are symptoms of slowed thyroid secretion, a combination of thyroid, ovaries, and suprarenal may be given. If, on the other hand, the blood pressure is high and there are some signs of subthyroid secretion, a combination of thyroid and ovarian substance may be used. Or, in this condition of high blood pressure, a small dose of corpus luteum may be used instead of the thyroid. If, however, there are signs of increased thyroid secretion, the treatment of hyperthyroidism becomes part of the treatment of the menopause, viz., the patient should eat no meat of any kind, should not be allowed tea, coffee, or any stimulant, should receive extra amounts of lime in some form, and ovarian extract, either in combination with suprarenal or not, depending on the blood pressure.

The dose of the combination of these glands must be decided for each individual patient, it cannot be dogmatically determined; in other words, the physician should write his prescription for such combinations of two or more glandular extracts, just as he would write a prescription for any other combination of drugs. The amount of thyroid depends on the need and susceptibility of the patient. Sometimes it is well to stimulate the thyroid gland with iodine rather than with thyroid extracts. The amount of suprarenal and the amount of ovarian extract must be determined by the condition of the patient; both are stimulants. When corpus luteum is selected, it should be remembered that it lowers blood pressure and is a depressant, sometimes even in small amounts.

2. *For menopause symptoms, especially when the onset is abrupt.*—Almost the same discussion as in indication one is applicable for this condition. It should be constantly borne in mind that more than one gland is disturbed when ovulation and menstruation cease. The symptoms of the various gland disturbances should be carefully studied, to determine which glands need help and which glands need to be inhibited, if possible, in their activities. Many times a combination of small doses of different glandular extracts acts better than when a single one is given, but the physiological action of each gland should be studied and noted to know, 1, if it is needed, and 2, when its administration is causing unnecessary or unpleasant symptoms. In an abrupt menopause, many times the corpus luteum extract is more efficient than is ovarian extract. This will be again discussed later under the indications for corpus luteum.

3. *For too slowly developing girls.*—These young girls do not yet need corpus luteum; they may need more ovarian secretion. They may also need thyroid extract; and it is possible that they need thymus extract. Pituitary and suprarenal extracts seem to inhibit ovarian perfect secretion, and therefore delay puberty; consequently they are not needed. These young girls, then, may be given small doses of ovarian extract, and perhaps thyroid if they seem to need it. However, at times, they have an increased secretion of the thyroid instead of an undersecretion. If they are not nervous and the heart is not fast, small doses of iodine, as sodium iodide in 0.10 gram doses once or twice a day, is good treatment, with or without ovarian extract.

4. *When there is an apparent subsecretion of the ovaries in older girls and women, especially when a long course of treatment is necessary.*—If the girl or woman requires treatment but a short time, corpus luteum acts more efficiently than ovarian extract, but corpus luteum should not be given any great length of time. Such girls and women may receive ovarian tablets, with or without a combination with thyroid or iodine as seems advisable. These girls and women so readily show hyperirritability that generally thyroid should not be given. If, on the other hand, they are adding weight and becoming sluggish mentally and physically, thyroid is what they need. These girls are likely to have amenorrhea or scanty or delayed menstruation, and may be very thin and anemic and require tonics and iron treatment; or, on the other hand, they may be stout, have very large, fat breasts, headaches, indigestions, and various nervous disturbances. It should be again emphasized that each individual of this class should be very carefully studied, not once but repeatedly, during treatment. When the right medication is found, they respond very quickly. To decide upon the right treatment, all of the functions of the various glands should be known, and the symptoms and signs of undersecretion and oversecretion should be recognized. When the proper treatment is given the results are sometimes so phenomenal that they cannot be understood by the careless or "too busy" clinician who does not study his cases well, or by one who always diagnoses these

conditions as neurasthenia, hysteria, or plain "cussedness."

5. *In menstrual disturbances.*—Sometimes in dysmenorrhea and in disturbances preceding menstruation, such as nausea, headaches, etc., ovarian treatment is of value in preventing pain and these toxic symptoms. Sometimes corpus luteum seems to act better for this condition; but all local physical conditions disturbing the menstrual function should be eliminated before one depends on glandular extracts.

#### USES OF CORPUS LUTEUM.

1. *In amenorrhea.*—As above stated, in delayed puberty in girls, ovarian, or ovarian and thyroid combined, treatment is better than corpus luteum treatment, but in amenorrhea or delayed menstruation of girls or women who are not pregnant and in whom there is no apparent constitutional cause, corpus luteum is a valuable and efficient treatment. These patients may be thin, perhaps anemic, and have poor appetites, and need, besides the corpus luteum treatment, a general building up by tonics, food, iron, and, often, better hygienic surroundings. On the other hand, many of these patients with functional amenorrhea are nervous, irritable, and feel generally disturbed because of this inability to eliminate the toxins or increased elements of metabolism which should normally be lost once in four weeks. These patients may have disturbed thyroid secretion at this time, an irritability of the thyroid without all of the usual hyperthyroidism symptoms. Iodine may help such a patient, as well as corpus luteum.

Another class of girls and women with amenorrhea add weight, are sleepy, lack initiative, and are lackadaisical. Such patients may show more or less signs of hypothyroidism, and will all be improved by more thyroid activity and by corpus luteum. Either thyroid or corpus luteum, or both, will generally incite menstruation, and the patient soon becomes normal.

Women who have delayed menstruation, even only a few days, who become very nervous and irritable just before menstruation, are many times benefited by corpus luteum given in small doses of two to three grain tablets a day for a week preceding the date that the period is due. It often hastens menstruation and prevents this nervous irritability. If this small dose is not successful, larger doses may be given for two or three days before the period is due, as four or five grains, three times a day. Very large doses are not needed; and if the blood pressure is low, even the dose just mentioned should not be given; or, if it is found by experience that a given dose causes faintness, dizziness and nausea, the dose to be given before the next period should be much smaller.

While corpus luteum in small doses may be of benefit, in disturbances caused by removal of both ovaries, it is generally not of as much benefit as are preparations of the whole ovary.

2. *In overweight.*—Anything that causes normal, complete and sufficient menstruation will prevent the deposit of fat and may cause loss of weight in the overfat, hence corpus luteum may be tried to regulate this function. However, for the purpose of



reducing weight corpus luteum is a dangerous preparation, and it should not be given in large doses, and should not be given for any great length of time. Diet and thyroid treatment, exercises, and various measures to produce sweating constitute the best management of these cases. Corpus luteum could be given for two or three days each month, before the expected period.

3. *In dysmenorrhea.*—Corpus luteum has been recommended to prevent this kind of pain. If there is any physical reason for the dysmenorrhea, of course this treatment is useless. Ovarian pain due to delayed menstruation, and uterine pain from clots due to a sluggish flow of menstrual fluid may be benefited by corpus luteum. It should be again urged, however, that in all instances of dysmenorrhea the pelvic condition should be very carefully studied to exclude physical causes before reliance is placed upon organotherapy.

4. *In pregnancy.*—The relation of the corpus luteum of pregnancy and its secretion to the vomiting of pregnancy has already been discussed. While some clinicians have had success in feeding corpus luteum in the pernicious vomiting of pregnancy, a good physiological excuse has not been proved for such treatment. The blood pressure in these cases should be watched; the twenty-four hour excretion of the kidneys should be studied; and the presence of acidosis should be noted. Anything found abnormal in these lines should be properly treated. If there is an increased blood pressure, in combination with a proper diet and alkaline treatment, corpus luteum might be tried for a short time. The daily dose should be small, and the blood pressure should be watched. In other words, the treatment of this serious condition by the administration of corpus luteum is still experimental.

5. *In menopause cases.*—This condition has already been largely discussed under the heading of ovarian treatment, but certainly when the menopause is precipitate, with hot flashes, sweatings, nervous irritabilities, etc., corpus luteum treatment seems many times to be of great benefit. This is especially true when there is high blood pressure, and in the severe headaches occurring in this condition. Even when these headaches are not associated with high blood tension, but occur periodically, showing that they are more or less toxic, corpus luteum many times is very efficient in preventing them. It will not stop a headache that has begun, unless it is a continuous headache of several days, but if corpus luteum is administered for several days before the cyclic period when menstruation would have occurred, it may prevent these periodic pains. Excessive nervousness and irritability may also be prevented by corpus luteum treatment.

The very high systolic pressure which so often occurs in women at or soon after the menopause, without arteriosclerosis, and without apparent kidney cause, is often very markedly benefited by corpus luteum. However, the absolute necessity cannot be too much urged of studying each and every case of menopause with disturbing symptoms from the standpoint of all our present knowledge of the internal secretions.

The disturbance is polyglandular; with the loss of corpus luteum several glands are disturbed, notably the ovaries, thyroid, suprarenal, probably the pituitary, and perhaps the mammary glands—if they have an internal secretion. Whether the patient adds or loses weight, whether or not there is disturbance in the digestion of carbohydrates or in the digestion of proteins, with possibly traces of sugar in the urine on the one hand, or an increased or disturbed protein or purin metabolism on the other hand, whether the blood tension is high or low, whether there are palpitations, anemic or plethoric headaches, profuse perspirations or dry skin—a careful tabulation of all these many symptoms and signs will suggest a proper combination of the organic extracts to meet the condition, often with consequent rapid improvement. During such treatment the patient must be frequently seen and carefully watched, and modifications in the treatment must be made at each visit, depending on the improvement or lack of improvement in her symptoms, or on a change in her symptoms. It should be urged that small doses of iodine in the form of sodium iodide, two or three grains a day, may be better for some individuals than the administration of thyroid. The iodine will activate the thyroid to more normal secretion. When the thyroid substance is fed, the patient receives all of the thyroid activities. It should be again repeated that the dose of any one of these glands when they are given for some time, should be very small, as the secretion from these glands is always in small amount for each twenty-four hours.

#### ADMINISTRATION.

Ovarian extracts are perhaps best made from the glands of the pig, and the dried powder may be ordered in such doses as are deemed advisable. The two grain tablets (each representing two grains of the desiccated ovaries) seem to furnish ordinarily the proper dose. From three to six of these tablets may be given per day, all tablets being crushed by the teeth before swallowing.

When ovarian extracts are needed, the dose found proper may be given for a long period. Although feeding ovarian substance seems to slightly reduce the blood pressure, there are apparently no toxic symptoms caused by reasonable doses of the whole ovary. Some patients are surprisingly stimulated by the ovarian treatment, whether from the ovarian substance itself or because this substance stimulates other glands, cannot now be stated; but such symptoms should be noted and the dose greatly reduced. A few patients are stimulated mentally and physically by even as small a dose as two grains per day.

Corpus luteum is perhaps also best prepared from the glands of the sow. While some clinicians find that the preparations from the corpora lutea of pregnant animals are more active than those from non-pregnant animals, for ordinary clinical purposes the mixed preparations from both pregnant and non-pregnant animals seem perfectly satisfactory, although the dose of the mixed glands may be a little larger to produce active symptoms than the dose of a preparation of the glands from a pregnant animal.

This substance is perhaps best administered in

powder or put into capsules in such dose as the physician desires. Five grain tablets or capsules are not needed; the dose is too large, except in rare instances. Two grain tablets are perhaps also too large, i. e., each tablet representing two grains of the powdered corpus luteum. One grain tablets would be better, or perhaps even half grain tablets. The dose could then be multiplied to suit the individual patient. In the writer's opinion, the dose of corpus luteum should be reduced much as was the dose of thyroid when thyroid was first offered.

\*This substance in large doses or long continued becomes toxic. The symptoms are low blood pressure, often palpitation (although the heart may be at first slowed), and there may be nausea and vomiting, and a general feeling of depression. If the blood pressure becomes low under the treatment, it is likely to continue to fall for some time after the treatment is stopped; therefore, the blood pressure of patients under active corpus luteum treatment should be frequently taken. Even if the blood pressure is high, a fall of fifteen to twenty mm. should cause the cessation of the treatment, for a time at least. If the blood pressure is low, 120 systolic, for instance, a fall of not more than five mm. should be allowed before the treatment is stopped. If the systolic blood pressure is 110 mm. or lower, it is doubtful if corpus luteum should be administered.

#### OVARIAN EXTIRPATION.

Total removal of both ovaries is only justifiable in very rare instances.

It is unimportant whether it is the ovarian substance or the corpus luteum that furnishes the secretion that is most necessary for the mature woman's mental and physical health; it is a fact that many internal secreting glands are disturbed by the removal of the ovaries. Total removal of the ovarian tissue before puberty stops the development of the genital organs and of the breasts. Total removal after puberty stops menstruation, causes artificial menopause, and multiplies the menopause symptoms and disturbances. The younger the adult woman so castrated, the more serious are the symptoms. Castrated women are often wrecks, both mentally and physically. They may gain weight; they may lose weight; they may be ravenous; they may have no appetite; they may be loquacious; they may be morose; they may be drowsy; they may be sleepless; they may be hysterical; and they may become to all intents and purposes actually insane. Feeding these sufferers ovarian and corpus luteum extracts is only partially successful in ameliorating their condition.

The rules for operation for tubal and ovarian disease should be:

1. To leave as much of the ovaries as is found healthy.

2. If the operation of necessity destroys the circulation and therefore nutrition of the whole of both ovaries, large grafts from the healthy part of the ovaries should be placed in some location that will allow the ovarian tissue to readily obtain a blood supply and therefore live. If the ovarian transplant lives and functions, it should be remembered that it periodically swells, and hence, in tense, nondilatable tissue, may cause severe pain. The uterine wall, the

peritoneum, the labia majora, the mons veneris, the abdominal wall, and even the axilla have all been places suggested for implantation.

3. If there is no healthy ovarian tissue for auto-grafting, and as total extirpation of both diseased ovaries is not an emergency operation, the surgeon connected with a large hospital generally could obtain a piece of healthy ovary from a nonsyphilitic and nontuberculous patient for transplantation into the woman to be castrated. The necessity for obtaining such ovarian tissue would be rare, as total extirpation is rarely needed. Of course the surgeon cannot decide that there is no healthy ovarian tissue until the time of the operation, but he should be prepared for such an emergency when there is a probability of the necessity of total extirpation. Ovaries removed from healthy women after sudden accidental death, and properly preserved, would seem to be ideal tissue.

If these engrafted ovaries or ovarian tissues live and function it may be two or three months before the fact is known by any symptoms or signs in the patient. The signs of success are a general feeling of health, absence or diminution of menopause symptoms, and menstruation. Such grafts may live for a time and then die, but more or less embryonic ovarian tissue may have had time to mature and to begin to furnish the secretion so much needed by the patient.

Properly selected patients who have had their ovaries removed for disease and who have psychoses which are not cured by the administration of organic extracts, might be well treated by grafts of healthy human ovarian substance.

**Presystolic Thrills in Soldiers.**—Roger S. Morris and Alfred Friedlander (*Journal A. M. A.*, August 3, 1918) record the fairly frequent observation of a presystolic thrill in soldiers otherwise perfectly normal. They contend that this thrill is purely functional and is of no significance with relation to the integrity of the heart. Men who have received the rigorous training of the military camps are found to have the thrill and yet to be in perfect physical condition and capable of the most strenuous exertion. The functional thrill is characterized by being definitely presystolic, of short duration, limited to the apex of the heart, and ending with the shock of the first sound. It is never as intense as that of well marked mitral stenosis, is best felt when the heart's rate is increased and the patient is in the erect posture, often disappearing with slowing of the heart and in recumbency. It is common in persons with long, slender chests. The systolic shock following the thrill is usually fairly marked, sometimes slightly exaggerated, sometimes split. With this thrill there is almost constantly an audible reduplication of the apical first sound, which also becomes less evident or disappears in the recumbent position. In this reduplication the second part of the sound is often louder than the first, suggesting a crescendo character. There is also often a soft systolic, apical murmur in recumbency. Presystolic murmurs are never found, irrespective of exercise or position. The pulmonic second sound may be accentuated and reduplicated in recumbency.



## TOXIC NONEXOPHTHALMIC GOITRE.\*

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Toxic nonexophthalmic goitre is a neurosis of that branch of the vegetative nervous system termed variously the greater vagus, or the craniosacral of the parasympathetic system, accompanied by perversions of metabolism and associated with a goitre more or less distinctive in pathology. A year ago I called attention to the evidence that so called exophthalmic goitre was a disturbance of that branch of the vegetative nervous system variously termed the thoracolumbar or true sympathetic, associated with activity of the thyroid and suprarenal glands, and a goitre of a distinct pathological pattern.

The actions of the two divisions of the vegetative or autonomic nervous system are irreconcilably opposed to each other, so that it is most unwise to speak longer of the sympathetic nervous system unless the branch in mind is indicated. I shall speak of the thoracolumbar as the sympathetic system, and the craniosacral as the parasympathetic system. The sympathetic system carries the fibres which are the accelerators of action and it is as a whole an exploiter of energy, whereas the vagus system carries the fibres which are the depressors of action and it is as a whole a conservator of energy. The hormones of the ductless glands are diffused up to a certain level apparently autonomously, at least that is the conclusion inferred from the autotransplantation and nerve excision experiments. The secretion which is produced by nerve stimulation, i. e., the supersecretion or emergency secretion is elicited only through the sympathetic system and not at all through the vagus system. The hormones secreted through stimulation of the sympathetic system are found in turn to react upon the sympathetic system making it in turn more sensitive to stimuli, the process acting as it were in a manner of autocatalysis.

Activities of the great energy producing glands, the gonads, the suprarenals, and the pituitary are accompanied by expressions of sympathetic nerve stimulation. Inactivity or insufficiency of these glands is associated with signs of sympathetic nerve depression. The children of great energy expression who later become the adults envied by their business associates because of their "pep," are probably endowed not only with sympathetics of superior quality, but also with ductless glands capable of superior mobilization. I doubt that the thyroid secretion has any direct toxic influence upon either of these nerves. The influence of the thyroid obtains either through its indirect effect through metabolic variations in the nerve tissue or through metabolites produced in the course of thyrotoxic metabolism. Injection of the active principle of the thyroid into the blood stream elicits no effect before a period of about thirty hours, nor does this injection, as Levy shows, have any immediate influence on the cardiac vagus nerves. This corresponds closely with the massive intoxication occurring on the second day after thyroidectomy. The parasympathetic and sympathetic nerves are theoretic-

cally in balance, but this poise is seldom found in practice.

Many children are readily assigned to one or other of these divisions. If a sympatheticonic child develops an active goitre it becomes more sympatheticonic; if a vagotonic child develops an active goitre it becomes more vagotonic. The increased function following the metabolic acceleration produced by thyroid was greater in the tissue which was naturally stronger. Recent work by Kendall suggests that the sympathetic stimulation is not only a suprarenal stimulation but that the active suprarenal produces in the course of protein metabolism a preurea compound which is also highly stimulative. The absence of the preurea compound, i. e., the presence of inactive suprarenals, is accompanied by depression, and this depression comparable to suprarenal removal is, he thinks, due to the substance which is not split into preurea. The sympathetic depression suggests a result of inactive suprarenals plus the action of a substance stimulative to the parasympathetic system. This experimental depressive hyperthyroidism is so comparable to depressive hyperthyroidism in man as to merit notice.

Kendall's experiment consisted in feeding intravenously thyroid hormone and aminoacids and observing the nitrogen metabolism. Proteins from food are taken into the blood as aminoacids and after accomplishing their purpose are excreted in the urine as urea. Kendall finds that the work of the thyroid hormone ceases when it has broken the aminoacids up into ammonia compounds. To change the ammonia into urea there is needed a new factor and this factor he finds to be the adrenal cortex, which produces an almost urea substance, the preurea. Aminoacids in the presence of thyroid hormone always break up into ammonia compounds. Whether an excess of ammonia or an excess of preurea occurs depends upon the rapidity with which the suprarenals act. In the animals thus fed, Kendall was able to produce a symptom gradient the summit of which was represented by an excess of preurea and signs of great stimulation, and the base of which was indicated by extreme prostration and an excess of ammonia in the tissues; and the decisive factor was the ability of the cortex to reduce ammonia.

The obvious fact was that some animals developed an exaggerated metabolism with great stimulation, while other animals with an equally great excess of circulating thyroid hormone developed a perverted metabolism and signs of depression. An animal whose one cortex was found to be most inactive after being thoroughly angered furnished from the remaining cortex an example of great activity. Kendall feels justified in making this statement: "Thyroid activity in the absence of a simultaneous suprarenal cortex activity does not produce the usual so called hyperthyroid symptoms but instead a condition of depression." The phenomenon which puzzled Kendall was the absence of the well known stimulation signs of experimental hyperthyroidism in the presence of a known oversecretion and the occurrence of a depression instead; the phenomenon which has puzzled clinicians has been an obviously oversecreting thyroid not pro-

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ducing an exophthalmic goitre but on the contrary associated with asthenia and depression of functions. Analysis of the semistimulated or nonstimulated cases in this experimental series approximates closely the classes into which nonexophthalmic goitre is divisible. One feels that in both groups, the experimental and the clinical, some agent is active which either depresses the sympathetic or stimulates the parasympathetic, resulting whether it be relative or absolute in a practical superiority of the parasympathetic.

The pathological histology from the standpoint of the epithelium is that there is never a primary hyperplasia and hypertrophy but always a primary retention of colloid, with atrophy of epithelium and with, sometimes, a regeneration. Grossly considered, the goitre may be a colloid, an adenoma, a carcinoma, or an adenomatosis (3, 4, 5).

The primary enlargement of the thyroid, I still feel as I have previously expressed (6), occurs in childhood as a reaction to a neighborhood infection quite analogous to lymph gland enlargement and its later activity is due to other stimuli. The enlargement of the gland does not determine its activity. Enlargement may also occur as part of a general infection, as syphilis or tuberculosis. The enlargement of the gland secondary to dental or tonsillar sepsis may be observed by any one seeing a fair number of children. The work of Burget (7) which is accepted as evidence against the infection theory fails to reproduce similar conditions to those at work in children. In this connection the conclusions of Marine (8) which are being made the basis of a rather radical departure in school hygiene in a large community in the Great Lakes goitre district should be noted. Marine considered the occurrence of goitre in fifty-six per cent. of the school children as quite analogous to the Michigan sheep goitre, the brook trout goitre, and the goitre of hairless pig malady, all of which are due to an insufficient iodine ration, and he has instituted an iodine medication through the medium of school nurses (9, 10, 11). The preadolescent goitre reduces under iodine in this latitude but is not always untended by untoward signs of increased metabolism and is not prevented from a postadolescent toxic expression.

The inciting stimuli to thyroid oversecretion are practically three: toxic, metabolic, and psychic. The toxic stimulus may be a recurring neighborhood infection, a distant focal infection, or a general systemic infection and its influence may be due to increased oxidation or metabolism of the body as a whole. The metabolic stimulus arises in a woman in connection with the institution of puberty and periodicity of menstruation, the demands of pregnancy, and changes at the menopause. In the man a less but still distinct influence is also exerted by gonadal maturation. The psychic stimulus arises from those affects which correspond to primitive animal instincts and are usually recognized by the individual; however, the stimulus may none the less strongly arise from affects which are displaced below the level of consciousness through repression.

The symptoms which occur are in part an appearance of the original stimulus and not essentially

thyreogenic and are in part a reflexion of diffuse metabolic disturbance, but in the main represent expressions of parasympathetic dysfunction. Colateral endocrine disturbances also occur but these are probably vegetative in origin. The simplest classification is the blood pressure grouping of Plummer (12) into 1, constantly toxic high pressure; 2, constantly toxic low pressure; 3, inconstantly toxic low pressure, and, 4, an intermediate group. This simple classification features that factor which is of vital moment in the prognosis, i. e., the cardiovascular degeneration.

Krumbhaar, of the University of Pennsylvania, in a recent electrocardiographic study of fifty-one toxic goitres found changes in fifty-seven per cent. and concludes that the myocardial degeneration "may be manifested by any type of cardiac irregularity; sinus arrhythmia, premature contractions, auricular flutter, auricular fibrillation, heart block, etc." (13). The occurrence of a thyreogenic cardiopathy from thyroid oversecretion without appreciable goitre is a physiological possibility. Symmers, professor of pathology in Bellevue Hospital Medical College, identifies the lesion familiarly known among pathological anatomists as idiopathic dilatation and hypertrophy of the heart, as a thyrotoxic cardiopathy and associates with it a definite structural alteration in the gland and terms it a chronic interstitial and hyperplastic thyroiditis (14). If this is substantiated it may be considered with interest in relation to some myocardial anomalies occurring in the course of the anxiety neuroses.

The toxic high pressure goitre group may be clinically subdivided into 1, a stage of vascular stimulation; 2, a stage of fixed vascular hypertension, and, 3, a stage of cardiovascular degeneration.

The original distinction between sympathetic and parasympathetic nerves was made upon a pharmacodynamic basis and this is still the method of exactitude. The results that follow the intravenous injection of adrenalin are accepted as evidences of sympathetic stimulation, whereas the effect of acetylcholine is analogously the same for the parasympathetic and both correspond to the effects of electric stimulation of the respective nerves. Roughly, however, one may find clinically that in certain cases the predominating symptoms are those of a stimulated sympathetic or vice versa. This clinical evidence is sufficiently definite to group cases in certain classes and led me to the statement that the incipient exophthalmic always showed heightened sympathetic tone and that the vagus symptoms which occur late in that disease represent an exhausted sympathetic and do not indicate a true vagotomy in the sense of primary vagus tone. The suggestion was made that the activity of the suprarenals was an index of the severity of the sympathetic disturbance.

In the group of cases not distinguished by an exophthalmos I have been impressed by the number of instances in which the nervousness was of the spastic type associated with stimulation of the parasympathetic and by the fact that it in a measure antedated the goitre and was increased by its appearance. I offer a tentative clinical classification with some evidence in support of this theory. This does not pretend to be a pharmacodynamic study



and the terms sympatheticonic or vagotonic can only be applied in an acceptable clinical sense.

The toxic high pressure goitre group never becomes exophthalmic, apparently because the capacity of the suprarenals are inadequate to stand the quantity production essential to that sympathetic superstimulation. The impression of a high degree of sympathetic stimulation which however cannot quite overcome the antagonistic control is felt by the observer. It quite suggests the upper reaches of the Kendall symptom gradient in his experiments. Many of these cases are mistaken for exophthalmics because of naturally prominent eyes or because of a protrusion due to retrobulbar edema.

The first stage or stage of vascular stimulation in the high pressure group is characterized by the presence of an active focus of infection in the body, the occurrence of a psychic repression of high potential, often sexual, and evidences of increased metabolism with psychomotor acceleration and heightened mental tension. The subjective feeling is rather one of strength than of weakness accompanied with much restlessness. The patient's friends consider him nervously energetic.

CASE 321.—Constantly toxic high pressure goitre. Stage of vascular stimulation, chronic infection of tonsils, infection of impacted molars, gingivitis, vasomotor rhinitis, hypertension (150-65), tachycardia (100). Service of Doctor Ecker, throat examination by Doctor Walker, dental examination by Doctor Sharp.

Male, age twenty-two, bookkeeper. This young man's attention was directed to his health two years ago by reason of a life insurance rejection which led to his reference by the Life Extension Institute to a physician. He was treated one year by this physician for heart disease. He was later treated by another physician for sexual weakness. He was rejected at the Plattsburg Training Camp a little later.

He complains now of being nervous without cause, of trembling on slight occasion, of being emotional, of feeling that he is losing time and must hurry. He feels better when in violent exercise and when fully occupied with work. He does daily gymnasium work, daily swimming, and a daily walk of an hour. He works hard at his desk for eight hours, does overtime work, and studies engineering at night school as well as taking lessons in Spanish. On first view one attributes much to the overwork. Further consideration elicits the information that he is engaged but defers marriage from fear that his manhood has been impaired by auto-sexual habits. He has been auto-sexual from childhood until two years ago. At sixteen he developed anxiety over his habits from reading the usual advertising literature on lost manhood, repressed his fears as much as possible, became religious, became active in basketball and sprints, but at nineteen was having attacks of marked depression. The insurance rejection and the treatment consecutive thereto fully crystallized his belief in his physical ruin.

In this case no treatment was directed to the thyroid *per se*. The tonsils were removed, four infected wisdom teeth were extracted, the work, the study, and the physical exercise were standardized, and his sexual knowledge was revised and amplified. Two months after operation the blood pressure is 130-60, heart rate 72, and the general condition indicates a parallel and progressive betterment. The chronic coryza is absent. The thyroid is diffusely enlarged and of colloid consistence.

The stage of fixed hypertension is quite identical in symptoms with the condition to which Janeway gave the name of primary hypertensive cardiovascular disease with the added feature of a goitre. There is generally present a more or less progressive infection and often psychic factors of undeniably irritative import. Mild vagotonic symptoms appear

after periods of definitely prodigal energy expenditure.

CASE 365.—Constantly toxic high pressure goitre, stage of fixed hypertension, cardiac hypertrophy, hypertension, 180-115. Heart rate 88, sinus infection, frontal. Dental sepsis consisting of gingivitis under crowns and bridges and periapical infection. Service of Dr. Mead Moore. Dental examination and radiography by Doctor Sharp.

Woman, age forty. This lady recently detected an asymmetry of the neck which has since caused some annoyance because of the cosmetic defect. She is a cultured student, a teacher of languages, always very active, and noted among her friends for alertness of mind and energy of body. This patient suffered from rheumatism at the age of eleven, was ill four months; at seventeen the tonsils were removed; at twenty-five again had rheumatism, after a stillborn child; at the age of thirty-seven a third attack of rheumatism was definitely ascribed to her teeth, and she was treated for pyorrhea. Eighteen months ago contracted a frontal sinus infection in the attention to which she has been dilatory and which still shows some indications of irritability. She reacted to vaccine therapy with marked serum sickness. One year ago she undertook the rehabilitation of a rundown private school, an undertaking fraught with much physical and psychic strain: one month later she developed an attack of pityriasis. She has no complaint to make of her health, feels better than ever before in her life, and often wonders at her own tirelessness. She believes that ill health is largely a matter of auto-suggestion and lives accordingly. She keeps her weight down by doing 100 bending exercises daily. This lady is unwilling to accept any suggestion for treatment. The focal infection is undoubtedly in the mouth, the psychic factor presumably in her overwork. Considering that this lady's father died at sixty-four of paralysis, and the mother at sixty, of angina, the prognosis is not bright. The thyroid is diffusely enlarged and shows in addition a lime sized adenoma in the right lobe.

The stage of cardiovascular degeneration is a picture of arteriosclerosis and myocarditis with their appropriate symbolism plus an asthenia, a pigmentation of the skin, and a slowing, both mental and motor, that suggests Addison's disease. A vascular nephritis adds an albuminuria which often deludes the observer. The thyroid is often far spent at this time and may welcome artificial assistance. It is the efficacy of small doses of thyroid powder in analogous cases which has originated the fallacy that thyroid medication is beneficial in nephritis. Boothby cites a pseudonephritis in which albumin and casts cleared and the functional tests improved (15). A partial heart block in this type of case improves under thyroid medication.

In a personal communication dated December 2, 1915, Dr. R. G. Hoskins, of Northwestern, whose experimental knowledge of the suprarenals is not excelled in this country, queries, "In cases of long standing hyperthyroidism could not the asthenia be best explained as due to over stimulation of the suprarenals leading to final atrophy?"

CASE 147.—Male, age seventy-two, civil engineer. Service of Doctor Balloch. Relief was sought in this case for extreme and incapacitating shortness of breath associated with numbness of the legs after walking much. This condition had been progressive during the last two months, following an exhaustion in the field, since which time he has been at a desk. This man has led a most active and most interesting life in his duties as government engineer, particularly in the building of lighthouses such as Hopkinson Smith idealized, and with whom he was associated. His life story is one of unending tirelessness, endurance and optimism. He has never been sick.

Upon examination one is impressed by the extreme breathlessness and by the irregularity of the heart. The heart extends to the axilla, is irregular in force and rhythm

and the arteries of the arm are overly hard. There is a heavy trace of albumin with casts. There is no peripheral edema. A large cystic goitre occupies the left side of the neck. The pulse is sixty. The picture is that of a terminal cardiovascular sclerosis with fixed heart block. He remained in bed a week without improvement. He was then put upon atrophine and thyroid dried substance,  $\frac{1}{2}$  grain three times a day. There was marked improvement in the course of a month. He returned to office work and has worked since August, 1916, without a recurrence. The rate and regularity of the heart seems maintained by the small doses of thyroid.

In this case the thyroid has acted as a cardiovascular stimulant over a long period and the cessation in part of its secretion has allowed a vague disturbance of the heart to appear, which by reason of the collateral arteriosclerosis simulates a sclerosis of the bundle of His. It is not unlike a similar alcoholic vascular condition. The additional thyroid influence starts the drive again but defers the payment of the penalty.

The toxic low pressure group of goitres include the great majority of cases of parasympathetic stimulation with goitre. I imagine that ninety per cent. of all toxic goitres belong to the nonexophthalmic class; certainly the proportion of true exophthalmics is very small.

There are three prerequisites to the study of the toxic goitre: First, an adequate conception of the rôle which the vegetative or autonomic nervous system plays in the human body and an intimate acquaintance with its functional expression; second, a familiarity with the physiological evolution of the normal individual from child to adult with the usual reactions in the great epochs of puberty, adolescence, pregnancy and the climacteric and some knowledge of the goitrous individual's variants: Third, an elementary study of personality as determined by the phylogenetic instincts and especially by those aspects of the instincts termed, cognitive, affective, and conative (17).

It is of the utmost value for one from time to time to give thought to the quantity and kind of work which is being done by the great vegetative nervous system. Its duty lies, on the one hand, in accelerating the processes of life by way of its thoracolumbar division, and on the other hand, by means of the craniosacral, in retarding these processes. The theoretical balance which gives perfect physiological poise is seldom attained, for the gift of our inheritance is apt to be a balance of power on the one side or the other.

The action of the vegetative nervous system is primarily automatic but this automatism is gravely perverted through three agents, the hormones of the ductless glands, the actions of toxins, and the effect of psychic stimuli transmitted through the central nervous system, and often through the combined action of all three factors. This survey, *v. i.*, of the field of action of the autonomic nervous system follows Barker. It includes secretory processes of the digestive glands (salivary, gastric, intestinal), as well as the secretory action of the organs that separate the urine, the sweat, and the milk; the work of the heart and the distribution of the blood in the body through changes in the calibre of the vessels in the different parts; the work of the respiratory mechanism; the propulsion of food through the digestive canal, the emptying of the secretions from

the digestive glands, the muscular activities of the ureters and bladder and of the system of genital ducts in both sexes; the state of nutrition of the muscles, the carbohydrate metabolism, the nitrogen metabolism, the heat regulation, the deposition of fat and the growth of bone.

Conditions of craniosacral irritability are largely but not exclusively exhibited within the confines of one system of vital function. Like the branches of a tree, one limb is not violently shaken without oscillations in other divisions. The relation of the thyroid to a psychoneurosis is a debatable point. Its relation is probably threefold; it may sensitize latent tendencies; it furnishes a soil for luxuriant growth; or it may be an end product. Many cases of so called endocrinopathy need reviewing by a psychoneurologist for the material being offered as examples of endocrine dysfunction comprises a mélange of neurasthenias, cyclothymias, neuroses and psychoneuroses.

The vegetative neuroses which show major parasympathetic symptoms in the gastrointestinal field include, digestive migraine, salivation, continued vomiting, pharyngeal anesthesia, esophageal spasm, cardiospasm, gastric angina, pylorospasm, hyperacidity, intestinal colic, appendix and hepatic colic, colonic spasm, mucous colitis; in the respiratory field, vasomotor sinus congestion, sinus headache, vasomotor rhinitis, recurring noninfectious coryza, rose cold, hay fever, laryngospasm aphonia, idiopathic cough, bronchial asthma, bronchial gland irritation, Bryson's dyspnea; in the cardiac group, pseudoangina, sinus arrhythmia, premature systoles, bradycardiac palpitation, syncope, hypotensive crises, precordial anxiety, brachial neuralgia, carotid neuralgia, tinnitus, vertigo; in the field of the skin, vasomotor instability, pruritus, paresthesias, erythema, eczema, acrocyanosis, Raynaud like appearances, hyperidrosis, erythema multiforme, etc. Ocular disturbances with headache almost universally occur at some stage and seem dependent on disturbance of accommodation, disturbance of the circulation or on retinal irritation. In some the gynecological aspect is most in evidence including spasmodic dysmenorrhea, amenorrhea or a flow between periods, recurring miscarriages, inordinate ill health during lactation and anomalous climacterics, and sexual anesthesia.

Experimental evidence is constantly accumulating relative to the important rôle that the vegetative nerves play. Of interest is the observation made by Porter and Newburgh that in dogs with pneumonia after section of the vagi the violent dyspnea is succeeded by quiet breathing. From a pharmacodynamic study of typhoid fever Matsuo and Murakami conclude that in the majority of cases a state of vagotonia or one of sympathicotonia exists; that the bradycardia is a vagotonic phenomenon; that in their cases all the deaths occurred in the sympathicotonic cases and that this may form a basis for prognosis.

CASE 130.—Constantly toxic low pressure type. Major cardiovascular symptoms. Minor skin symptoms. Service of Doctor Lamb. Female, clerk, age thirty. Decisive symptom, fainting spells. Goitre noted at fourteen, taken from school because of palpitation of heart. Tonsillitis at seventeen with recurrences. At twenty in contact with brother and sister who died of consumption. At twenty-



four had a pulmonary hemorrhage. Four months ago tilted by fiancé for a younger girl. Present condition: Asthenia, palpitation, dyspnea, choking feelings and fainting spells. B. P., 128-70. Rate 88. Heart negative. No albumin. Marked flushing of face and neck. The most marked fact in this girl's history was the cardiovascular asthenia. The notable thing in the family history is that the mother died from cystic suprarenals with symptoms of pernicious anemia and achylia gastrica. The x ray shows a small arrested focus in the right apex.

CASE 180.—Constantly toxic low pressure type. Major gastrointestinal symptoms. Minor respiratory symptoms. Service of Dr. Saffold. Female, aged thirty. Decisive symptom—goitre. During childhood there were recurring attacks of tonsillitis. At twelve was treated for intermittent heart. A goitre was noted at fourteen. At twenty-two was treated for rose colds. At twenty-four tonsillitis, followed by rheumatism. At twenty-seven the turbinates were removed to remedy attacks of hay fever. At twenty-eight was treated for chronic appendicitis, later for movable kidney. During these years from twenty to thirty there occurred at intervals run down spells after overdoing, characterized by loss of strength, loss of weight, and diminution in the size of the goitre. At present there is gas and pain after eating, low colicky pains three hours after eating, acidity, esophageal spasm with pain to the shoulders, pain in the appendix region. Morning nausea. B. P. 110-60. Rate 88. The goitre is in part colloid, in part adenomatous in feel. There is much vascularization. Removal of tonsils was advised.

CASE 371.—Constantly toxic low pressure type. Major gynecological symptoms. Minor cardiac symptoms. Decisive symptom—preference of goitre. Service of Dr. Whitson. Female, stenographer, aged thirty-eight. This girl menstruated at fourteen and not since. Goitre noted at twenty-four. Married at twenty-five. Shortly after marriage was warned of the probable sudden cardiac death of husband. This fear was a daily reminder until its realization two months ago. At twenty-seven patient miscarried in the fifth month. At twenty-nine patient miscarried in the second month. At thirty-one was treated for cardiac symptoms with thyroid extract and digitol, at thirty-four the tonsils were removed, at thirty-five was treated for cardiac symptoms with thyroid and digalen. Five months ago the thyroid was roöntgenized.

Patient is obviously near point of exhaustion. Face erythematous and marred by an eczema. Body sweating profusely. Coarse tremor. B. P. 120-75. Pulse 112. Heart moderately enlarged, very irregular pulse from premature systoles. No albumin. Operation—bilateral lobectomy by Doctor White. In the two months since operation the heart has steadied, the face has paled, and there is great general improvement in wellbeing. Operation was advised in this case to protect the myocardium.

The inconstantly toxic low pressure group differs from the preceding group only in the history and in the less destructive effects of the intoxication. Intermittent nervous breakdowns are separated by periods of good health. The history demonstrates that there is not a high health threshold but that specific infective or psychic traumata anticipate the several breakdowns. There is usually an adenoma present. Goetsch has described a typical case in his suggestion that the presence of mitochondria is an index of thyroid activity (18). No comment on low pressure or dilator phenomena is complete without reference to the work of Hunt on acetylcholine isolated from the suprarenal glands. This substance, the most powerful vascular depressant known, which is active in a dilution of one part to one trillion, plays as yet an unknown rôle in the vascular regulation (19).

CASE 41.—Instantly toxic low pressure type. Female, aged twenty-nine. Employee at bureau. Service of Dr. Lamb. Decisive symptom—headache. This girl suffered from recurring otorrhea in childhood, had a nervous breakdown at sixteen, and was taken from school because of

rapid heart. A goitre was noted at nineteen. One year ago had nervous breakdown and was unable to eat or sleep, very restless, felt impelled to keep moving, and continually felt as if she had been running. Since that time has had headache and weakness. B. P. 108-75, rate 72. Egg size adenoma in middle lobe of thyroid. Eye signs: left slit noticeably wider, asynchronism on closing. Incomplete closure in winking. The removal of this goitre two years ago has been followed by marked increase in endurance, better spirits, and less nervousness.

Low pressure and high pressure, using as Plummer did an arbitrary standard of 160, does not cover all the cases. There is an intermediate group between 130 and 160, which suggests probable terminal hypertension and vascular degeneration like the high pressure cases, but which also luxuriantly exhibits the vagotomy of the low pressure group.

CASE 114.—Constantly toxic intermediate pressure. Early major cardiac symptoms. Late major gastrointestinal symptoms. Service of Doctor Clark. Female, aged fifty-five, professional matron. At age of thirty-five, after unusual emotional strain felt a sudden throbbing of heart, with cessation of beat and premonition of death. During the succeeding three months these sensations recurred at times with diarrhea. Was out of health a year. At age of forty-one after anxiety in work, a pain appeared in the left shoulder with rapid heart; patient was in bed two weeks, stopped work for some months. At age of forty-eight, gradual development of pain at left costal margin, general weakness and nervousness, and for nine months mucous colitis. An exploratory laparotomy gave negative findings. At fifty-two goitre was noted. Cardiac dullness 16 cm. to left. Marked sinus arrhythmia and premature systoles, much increase in forced expiration. B. P. 150-100. Rate 96. The right lobe of the thyroid is composed almost entirely of an adenoma which is losing the rubbery feel peculiar to them and at the advancing edge along the isthmus is almost stony. The right lobe is  $7\frac{1}{2}$  cm. by 5 cm., extends below the clavicle and is apparently anchored at the base. The left lobe is about 2 by  $2\frac{1}{2}$  cm. and is soft and colloidal in feel. This was considered to be a fetal adenoma with malignant degeneration. Operation by Doctor Kerr. Pathological report, carcinomatous change in an adenoma. Since operation there has been a great improvement in health and in the cardiac symptoms.

CASE 112.—Constantly toxic intermediate pressure type. Major gastrointestinal symptoms. Minor cardiac symptoms. Pressure cough. Female, aged fifty, clerk. Menstruated at sixteen. Dysmenorrhea relieved by dilatation. Frequent tonsillitis during adolescence. At thirty-two had nervous prostration and was sick for five years. At forty had attacks of morning diarrhea continuing since. These consist of eight to ten liquid stools before going to work with freedom until the next day. Major Russell made an extensive search for parasites. At forty-eight a constant harassing cough began. At the same time attacks of heart pang occurred, excruciating, more so in cold weather and out doors and impelling her to stand still. Three years ago neck began to resemble tanned leather. B. P. 140-95. Rate 88. Mass felt rising from below at episternal angle, apparently a substernal goitre. Tracheal sounds suggest pressure and are influenced by posture of head. Heart enlarged. No murmurs. Broad band of dark tan pigmentation around neck, patches on face. No albumin.

As to treatment, the consideration in class one is as to the degree of vascular and myocardial damage present or imminent. As a rule surgical interference is the surest way of blocking a process which is very intensive in its progress. In the low pressure class where the question is more as to the degree of ill health than actual duration of life, a wider latitude is permitted. The following steps should be taken: 1, the removal of focal infections; 2, the relief of psychic irritation; 3, surgical intervention. One or both of the first two suggestions

may suffice. The operation should be a bilateral lobectomy. Much good is done by the various specialists and many cases arrested, since nowadays steps one and two are combined with various local treatments. Vagotonic disorders aside from their cause are alleviated by local palliatives in many cases. This can be noted in the reports of gastroenterologists, gynecologists, laryngologists, etc.

The discussion is not complete without a word as to prophylactic treatment. First, goitre in children should be prevented. I examine 1,500 children a year and I am more firmly convinced than when I made the statement some years ago that goitre is largely a result of deciduous dental sepsis. I feel that young girls from five to twelve should be examined yearly and the cephalic extremity kept free of all infections, gingival, otic, tonsillar, adenoid, etc. If a goitre is already present the transit of the girl through puberty demands protection.

The demands upon the thyroid by the processes of sexual maturation are heavy enough without the added irritation of the myriad of physical, mental, and psychic adjustments which arise at this time. During the period of adolescence the appearance of pseudochorea, palpitation and fainting, nervous breakdowns, asthenopia with intractable headache and other nervous phenomena should call for an estimation of the thyroid activity.

Especial care should be exercised to keep the body free from focal infection, especially around the teeth, during pregnancy. The physiological activity of the thyroid of pregnancy ceases normally during lactation, but it may be extended by infection or by the influence of anxiety beyond this period. The condition of the thyroid after child bearing merits observation. Another age period marked by thyroid vulnerability is at the menopause; very many stormy changes of life are thyrogenic and not ovarian.

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815 CONNECTICUT AVENUE.

## PAPILLARY CYSTADENOMA OF THE OVARY.\*

With Report of a Case.

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Whether cystic papillary growths are malignant, or to what extent they undergo malignant changes, is not fully determined. Cases, apparently innocent, have had sometimes a very rapid recurrence, proving to be malignant, while cases which clinically presented all the character of malignancy have unexpectedly been permanently cured by operation.

The following case of mine seems worth reporting on account of its peculiar features:

Miss V. A., aged thirty-two years, school teacher. Menstrual history not important, with the exception that she was amenorrhoeic for six months before coming under my examination. She told me that her abdomen had been gradually increasing for a year, reaching at the present time such distention as to interfere seriously with her digestion and respiration. She complained of no pain, but of weakness and extreme emaciation, her weight having dropped from 160 to 120 pounds within a short time. She also had dyspnea and vomiting, not being able to retain any kind of food ingested. At the physical examination the abdomen appeared to be very much distended, causing enlargement of the costal arch. It showed a considerable quantity of free fluid in the peritoneal cavity. Vaginal and rectal bimanual examinations were entirely negative, it being impossible to locate the uterus and annexa. Only a very careful palpation gave me the impression of the presence of something solid or semisolid in the abdominal cavity, the origin and nature of which it was quite impossible to establish. I made a diagnosis of probable ovarian cyst or abdominal tuberculosis.

At the operation the case seemed quite hopeless. I found in the peritoneal cavity about five gallons of clear fluid and an extraordinary number of cysts of different size, surrounding with racemose disposition a central and larger cyst and containing more than a gallon of fluid. On the external and internal surfaces of these cysts were numerous papillomata which extended also on to the peritoneum, intestines, bladder, and to the ovary on the other side. After tapping the central cyst, I delivered and removed the whole mass, which originated on the left side. No traces of the ovary could be found. I removed also the right ovary, which was studded with papillary growths and a few small cysts, and as much as I could of the papillomata scattered on the peritoneum and other organs, closing the abdomen without drainage. The patient had an uneventful recovery, and after three weeks was able to leave the hospital.

I have often examined this patient since the operation and have found that at present she is enjoying good health seven years after the operation, and is presenting no sign of recurrence. This is a typical case of papillary cystadenoma of the ovary, and although its histological examination does not show real sarcomatous or carcinomatous degeneration, it has to be considered clinically malignant belonging to the class of the proliferating cysts on account of the ascites and of the implantation of the papillomatous growths upon the peritoneum and other organs of the abdominal cavity; and because of the cachectic condition of the patient. To explain the pathogenesis of the proliferating cysts it must be remembered that their walls are formed of three layers, the external of fibrous tissue, the middle of connective tissue, and the internal by a

\*Read before the Medical Association of the Greater City of New York, April 15, 1918.



capillary plexus covered by epithelium. According to Waldeyer, this epithelium is formed of very short cylindrical cells. But Mallassez and De Sinety insist on the polymorphism of these cells and have demonstrated also a subepithelial endothelial layer proving that on the same type of cyst the most varied forms of deformed epithelium can be found. Besides, they have established a certain relation between the epithelial cells of these cysts and that of the epithelioma of the breast.

The most hybrid forms of degeneration might be found in such cysts. The main forms, according to Waldeyer, are the papillary and the glandular, or both, according as they originate from the middle or internal layer. When one or both of these forms exist it is easy to understand how these cysts may also have a carcinomatous or sarcomatous degeneration at any moment, presenting a complete picture of malignancy. While the dermoid cysts may be quiescent for many years, the papillomatous cysts have a marked tendency to multiply, thus seriously affecting the general health of the patient.

But unfortunately we cannot judge yet to what extent these cysts have to be considered malignant. Even the pathological examination may fail owing to the limited area of degeneration in the neoplasm. But when the affection is bilateral and when the barrier of fibrous tissue forming the external layer of the cysts is broken and there exist ascites and implantation of the papillary growths on the peritoneum and other organs, they must be considered malignant and as allied to carcinoma. Some time ago papillomatous growths were considered as forming a special class of malignant tumors and many times it happened that cases which presented a very extensive process, after opening the abdomen, have been declared inoperable, with lethal termination. Pfannenstiel was one of the first to demonstrate that papillomata may not be originally malignant and may be cured by operation.

Doctor Hyde in his paper advocating the Pozzi drainage method for the treatment of papillomata complicated with ascites, states that it is a well ascertained fact that numerous cases of papilloma simplex have been cured, but that the medical literature on this subject is still very scant. Still less numerous are the cases of papillary cystadenoma reported permanently cured. It seems that almost fifty per cent. of cystadenomata undergo malignant degeneration. Schauta says that all the cases of papillary cystadenoma operated on by him had had recurrence with real malignant metastasis within a short time.

Kelly, in his textbook, reports fifty-four cases of papillary cystadenoma operated on by him, but does not give the number of the permanently cured cases. He mentions the case of Thornton which remained free from recurrence for nine years, and that of Lorner in which two papillomatous tumors, the size of a double fist, were removed, leaving scattered on the peritoneum papillomata, and in which after four years and a half no trace of recurrence could be found. Doctor McGlinn of Philadelphia reports two cases. He operated on a woman for racemose cyst of one side, leaving the ovary of the other side which appeared healthy.

One year later he had to operate on the same woman for papillary cystadenoma with probable carcinomatous degeneration of the side which was healthy at the first operation. The woman recovered. The other case was a woman on whom he operated for papillary cystoma and she died shortly after from cancer of the uterus. Doctor Oastler reports three cases; one was papillomatous cyst, one multilocular cystadenoma, and one pseudomucinous cyst of the ovary. Of these three cases the third did not show recurrence after two years. My case which presented all the clinical characteristics of malignancy (ascites, cachexia, etc.), and which after seven years has shown no sign of recurrence, can be counted among the cases of papillary cystadenoma reported permanently cured.

#### CONCLUSIONS.

First: Papillary cystic growths must always be considered clinically malignant, because we do not know their outcome, but the operation may give unexpectedly good results.

Second: Early operation is always desirable when a diagnosis of cyst is made.

Third: In the advanced state, when ascites and great emaciation are present the diagnosis of cyst is difficult, if not impossible, being confused with a general cancerous or tubercular affection of the abdomen.

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212 EAST SIXTY-FIRST STREET.

## THE FOOD VALUE OF CANDY.\*

BY JOHN E. LEIKAUF, PH. D.,  
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#### WHAT IS FOOD?

Some one has said, "Tell me what you eat and I will tell you what you are," which is just another way of saying that there is a direct relation between what a man eats, his physical condition, his character, his temperament, and perhaps even more so, his temper. A sour stomach and a bad temper epitomize cause and effect. Historians tell us that it was stomach trouble and not mental trouble that caused Napoleon to lose the battle of Waterloo. We are beginning to realize the great importance of carefully selecting our daily foods, not only to see to it that they are pure and wholesome, but that they are harmonious and best adapted to our individual requirements, and that the various nutrients which they contain are in the right proportions to produce the greatest nutritive value.

Food is life; and that we may have life more abundantly, the food question is receiving more consideration and attention than at any other time in the history of the world.

The technical schools and colleges during the

\*An address delivered to the city employees, May 8, 1918, under the auspices of the New York Municipal Civil Service Commission, Leonard Felix Fuld, Ph. D., Assistant Chief Examiner.

past few years have been giving special attention to the principles of dietetics. This is due in part, no doubt, to the fact that modern physicians give greater importance to the diet than they do to administering drugs. The proportion of carbohydrates, fat and protein, which represents the fuel value of different kinds of foods, is carefully ascertained in order to determine what kinds are best adapted to the needs of persons in various occupations and different conditions of health. The determination of the food value of any kind of food is an exact science. The food analyst, therefore, occupies a very important position in our social economics.

Our ordinary foods are composed of from fifteen to twenty elements, which are combined in the right proportions to form a great variety of foods. The most important of these elements are carbohydrates, fats, protein, water, and minerals. These different materials are necessary for the purpose of building up and repairing the body tissues and to supply the body with heat and energy. The carbohydrates include the different kinds of sugars, such as cane, beet, maple, corn syrup, and molasses. The sugars and starches are easily digested and are important food elements as sources of bodily heat and muscular energy, and are often converted into fat. The fats are found chiefly in animal foods; they are also found in olive oil and various kinds of vegetable oils, and in various kinds of nuts. They furnish the body with heat and muscular energy. Protein is found principally in lean meat, gluten of wheat and whites of eggs; it is also found in many of the cereals, and notably in the legumes, peas, and beans. It builds bone and muscle and furnishes muscular energy to the body. Water, although a most important food element, being a part of all the body tissues, does not supply energy. It is, however, indispensable, as are also the minerals which supply the body with little or no heat or muscular energy.

It is, therefore, apparent that many different kinds of foods are necessary in order to have a complete dietary. The body is like a machine and requires different kinds of materials to repair the worn out tissues, to build up its different parts, and to serve as fuel to supply heat and energy. Carbohydrates and fats are the chief fuel elements of food. The transformation of these and other elements into heat and energy are measured with a respiration calorimeter. In ascertaining the amount of heat given off by any food element, the unit commonly used is the calorie, the amount of heat which would raise the temperature of one kilogram of water 1° C., or what is nearly the same thing, one pound of water 4° F. Instead of this unit of heat a unit of mechanical energy may be used—for instance, the foot-ton, which represents the force required to raise one ton one foot. One calorie is equal to very nearly 1.54 foot-tons; that is to say, one calorie of heat, when transformed into mechanical power, would suffice to lift one ton 1.54 feet.

The United States Department of Agriculture has made very extensive and complete scientific tests and experiments to determine the correct food values of various kinds of foods. These experiments demonstrate that the carbohydrate, fats and

protein all furnish fuel which supplies energy to the body in the form of heat and muscular power. The nutritive value of any kind of food, therefore, depends upon its composition and digestibility, e. g., granulated sugar is 100 per cent. carbohydrates and butter is eighty-five per cent. fat; both are easily digested, although, neither is a perfect food if taken alone, but when combined with other foods that contain protein and minerals in the right proportion, a complete and satisfactory dietary is obtained.

Candy being composed principally of sugar, chocolate, and nuts, is very high in food value, and the different kinds vary in the proportion of carbohydrates, fat, and protein they contain.

Sugar is highly concentrated food: its pleasant flavor and high nutritive value make it one of our most popular daily foods. The natural craving for "something sweet" is common in all classes and the per capita consumption of sugar is in direct proportion to purchasing power—they will eat all they can afford to buy. The absolute purity of sugar is unquestionable. Several years ago, the Bureau of Chemistry of the United States Department of Agriculture carefully analyzed 500 samples of sugar, every one of which was found to be absolutely pure. Sugar is easily digested; the experiments made at the Minnesota Experiment Station show that 98.9 per cent. of its total energy is available to the body. On account of the rapidity with which it is assimilated, sugar quickly relieves fatigue. Sugar is a favorite food with farmers, lumbermen, and others, who work hard in the open air, which unquestionably proves its high fuel value. Six ounces of sugar are equal in food value to one quart of milk, or 1¼ pounds of lean beef. It has a fuel value of 1,810 calories.

Chocolate is made from cacao beans, the fruit or beans from the cacao trees, several species of which grow in the countries extending from Mexico to Brazil, the most important of all the species being *Theobroma cacao*, which is chiefly cultivated for its good quality and yield. The Aztecs, the aborigines of Central America, used cacao beans as currency, the value of the bean depending on its size. In appreciation of the delicious flavor and the food value of the beverage, chocolate—from "choco" (cacao) and "late" (water) made from the cacao beans, they called it "*Theobroma*" which name was derived from two Greek words, "*theos*" (god) and "*broma*" (food)—"food of the gods." With the exception of prepared cocoanut, chocolate is higher in food value than any other ingredient used in the manufacturing of confectionery, having a fuel value of 2,860 calories per pound.

It is a fact of common knowledge that nuts are very high in food value, those used principally in manufacturing confectionery being almonds, filberts, pecans, peanuts, and walnuts, averaging approximately 1,500 calories per pound.

Corn syrup, erroneously called glucose, used largely in manufacturing gum drops, hard candies and taffies, is a pure, wholesome transparent heavy syrup, manufactured, as the name indicates, from corn. Its purity, wholesomeness, and food value have been the subject of searching scientific investigations by the United States Department of Agri-



culture, food departments of the various States, and by noted food chemists, all of which have demonstrated that it is: "readily and completely absorbed by human beings, that it is the normal blood sugar, and the cheapest food fuel known." The food value as expressed in scientific terms is 1,559 calories per pound.

Candy is composed of various raw materials of high food value; it is, therefore, apparent that candy being composed of combinations of two or more of these raw materials is exceptionally high in food value. The food values of several well known kinds of candy are shown. The food value of each kind has been carefully estimated from standard formulas used by prominent manufacturing confectioners.

## FOOD VALUES OF DIFFERENT KINDS OF CANDY.

Name.	Calories. per pound.
Sugar coated Jordan almonds.....	2410
Caramels .....	1451
Chocolate dipped cream caramels.....	2155
Chocolates, cream centres.....	2092
Chocolates, nut centres.....	2498
Chocolate tablets, etc.....	2860
Cocoanut hnbons.....	1750
Cocoanut caramels.....	1675
Cream filberts.....	1913
French burnt peanuts.....	2040
Fudge .....	1587
Gumdrops .....	1685
Hard boiled candies.....	1587
Jelly beans.....	1708
Lozenges .....	1795
Marshmallows .....	1737
Stick candy.....	1745

## FOOD VALUE OF DIFFERENT KINDS OF RAW MATERIAL.

Jordan almonds.....	3030
Chocolate .....	2860
Cocoanut .....	1730
Corn starch.....	1675
Corn syrup.....	1559
Walnuts .....	3300
Filberts .....	3290
Gelatine .....	1795
Pecans .....	3455
Peanuts .....	2560
Sugar .....	1810

On comparing the fuel values of the different kinds of candies with the fuel value of some of the common daily foods, shown by the food value charts, such as whole milk having a fuel value of only 315 calories per pound, cream 881 calories, whole eggs 695 calories, beefsteak 1,090 calories, corn 1,685 calories, rice 1,620 calories, white bread 1,180 calories, and corn bread 1,175 calories, it will be seen that with but three exceptions, the different kinds of candies are very much higher in fuel value than any of these foods.

The high nutritive value of chocolate candy is recognized by the leading military authorities of the world, and the "boys at the front" are satisfying their craving for "something sweet" with chocolate cakes and tablets and candies of various kinds. Scientists have demonstrated by careful experiments that during violent exercise or exhausting labor, the sugar in the blood is very heavily drawn on to supply the body with the necessary fuel, hence the longing for "something sweet," which can be readily assimilated, and which is most easily and conveniently supplied in some form of candy. The Swiss guides for mountain climbers consider lump

sugar and sweet chocolate an indispensable part of their outfit. Brigadier General L. W. Waller, of the United States Marine Corps, referring to the food value of chocolate, says, "I never went into a campaign without my chocolate. I always have a few cakes of it in my kit when I go into service. Men fight like the devil on chocolate. It is particularly good in hot weather. Seasoned fighting men take it on the march with them."

Referring to the emergency ration for the army, suggested by Doctor Vedder, the *Scientific American* says: "The problem of rationing the soldier is of the utmost importance, not merely for the purpose of preserving his physical health, but of conserving his military effectiveness. Regardless of what the civil population subsists upon, the rationing of the soldier must not be reduced so as to curtail his food requirements. An emergency ration must be balanced and possess a reasonable energy value and tissue building power. Palatability must not be sacrificed. Vedder has suggested as an emergency ration ten ounces of hardtack and six ounces of sweet chocolate. The total weight of the ration is one pound, while it supplies approximately 2,100 calories of which 180 calories arise from protein sources. The general food value of sweet chocolate has not been thoroughly appreciated. The fact that six ounces of sweet chocolate provided 823 calories attests its high nutritive value and recommends it as a valuable foodstuff for the service of the civil population as well as those engaged in military services. To be sure hardtack requires mastication, but hunger provides sufficient impetus to guarantee that it will be properly prepared for the action of the digestive fluids. The high carbohydrate content makes thorough insalivation of pronounced value as the first stage in its digestion. Taking it all in all this combination of hardtack and sweet chocolate commends itself as being particularly well adapted to the needs of the soldier and the requirements of an emergency ration." *The British Army Officer* reports that the canteens at the front have experienced five times the demand for candy that was expected. On a recent cruise, the Atlantic Squadron carried no liquor but had on board the various ships 40,000 pounds of chocolate and other kinds of candy.

Children are especially fond of candy and find it hard to resist the desire to eat all they want. They can eat a reasonable quantity of any kind of candy, just the same as they can eat a reasonable quantity of any other kind of good food; with the absolute assurance that it is pure and wholesome, that it furnishes their energetic bodies with quick burning, fatigue relieving fuel, and that it is high in food value and good for them. Children should have candy frequently. It is better to give them candy frequently than to give only occasionally, when the craving for it creates an almost irresistible temptation to overeat. It is especially desirable that candy should be served for dessert. A moderate amount frequently is better than an occasional over-indulgence.

The purity and wholesomeness of candy are unquestionable. The importance of protecting the purity of our daily foods, candy included, was given official sanction by Congress, when the National

Pure Food Law was enacted June 30, 1906. The legislatures of the various States have also recognized its importance by enacting State Pure Food Laws, which, for the most part, are substantially the same as the National Pure Food Law. The purity and wholesomeness of manufactured food products are, therefore, carefully safeguarded. Gone forever is the day of the disreputable food faker. The raw materials used in making candy are pure and wholesome in every respect.

Colors have a direct effect on palatability. Nature colors berries, apples, peaches, plums, and other fruits, not only to make them more attractive, but also to increase their palatability. For the same reason, pure colors are used to color various kinds of candies. The United States Department of Agriculture certifies the purity of the colors used in candy and other food products. The food products made by present day manufacturers are pure and wholesome and made with the greatest care as to cleanliness, quality, and sanitary conditions.

Candy is good food, pure, and wholesome. It is the universal food, it speaks all languages; it dries the tears in the eyes of little children; and wreathes the faces of old age in smiles; it is the unspoken message from the lover to his sweetheart; it brings joy to the home; it is the advance agent of happiness in every clime. Can as much be said of other kinds of food?

## PAINLESS MEATOTOMY.

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A successful meatotomy is not so much dependent upon the size of the external incision as upon the division of the membranous band or collar back of the fossa navicularis at its junction with the urethra proper. The operation is performed painlessly and with respect for the after appearance of the glans in the following manner:

After preparation of the part the urethra is distended with one quarter per cent. cocaine solution. Eight c. c. of fluid usually distends the entire anterior urethra, and this is held at the meatus for about three minutes. A cotton applicator as wide as the urethra will permit to enter, soaked in the cocaine solution, is introduced for about one inch and pressure is made downward on the floor of the canal. A very fine hypodermic needle is then introduced under the integument in the median raphe at the margin of the glans and frenum, and infiltration with the cocaine solution is made up to the very edge of the meatus. If desirable a spray of ethyl chloride can be placed at the point of entry of the needle. The cotton applicator is removed and a thin, straight, blunt pointed bistury is introduced. The constriction or band is first severed, then the glans is incised through the infiltrated area sufficient to permit a twenty-six to twenty-eight bougie à boule to enter. This must pass the internal constriction or further division is made within the urethra until the constriction is passed.

This is the most important point in the entire procedure: Cut just sufficient to pass the meatus with a medium size instrument, twenty-six to twenty-eight, but freely incise the constriction within the urethra.

Bleeding is controlled by placing a pledget of cotton well oiled with vaseline within the urethra.

15 CENTRAL PARK WEST.

## TWO NEW FRENCH METHODS FOR STAINING BLOOD FILMS AND BLOOD PARASITES.

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I have undertaken in France a struggle against the use of German dyes for microscopical work. I wish to extend this attempt to America, the friend and ally of France. The methods given in this article are very practical, not only because the technic of the coloration is simple, but especially because the staining solutions—Tribondeau eosinates I, II, and III—can be prepared without difficulty by anybody. They are related to the well known methods of Leishman, and provide efficient substitutes for the secret processes of Giemsa and the other German writers. A further account of this work may be found in the accounts of the *Société de Biologie* (May-June, 1918) where they have been presented by Professor Mesnil of the Pasteur Institute.

### I.—COLORATION METHOD\* WITH THE TRIBONDEAU STAIN III.

This is essentially a neutral solution of eosinate of methylene blue converted by ammonia. Of the two Tribondeau methods, this one is the more rapid in execution and gives more complete results. It only offers the inconvenience of requiring the employment of a very pure and neutral distilled water. Now, certain commercial distilled waters do not possess these qualities. (It is true that one can correct a defective water by redistilling, after the addition of a little silver carbonate got by precipitation of a silver nitrate solution with carbonate of soda; but this is a complicated procedure.)

*Preparation of the Tribondeau stain III.*—Heat some distilled water to boiling point. Divide: A—fifty c. c. in an enameled basin; add 0.20 gram pure medicinal methylene blue; shake to dissolve: B—seventy-five c. c. in a glass; add 0.30 gram water soluble eosin (French eosin); shake to dissolve.

Pour B into A by successive fractions. After each addition of B mix for some time with a glass rod; then, place on a glass slide the drop of the mixture from the end of the rod. This drop is at first deep blue and free from precipitate; then, as the proportion of eosin is increased, the blue becomes paler and a precipitate appears; finally, the precipitate increases and the color of the liquid turns from blue to rose. Stop the addition of the eosin as soon as this change occurs. It generally requires a little more than fifty c. c. of B to obtain this result, which is quite easy to observe even to the unpractised eye.



Add four c. c. of ammonia to the mixture thus obtained. Mix. Heat to 120° C. in the autoclave for twenty minutes, in the enameled basin covered with an inverted glass funnel. Remove from the autoclave; stir with a rod and allow to cool completely.

Filter through a small white filter paper, well folded, all the contents of the basin.

Discard the filtrate. Keep only the precipitate, which is almost entirely retained on the filter and of which a small portion remains deposited on the side of the basin. Dry the precipitate by placing in an incubator at 37° C. the filter widely open on several layers of absorbent paper, and also the basin.

When the drying is complete (no trace of water must remain in order that the ammonia may be completely volatilized), place the filter in the basin and dissolve as much as possible of the dried stain by pouring into the basin, in successive fractions, 100 c. c. of glycerinated alcohol (absolute ethyl alcohol ninety c. c.; neutral glycerine ten c. c.) and crushing the powder with a large glass rod.

Transfer the 100 c. c. of solution into a flask, taking care to transfer also all the undissolved stain. Shake the flask from time to time. Filter after twelve to twenty-four hours.

*Technic of staining.*—First fix the preparation with the undiluted stain Tribondeau III. For this, the slide carrying the blood (previously spread in a thin film, dried simply by moving in air, and marked off by a glass pencil line) is placed on the table, film upward. Cover the film with 0.2 c. c. of Tribondeau III (approximately twelve drops). Cover with the half of a Petri dish to prevent too great evaporation, especially in summer. Allow to act three minutes.

Then stain by adding to the Tribondeau III, on the slide itself, 0.6 c. c. of distilled water (approximately twelve drops). Mix water and stain by a few movements of the slide. Replace on the table. Allow to act for an average time of twelve minutes, without moving.

Wash rapidly with a jet of distilled water.

Dry immediately (by passing the wet preparation for two seconds over the flame and blowing vigorously on it).

#### II.—COLORATION METHOD WITH THE TRIBONDEAU STAINS I AND II.

These stains are respectively a neutral solution of eosinate of natural methylene blue, and an alkaline solution of eosinate of methylene blue converted by ammonia. When a suitable distilled water is not available, this second method is preferable to the first, because it is less delicate.

*Preparation of the Tribondeau stain I.*—Pour into a heat resisting flask:

Neutral glycerine .....	5 c. c.
Absolute ethyl alcohol .....	45 c. c.
Pure medicinal methylene blue .....	0.20 gm.
Water soluble eosin (French) .....	0.05 gm.

Dissolve rapidly by plunging the flask into a very hot waterbath and shaking. Allow to cool. Pour into a glass graduated measure; make up to fifty c. c. with absolute ethyl alcohol. Filter, and cork in a flask.

*Preparation of the Tribondeau stain II.*—Pour into a heat resisting flask:

Neutral glycerine .....	25 c. c.
Ethyl alcohol 95% .....	15 c. c.
Pure medicinal methylene blue .....	0.20 gm.
Water soluble eosin (French) .....	0.05 gm.

Dissolve in a waterbath as with I. Allow to cool. Pour into a glass graduated measure, and make up to forty c. c. with ninety-five per cent. ethyl alcohol. Return to the flask.

Add four c. c. of ammonia. Mix. Heat to 120° C. in the autoclave for twenty minutes, in the open flask. Remove from the autoclave and allow to cool somewhat. Pour into a glass graduated measure and make up to fifty c. c. with ninety-five per cent. ethyl alcohol. Return to a flask which is corked only after a day or two.

*Technic of staining.*—First fix the preparation with the undiluted Tribondeau I. For this, place the slide on the table, film upward. Cover the film with the stain I. Cover with a Petri dish. Allow to act for three minutes.

Wash with a jet of distilled water. Get rid of the surplus water by shaking; wipe the under side of the slide; place it on the edge of a glass or crystallizing dish without drying the film.

Stain by pouring on the preparation Tribondeau II diluted and hot. For this, have a small test tube of one centimetre diameter marked at two c. c.; pour distilled water to the mark; heat the tube held aslant in the flame until the appearance of the first bubbles of air; add to the two c. c. of hot water four to five drops of Tribondeau II; pour hot over the film. Allow to act fifteen minutes.

Wash with a jet of distilled water. Dry immediately (heating and blowing).

Remove the excess of blue by pouring on the dry preparation, held aslant, a watery solution of tannin (one in twenty), until the film becomes rose colored. It is necessary to avoid differentiating moist films because the preparations would become spotted with blue. The solution of tannin is prepared by dissolving one gram of tannin "à l'alcool" in twenty c. c. of very hot water. A little camphor is added to prevent the growth of molds.

Wash at once with distilled water. Dry immediately.

N. B.—One can omit Tribondeau I, fixing simply with alcohol, but this is disadvantageous because it is then necessary to stain with Tribondeau II for thirty minutes instead of fifteen.

**Chronic Hypertrophic Rhinitis.**—E. J. Stein (*Pennsylvania Medical Journal*, June, 1918) concludes that: 1. The treatment of this condition must be begun in childhood when a tendency to narrow nasal cavities is first observed. 2. The chemical cautery still holds out a definite relief in some of the milder cases. 3. The surgical treatment is the more popular and gives definite relief. 4. The electric cautery, when the technic is acquired, promises to be the most efficient because it is more readily controlled and more adaptable to all cases. 5. Vaccine therapy is useless unless the bacillus rhinitis of Tunncliffe is definitely proved to be the actual causative agent.

# Medicine and Surgery in the Army and Navy

## MOBILIZING THE SPAS AND HEALTH RESORTS OF OUR NATION.\*

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(Continued from page 423.)

### WHITE SULPHUR SPRINGS.

White Sulphur Springs, West Virginia, is located in the most picturesque part of the Alleghany Mountains, near the boundary line of the Virginias. It is perhaps the oldest and one of the best known of American spas. Apart from Indian traditions and the experiences of the early settlers, there are authentic records of persons actually treated there as early as 1778 and since that time people have journeyed there for the benefits to be derived from its climate, altitude and waters and for participation in its social life.

Because of its altitude of 2,000 feet above sea-level, the climate is bracing and little debilitating weather is experienced, even in midsummer. There are two hotels at White Sulphur Springs, The White and The Greenbriar. The White is a spacious colonial building with a history that is pervaded with *ante bellum* romance. The Greenbriar is a modern, fire proof, steel structure. Its architectural style is Georgian and it is not too much to say that it may be rivaled but not excelled in the completeness and artistry of its appointments by any resort hotel. In addition, there are between fifty and sixty cottages surrounding the hotels, most of them having five rooms and baths, particularly useful for those desiring seclusion and rest.

The domain of the White Sulphur Springs Company comprises an area of 7,000 acres. Within this park are an eighteen hole and a nine hole golf course. The larger course may be said to be for the real golfers and the smaller, for amateurs. There are five excellent tennis courts and miles of foot paths, bridle paths and roads. A casino is situated near the golf greens and tennis courts and offers amusements to those not inclined to exercise.

There are several springs at White Sulphur with considerable variation in constituents and physiological effects. However, in this article we will confine discussion to the two White Sulphur springs, the radiochalybeate spring and the alum spring. The older White Sulphur spring is the best known and may be said to be the one upon which the reputation of White Sulphur is founded. It is clear and palatable, and maintains a temperature of sixty degrees Fahrenheit. It is classified as sulphoalkaline, the chief constituents being the sulphates and bicarbonates of magnesium, sodium and calcium with free carbonic acid gas and traces of sulphuretted hydrogen. Another sulphur spring is adjacent but the waters are not as strong, although of similar composition.

The radiochalybeate spring possesses a greater

degree of radioactivity than the other springs and contains iron in an assimilable form. It is used for drinking purposes.

The alum spring, as the name implies, is different in constitution from the others, its chief constituent being the sulphates of aluminium, magnesium, calcium and manganese.

The White Sulphur springs' waters are all radioactive to some degree, the radiochalybeate spring being the most highly charged.

The cure at White Sulphur is effected by bathing in and drinking the waters. The sulphur waters are mildly laxative, diuretic and alterative in effect and are used in conjunction with hydrotherapeutic measures for the treatment of diseases of the stomach, liver, kidneys and other metabolic disturbances, the outgrowth of the disfunctions of the organs concerned with vital processes. The radiochalybeate spring is prescribed in conditions that need an assimilable form of iron as well as its radioactivity. The alum spring water, being astringent, finds a usefulness in conditions of the gastrointestinal tract requiring a sedation of hyperactive function.

The sulphur water baths are the feature baths of this resort and are particularly efficacious when used with the drinking waters, in conditions of disturbed metabolism because of nutritional disorders, infections or insufficient elimination, as the gout, the neuritides, the chronic rheumatisms, arthritis; malnutritional states, from whatever cause, chiefly gastrointestinal disorders; intestinal inactivity, kidney irritations, obesity, diseases of the skin and the functional nervous diseases and convalescence.

The bath establishment of White Sulphur may be said to excel in completeness of equipment and appointments any bath house in the country. It is a three story structure, located near the hotels and is connected with both by enclosed loggias. The ground floor contains the swimming pool, one hundred by fifty feet, and the gymnasium with dressing rooms at each end and wide balconies on each side of the swimming pool. The two upper floors are devoted to the bath proper and are connected by elevators with the lower floors. On the second floor are the physicians' offices, the Zander room, inhalation room, and radium room. Equipment provides for giving almost any form of bath, including special baths as are given at Nauheim, Aix les Bains, Vichy, Carlsbad, Baden-Baden, and other European spas. The electrotherapeutic department is well equipped for accessory treatments. The radium room contains the latest apparatus for radium emanation and for artificially charging water for drinking purposes, and is especially useful in the treatment of arthritic conditions. Apparatus for superheated air treatment has been installed and is an important accessory in the treatment of painful joints, nerves, and muscles. The sulphur baths are given to meet individual requirements and in the rheumatoid conditions massage is practised during the bath. The baths exercise a specific influence upon the skin and circulation, due

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to the presence of the salts and gases. Exercise may be had in the Zander room or the gymnasium, or by walking, golfing, tennis, and riding.

This institution is particularly commendable for conditions of intoxication etiology, especially the neurodigestive intoxications in conditions of nervous exhaustion and shock and conditions that may be called preshock. The intoxications may be due to microbic activity that may be flourishing in the intestines, the liver, the oral cavities, and other tissues. They may be luetic, or may arise from excessive use of tobacco or what not and may have diffused throughout the body during a crisis and are best eliminated by eliminative baths, exercise, and out door life. The climate of White Sulphur is such that out door life is possible the year round, the average seasonal temperatures being approximately: Winter, 36° F.; spring, 51° F.; summer, 65 F°.; fall, 52° F. Its elevation insures a relatively low humidity. The capacity of the two hotels and cottages is easily several hundred, with adequate bath facilities. It is easily accessible, being on the main line of the Chesapeake & Ohio Railroad.

#### THE VIRGINIA HOT SPRINGS.

These famous springs are located in the most beautiful mountain section of Virginia. In this article, description will be confined to the institution known as The Virginia Hot Springs Company. This plant is situated in a valley, in a park of 5,000 acres. The elevation is 2,500 feet at the foot of the mountain; in a comparatively short distance, one may be led by well kept paths to an elevation of more than 4,000 feet.

The Homestead Hotel, inclusive of its new wing, has more than six hundred rooms. The beauties of its lounge, corridor *de luxe*, ballroom, Japanese room, and other features need no extolling; there is excellence in appointment everywhere. A solarium and casino are maintained for rest and amusement, respectively.

At the Virginia Hot Springs, the cure is effected by drinking and bathing in the waters which contain chiefly calcium bicarbonate, magnesium carbonate and sulphate, with a slight trace of sodium chloride. One spring has a minute trace of sulphur, and the bathing spring contains a small amount of carbonic acid gas and nitrogen with a maximum natural temperature of 106° F. This bathing spring, known as Boiler Spring, has an output of about 130,000 gallons a day. The drinking springs are diuretic in effect and their copious intake may be said to produce a depurative effect, thereby aiding materially to accomplish the therapeutic objective in view.

The radioactive content of the various springs at Hot Springs, Virginia, has been extensively studied by Hemmeter and Zueblin, who published their findings and conclusions in the February, 1915, issue of the *Archives of Internal Medicine*. Their article is too lengthy and technical for extensive insertion. However, those interested may apply to the management of the Springs Company for this reprint, and I take the liberty to state that their requests will be complied with immediately.

Briefly, their findings were that the springs possess a high and constant radioactivity. From

observation on patients, they concluded that the beneficial result of the so called chronic and sub-acute rheumatisms, gout, and metabolic diseases must, to some extent, be attributed to the radio-emanation of the water used for drinking and bathing purposes.

Diseases that have been most benefited by the cure are the so called rheumatisms, gout, obesity, the neuritides, the psychoneuroses, and the functional stomach disorders that are perhaps but a form of somatic expression of the psychoneuroses and, in other cases, the expression of dietary and inhibitory abuses.

The measures instituted for the benefit of the above named disorders are chiefly corrective and restorative. The aim of the treatment is to promote a full, free, and abundant action of the skin. The bath may be given at a temperature not exceeding 104° F. and, after this bath, there is provided means for the spout bath, which has for many years been the feature treatment at Hot Springs. The water is spouted at a patient at a pressure of from twelve to eighteen pounds and at a temperature of about 104°F., mechanically massaging the body. The effect of this is stimulating and, in some cases, may be employed before the tub bath. Following this, a customary procedure is a hot pack, followed by cool sponging or a cool douche, and an alcohol rub. The patient then is placed in a recumbent position for half an hour or more. It requires from thirty to forty-five minutes to give this treatment. Of course, if the individual case demands, massage may be added. Usually, during a bath, it is customary for the attendant to massage and passively manipulate the affected joints or parts. Let it be understood that this is by no means the routine procedure for every case. Each case has a careful supervision by a physician who prescribes the baths and the drinking waters to meet the requirements of the individual. In addition to this feature treatment, the bath house is well equipped with douche tables for giving the various forms of circular, jet, Scotch, rain and fan douches which are used in conjunction with the hot air and electric light baths.

Accessory measures include diet and suitable exercise, mechanical and physical. A set of thirty-six devices of Zander apparatus for active and passive exercises has been installed in recent years and is most complete in detail. Apparatus for giving local superheated air baths has been installed and is particularly useful in some cases of arthritis deformans, neuralgia and neuritis. Massage of the Swedish type is counted as one of the valuable accessory measures.

The bath house is connected with the hotel by an enclosed viaduct, facilitating the passage of the patient to and fro without fear of exposure. It is furnished with spacious rest rooms. The solarium constitutes a large, open air hall on the upper floor of the bath house, so that a patient, unless otherwise directed, may select his site of predilection for rest.

The swimming pool, eighty-five and one-half by thirty and one-half feet in dimension, and ranging from four to seven feet deep, is supplied from the

several springs and has an average temperature of about 85° F.

In conclusion, it is obvious that patients suffering from the chronic ailments heretofore described may be expected to improve in such fine surroundings. Without doubt, results do not depend entirely upon environment and the major portion of benefit received must be ascribed definitely to the hydrotherapeutic and accessory measures as they are practised in this institution. With an almost unlimited water supply and with such an extensive amount of acreage at their disposal, it is readily appreciated that more than a thousand patients could be taken care of. The annual mean temperature is about 59° F. A great advantage of Hot Springs is that the climate is such that the class of patients treated may take the cure all the year round. This place is easily accessible to all ports on the Atlantic seaboard.

#### MOUNT CLEMENS, MICHIGAN.

Mount Clemens is located about twenty-two miles from Detroit, Michigan, and for a great many years has been noted as a watering place. Unfortunately, because of the lack of time, I was unable to acquaint myself thoroughly with the several bath establishments of this resort when visiting there during the 1916 session of the American Medical Association held at Detroit. However, the establishments visited were representative of the whole and were found to be hygienic, well fitted with bathtubs, dressing rooms and rest rooms.

Mount Clemens gave the general impression of a city of several large hotels, a number of smaller hotels and boarding houses and a place where people of varied financial success sojourned in an effort to regain their health, comfort and efficiency. It is a regrettable fact that Mount Clemens has not been incorporated and supervised as a large institution or that a state reservation has not been created after the fashion of the reservation of the State of New York at Saratoga Springs, where medical efforts could have been better concentrated and an individual method evolved, with necessary accessories, substantially representative of the advanced equipment of modern spas. That its reputation has not diminished speaks more for the value of its waters than for the technic of their use and the accessories employed to aid in the accomplishment of their therapeutic objectives. However, it is not the purpose of this article to berate this spa, for the author is fully cognizant of the good work that has been done there as a whole, recognizes the handicap of the resident physicians in handling patients, and has nothing but praise for their individual efforts to systematize their work on a scientific basis; and it is to be hoped that their efforts will be expressed in constructive creations.

No attempt is made to give the analysis of the waters used in the several bath houses, for they are essentially similar in composition and vary but little in saturation. They are obtained from wells ranging from 800 to 1,300 feet in depth. They are strongly impregnated with salines, chiefly with the chlorides of calcium, sodium, and magnesium, and with hydrogen sulphide and carbonic acid gas. The

degree of saturation averages from 11,000 to 12,000 grains per gallon. They are classified as sulphosaline and are used for what may be called the Mount Clemens bath.

This is a hot tub bath of ten or fifteen minutes' duration, rubbing being practised during its progress in suitable cases. This usually is followed by a pack and in some cases with fomentations to local parts, and then a spray, brisk rubbing, and drying. The patient then is allowed to cool in a rest room. The actual time spent in administering this treatment averages about thirty minutes.

The physiological action of the baths is brought about by the salts and gases in solution. The skin reactions are local and reflex—a soothing effect upon the epidermis and a promotion of peripheral circulation because of the dilatation of the superficial capillaries and arterioles. Because of the thermic effect, a profuse diaphoresis is brought about and prolonged by the use of the pack and fomentations.

The chief action of the baths being eliminative and as a promoter of elimination through the emunctories, it follows that their greatest value is in conditions due to faulty elimination where the toxins, of either endogenous or exogenous origin, have, so to speak, mobilized, overwhelmed the organism because of the neutralization of the enzymes, antibodies, and what not, and precipitated disease entities, such as the rheumatisms, gout, skin diseases, the so called autotoxic conditions, alcoholism, the neuritides, and industrial or occupational diseases.

Accessory measures are too few and inadequate in number and variety. Additional apparatus for electrotherapy, mechanotherapy, and control tables for the various douches and showers are needed.

On the whole, Mount Clemens may be said to be primitive and not to have been developed in keeping with its advantages. The waters are particularly useful and, with the aid of the proper accessory measures, their efficacy could be improved considerably. Facilities for the accommodation of several hundred guests are available and the bath capacity is adequate for the number accommodated. It is accessible, via Detroit, from the probable ports of debarkation. Climatic conditions may be a little severe in winter, but do not detract materially from the advantages. The elevation is 602 feet.

(To be concluded.)

**Nitrous Oxide in Childbirth.**—Moses Salzer (*Ohio State Medical Journal*, July 1918) draws these conclusions: Nitrous oxide can be safely used for hours without fear of any immediate or remote danger to mother or child. 2. Its effects are under absolute control at all times. 3. The mother recovers from the confinement with a clear mental state and without any unpleasant recollections. 4. The babies when born are of good color. 5. It is successful in the elimination of pain when properly administered in practically every case. 6. It does not retard labor and cannot therefore be a cause of uterine inertia. 7. Cyanosis must be carefully avoided.



## SOME NOTES ON DRUGS AND TREATMENT.

### *A Review of Recent Progress in Therapeutics.*

BY MARK SADLER, M. D.,  
Montreux, Switzerland.

#### IV.

#### THE TREATMENT OF INFECTED WOUNDS.

The present war has given ample opportunity for studying infected wounds, since wounds on the battlefield must be considered from the beginning as infected. I shall only give such formulæ and treatments as I know from personal experience and from that of others to have been of real value. Asepsis having failed after faithful trial during the early months of the war, and as the wounds were frequently the starting point of serious complications, attempts were made in all directions and by all known means, to obtain as perfect a disinfection as is humanly possible. Taking up all the various medicaments employed, Deguy divides them into three classes: 1, Disinfection by sera; 2, chloric disinfection; and 3, disinfection by the usual antiseptics.

*Antiseptic sera.*—The best known is that of Leclainche and Vallée. From experimental study these writers have shown that the digestion of microbic agents in the wounds could be brought about by bringing the organic cells to the wound by a specific serum, preserving all their vitality and aptitude for tissue repair. This serum contains antibodies corresponding to the various forms of suppuration, such as the staphylococcus, streptococcus, colon bacillus, and septic vibrio. Therefore, it is a polyvalent serum and is only to be used for dressing the wound, either in liquid or powder form. Very rarely indeed, in certain staphylococcal or streptococcal septicemias, can it be used in intravenous injections or subcutaneously.

The use of this serum is exclusive of any other antiseptic, as the latter would interfere with the phagocytic and opsonizing action of the serum. The wound is first washed with a 9:1,000 salt solution and is then dressed with gauze, imbibed with the serum, introduced into the fistulous tracts. Simple injections may also be made. The dressings should be changed twice daily. This polyvalent serum has given remarkable results, especially in streptococcal infection, but in other types of infection, due to other bacteria, its effects have been practically nil, this being above all true in the case of anaerobic organisms.

Used in the form of moist dressings on erysipelas wounds, it checks the spread of the inflammatory process. In intravenous or hypodermic injections it has certainly been effective in certain septicemias. It should be understood that if the effects of this serum are not soon apparent by a change for the better in the state of the wound, it is useless to persist in the treatment.

*Chloric disinfection.*—For some time the chloric compounds have been employed for disinfection of gangrenous or fetid wounds, and war injuries have given this medication a new impetus. The preservative action of ordinary sea salt for certain meats, particularly pork and fish, is well known to all, so

that it is a natural consequence that salt solution at from seven to ten per 1,000 should be employed for irrigation of wounds. The sera devised respectively by Ringer and Locke have the following formulæ:

℞ Sodii chlorid., .....	9.00 grams;
Potass. chlorid., .....	0.42 gram;
Calcii chlorid., .....	0.24 gram;
Sodii bicarb., .....	0.15 gram;
Aq. dest., .....	1.000.00 (1 litre).
(Ringer.)	
℞ Sodii chlorid., .....	8.00 grams;
Calcii chlorid., .....	} .ââ 0.20 grams;
Potass. chlorid., .....	
Sodii bicarb., .....	} .1.00 gram;
Glucose, .....	
Aq. dest., .....	1 litre.
(Locke.)	

These sera are now being much used, and although there is some difference of opinion as to their actual utility, nevertheless they have rendered valuable service.

The well known liquor Labarraque of the French Codex is composed as follows:

℞ Calcii chloric. sic., .....	100;
Sodii carbonat., .....	200;
Aq. dest., .....	4.500.

Dakin maintains that the above solution contains an excess of free alkali which renders it irritating, and he therefore has proposed to neutralize it with boracic acid. Here is the formula:

℞ Sodii carbonat. sic., .....	140;
Calcii chlorid., .....	200;
Acid. boracic., .....	40;
Aq. dest., .....	1 litre.
(Dakin.)	

Magnesium chloride has been introduced by Delbet, who is well satisfied with its effects in a solution of 12.50 grams to 1 litre of distilled water. Deguy recommends ammonium hydrochlorate, in a one per cent. solution in irrigations and wet dressings. Zinc chloride is caustic when in a concentrated solution, but in a dilute solution it is antiseptic. For local application to wounds it is formulated as follows:

℞ Zinci chlorid., .....	1.0;
Acid. tartaric., .....	N. 9.0;
Glycerini, .....	10.0;
Aq. dest., .....	50 to 100 c. c.
(according to the desired result to be obtained.)	

In irrigations or moist dressings, a 1 or 2 per 1,000 solution is used, or the following formula may be employed:

℞ Zinci chlorid., .....	1.0;
Acid. tartaric., .....	9.0;
Aq. dest., .....	1,000.

*The old antiseptics.*—These have been divided under three headings by Deguy, the use of each being different: Watery solutions for irrigations and moist or wet dressings; alcoholic solutions for wet or moist dressings; ether solutions, which, by evaporation, leave behind a thin layer of the antiseptic on the wound. Among the watery solutions, iodine water must be mentioned, which is prepared by adding twenty c. c. of tincture of iodine at ten per cent. to one litre of water, or one gram of trichloride of iodine to one litre. Irrigations with iodine water are highly disinfectant, but they are painful, sometimes irritating, and cannot be frequently used. The mercurial salts are also being employed, sublimate

solution at 1 per 4,000, the oxicyanide at 1 per 2,000, hermophenyl at 1 per 1,000, etc. One should always be on the watch for possible toxic accidents due to absorption from wound surfaces.

Formalin (five c. c. per litre) is an excellent antiseptic in cases of profuse suppuration or blue pus. Carbolic acid 1 per 200 and coaltar in emulsion in tinct. quillayæ (coaltar 10 per 200 of the tincture) has important indications. The two following formulæ are highly spoken of by Deguy for irrigations and dressings:

R Thymol, .....	10.0;
Tinct. eucalypt., }	
Glycerini, .....	ââ 100.0;
Sodii borat., }	
Sodii benzoat., }	ââ 10.0;
Sodii bicarb., .....	25.0;
Methylen. blue, .....	q. s. for coloring.
10 c. c. of this solution to two litres of water.	

These various preparations are effectual in very septic, atonic wounds, but they are painful and irritating, causing redness which is an indication to stop their use. The treatment may be resumed later if required, after the symptoms of irritation have subsided.

Another good preparation in granulating wounds, but with much suppuration and no tendency to heal, is:

R Argent. nitrat. cyst., .....	1.0;
Glycerini neutral, .....	10.0;
Alcohol, 90°, .....	40.0.

This solution should remain perfectly limpid in a colored glass bottle if the three products used are C. P., which they should be. It is used for moist dressings with gauze pads (ten thicknesses of gauze) wrung out with the solution and applied to the wound, over which absorbent cotton is placed. These dressings are not to be applied more than once or twice in succession, as they dry the wound very quickly and the epidermis rapidly appears. This solution is of little use in irregular and undermined wounds.

Ether solutions play a good part in the treatment of wounds. By these the drugs can penetrate into all the corners and tracts of the wound, and by evaporation of the ether, leaves a thin, even coating. The following formulæ can be recommended

R Iodine, .....	1.0;
Ether, .....	1,000.0.

This solution is not often employed because iodine is caustic, but occasionally it will be indicated.

R Iodoform or thymol. diiod. (Aristol), .....	10.0;
Ether, .....	100.0.

This is a good disinfectant and deodorizer. Salol or resorcin in a ten per cent. ether solution, or a ten per cent. ether solution of camphor are also useful, likewise benzoin in the same proportion.

Oil of cade has also been well spoken of to clean up wounds which resist or offer gangrenous areas which do not become eliminated. The following formula is due to Deguy:

R Oil of cade, }	
Iodoform, .....	ââ 12.00;
Oil of vaselin, }	
Lanolin, .....	ââ 30.00;
Ether, .....	150.00.

Regarding technic, and, in the first place, irrigations, these are indicated in dirty wounds containing foreign bodies and when they are the seat of

severe suppuration. However, although most excellent, irrigations must never be lavish. Continuous irrigation is very useful, but, unfortunately, difficult of application unless in a well supplied hospital or clinic. Interrupted irrigation with Dakin's fluid, and following his technic, has been thoroughly described in the medical press, and therefore needs no comment here.

Wet dressings should not be continued for too long a time, on account of the resulting irritation to the surrounding structures. Moist dressings have been more generally employed during the war, representing about seventy-five per cent. of all dressings used.

Occasionally one may resort to astringent or oily dressings, which prevent the gauze from becoming adherent to the wound surface. For this a one per thirty glycerate of tannin, glycerate of alum one to five per cent., or glycerate of resorcin at two per cent. may be used.

When there are burns the blisters should be opened and the following prescription applied:

R Ol. hyoscyami comp.,*	50.0;
Adeps benzoïn, .....	20.0;
Ol. amygdal. dulc., .....	q. s. ad 250.0.

After a few days this prescription is changed to the following ointment:

R Zinc oxid., .....	6.0;
Zinci peroxid., .....	4.0;
Lanolin, .....	100.0;
Vaselin, .....	200.0.

In some cases of septicemia with persistent elevation of the temperature regardless of the local disinfection, general disinfection may be essayed by the use of colloidal gold or silver, or one of the following formulæ:

R Acid. carbolic, C. P., .....	10.0;
Glycerine at 30° C. P., .....	40.0;
Aq. dest., .....	50.0.

Inject subcutaneously once a day for one week one c. c. of the solution. The following is recommended at the same dose and for the same duration as the above:

R Formol, 40%, .....	0.10;
Potass. sulphoguaiacolat., .....	1 to 2 grams;
Sodii sulphat., .....	1 gram;
Glycerini, .....	.5 grams;
Aq. camphoræ, .....	100 grams.

Tonic treatment must also be exhibited. Injections of normal salt solution, camphorated oil, ether, caffeine and sulphate of sparteine have their indications. This caffeine serum is recommended by Marfan:

R Caffeïn. citrat., .....	75 centigrams;
Normal salt solution, .....	300 grams.

An excellent general stimulant is:

R Strychnin. sulph., .....	.25 milligrams;
Camphoræ, .....	.5 to 10 grams;
Guaiacol, .....	10 grams;
Ether, .....	40 grams;
Ol. olive, .....	100 grams.

\*Ol. hyoscyami comp. of the Pharmacopœia Helvetica is composed as follows:

Ol. hyoscyami, .....	1,000.0;
Ol. lavandulæ, .....	1.0;
Ol. mentha, .....	1.0;
Ol. rosmarini, .....	1.0;
Ol. thymi, .....	1.0.

This balsam is green in color with an aromatic odor. It is an old, well tried preparation of real value as a local carminative. (Translator's note.)



Inject one c. c. twice daily for several days, according to indications. The following prescription, given at the same dose as above, will be found of value:

R Sodii phosphoglycerat., .....5 grams;  
Strychnin. arseniat., .....20 centigrams;  
Caffein, benzoat., .....5 grams;  
Ol. eucalypt., .....aa 10 centigrams;  
Ess. gaultheriae, } .....  
Magnes. carbonat., .....95 grams;  
Aq. dest., .....q. s. ad 100 c. c.

The various treatments above described are not only useful in war surgery, but also in all cases of wounds occurring in civil practice.

## MEDICAL NEWS FROM WASHINGTON.

*New Appointments in the Medical Corps.—Members of Naval Medical Corps in France Recommended for Distinguished Service.—Naval Base Hospital No. 3 Now Established in Scotland.—Health Conditions in the Navy.—Reduction in Pay of Chief Nurses to Be Remedied.—Rank to Be Provided for Members of Army Nurse Corps.—Young Surgeons Ready for Service.—Sick, and Wounded Cared for by the Navy on Transports.—Dr. C. E. Gibbs, Dr. C. W. Mitchell, and Dr. R. B. Norment Appointed in the Public Health Service.*

WASHINGTON, D. C., September 9, 1918.

Lieutenant Colonel Charles F. Morse, Medical Corps, in charge in the Office of the Surgeon General of the Army of matters relating to the Veterinary Corps, and Lieutenant Colonel Samuel J. Morris, Medical Corps, in charge of matters relating to Medical Training Camps, have been promoted to colonel.

Colonel William F. Truby, Medical Corps, just relieved from command of Walter Reed General Hospital, D. C., has been assigned to the sanitation division of the Surgeon General's Office.

The recent promotion of Lieutenant Colonel Raymond P. Sullivan to colonel was the forerunner of his appointment to succeed Colonel William H. Moncrief as chief of the surgical division of the Surgeon General's Office. All officers now in the division hold temporary commissions in the Medical Corps, having come from civil life since we entered the war and being selected on account of their professional and administrative qualifications. Colonel Sullivan, after several years' experience as a surgeon in the Mayo clinics at Rochester, Minn., was in active practice in New York City.

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It is not generally known that any of the personnel of the Medical Department of the Navy is serving on the battlefields of France, but such is the case, for officers of the Naval Medical Corps and members of the Naval Hospital Corps constitute the sanitary forces of the marines fighting in that country, and the highest praise for them has come from those with whom they are serving.

Recently an officer of the Marine Corps, who visited wounded marines now at the Naval Hospital at Brooklyn, wrote to the Surgeon General of the Navy an account of what these men said of the naval medical personnel. The officer reports that he heard several of them talking in the highest terms of the Naval Medical Corps. These marines, wounded in the fighting at Chateau Thierry, cannot

sufficiently praise the Naval Hospital men for their first aid work during the desperate fighting from June 6th to 14th. According to one of them, "these naval men deserve a gold medal, the highest honor they can receive; before we could reach our objectives the navy boys were right out in the field picking up and tagging the wounded. They exposed themselves to the greatest dangers and had no protection, not even guns with which to combat the Germans they might encounter, since it was open fighting."

The commandant of the Marine Corps has sent to the Surgeon General of the Navy a copy of a letter from the commander of one of the marine regiments to the brigade commander recommending a number of Hospital Corps men for distinguished conduct for service in the face of the enemy.

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Naval Base Hospital No. 3, under command of Captain C. M. De Valin, of the Naval Medical Corps, which was organized sometime ago with personnel mostly from Los Angeles, Cal., has arrived on the other side, and it now is located in Scotland, where it has been established in a building formerly occupied by the Royal Army Hospital Service. It has hospital accommodations at present for 625 patients, with possibilities of expansion to accommodate 825 if necessary. It will look after patients from the naval personnel and from the personnel of the British and American expeditionary forces.

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The health and mortality conditions of the navy continue most satisfactory, the latest reports showing a death rate for the entire service of 1.0 per 1,000 per annum. The latest reports of diseases recorded for shore stations in the United States: One case of cerebrospinal fever, seven of diphtheria, eighteen of malaria, twenty-three of measles, twenty-two of pneumonia, five of scarlet fever, and one of typhoid, the latter being of a recruit at a naval training station, who probably contracted the disease before entering the service.

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It has been brought to the attention of the War Department that in that part of the army appropriation act of July 9, 1918, which relates to the army nurse corps, all nurses were given an increase of pay of \$10 a month, except those already chief nurses. For these their monthly pay was reduced \$10.

Before approval of the act, the annual base pay of a chief nurse was \$600 with \$360 additional as chief nurse, which gave \$960 for a year. Under the new law, her base pay is \$720 and her pay in addition as chief nurse is \$120 a year, making the annual pay for chief nurses \$840, or \$70 a month.

It is believed that this was due to inadvertence, but this actual reduction in the pay of chief nurses is causing much discontent, as they feel that they have been singled out for a reduction, particularly so as all other nurses received an increase in pay. The War Department has submitted to Congress a draft of a bill to remedy the situation.

\* \* \* \* \*

Efforts are being made in behalf of the women of the army nurse corps to provide rank for them.

At present, the Army Regulations prescribe that the members of the women's nurse corps take rank next after cadets. There is some talk of providing an intermediate grade for the nurses between that of the lowest commissioned rank and the highest noncommissioned rank, similar to the warrant officers' grades in the navy. However, the nurses prefer relative rank as commissioned officers. This is the plan understood to have been adopted in the Canadian and Australian Forces. A bill to that effect has been introduced in the House.

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According to reports from the surgical division of the Surgeon General's Office, the development of young surgeons for service with the American expeditionary forces in France has more than met expectations. Those that have shown special fitness are working not in isolated cases, but are operating in teams of eight, these teams being formed into groups of fifty. These young men, some of them only a few years out of medical schools, now are performing the class of surgical work that ten months ago would have been trusted only to the older men of the profession. Endurance and vigor are the characteristics that place these men in a special class of usefulness for surgical work in the hospitals, and their success has met with high praise from their seniors in the medical corps.

\* \* \* \* \*

When the navy took over the handling of the army transports, it at the same time assumed the work of caring for the army sick and wounded being brought back from France. Inasmuch as the navy has nothing to do with the transportation of these invalids to the port of foreign embarkation, it receives them as they are sent and at once attempts to make them as comfortable as possible on board the returning transports.

At the end of every voyage, the invalids are interrogated by inspectors concerning their treatment on the transports, and every suggestion that will make conditions better for these men receives careful consideration. However, the conditions of cleanliness, good nursing, and rest on the transports compare so favorably with those on the railroad trains that take them to the ports of embarkation, that nothing but satisfaction is heard from the men.

The good work on board the transports is the result of the provision by the naval medical corps of the best facilities that could be placed on shipboard for caring for sick and wounded. The Surgeon General of the Navy foresaw the indispensability of having everything in readiness for the time when the number of wounded to be returned would be great, and the navy has been ready with every surgical need for their treatment and care.

At times it was thought that the navy was carrying a larger number of physicians and surgeons in its medical corps than was necessary, but they were under training, so that, when they are needed, they not only are available, but trained in the duties they are called upon to perform.

The transportation of the sick and wounded of the army was taken over by the navy after we entered the war. Returning transports, rather than special hospital ships, are used in the service, be-

cause, owing to past performances, it was believed that the Germans would be no less apt to attempt to sink hospital ships than transports. Besides, it saves the drain on the available ship tonnage that would occur in the setting aside of vessels for special service as hospital ship.

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Dr. Charles Edward Gibbs, Dr. Claude William Mitchell and Dr. Richard Baxter Norment, Jr., have been appointed assistant surgeons in the Public Health Service.

**Vaccination against Bacilli Dysenteriae.**—Peter K. Olitsky (*Journal of Experimental Medicine*, July, 1918) considers that an oily medium for the suspension of dysentery bacilli is a practical method of actively immunizing or vaccinating against this organism. The toxicity of this group of organisms is such that it is not wise to employ them in simple saline or aqueous solutions. The addition of immune serum and certain chemicals to diminish the toxicity of the bacilli cannot be recommended, but almond oil was found to be a very satisfactory passive agent, capable merely of suspending the bacteria without altering their properties; furthermore, the oily suspension fulfils all the requirements of a serviceable vaccine, as no local or systemic toxicity was caused by it; agglutinins were formed regularly which persisted, and protection was secured for at least one month after a single dose of vaccine. Two factors of importance must be considered in using a vegetable oil for this purpose: First, the rate of absorption, since when it is too slow less satisfactory results are obtained; and second, complete neutralization, as otherwise, severe local irritation occurs caused by the local deposition of soaps. The slow absorption of the dysentery bacilli from the oily suspension results in only a slight local and general reaction, the local reaction taking the form of a subcutaneous indurated area, corresponding to the unchanged oil and bacteria. This recedes in from one to three weeks, during which time no inconvenience is felt. Agglutinins usually appear after the seventh day and increase from that time to the third week, after which they persist for a month at least. Olitsky thinks that the introduction by Le Moignic and Pinoy of an oily medium for suspending killed bacteria marks a definite advance in the technic of bacterial vaccination.

**Röntgen Examination of Kidney Tumors.**—Paul Eisen (*Illinois Medical Journal*, July, 1918) states that the röntgenologist has at his disposal three ways of applying x rays in diagnosis of tumor of the kidney. The first is the direct examination by means of röntgenograms which may show the tumor outline, and foreign substances contained therein. The second is visualization of the renal pelvis by injections of substances giving opaque shadows, and noting changes in the configuration of the kidney pelvis. The third is the introduction of shadow producing substances into the gastrointestinal canal to bring out displacement by a renal tumor. The importance of stereoscopic röntgenograms must be emphasized.



# Editorial Notes and Comments

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## THE VOLUNTEER MEDICAL SERVICE CORPS.

The Council of National Defense has sent out many thousand blanks to physicians, both men and women, for the enrollment of the legally qualified physicians in the reorganized Volunteer Medical Service Corps. This application blank provides for a complete record of the age, qualifications, experience, and special training of the applicant, and with the information contained in the answers the governing board of the corps will be able to make assignments to duties which will insure the greatest measure of effectiveness with the least possible disarrangement of existing conditions. Every legally qualified doctor not now in the government service is invited and expected to join this corps. Through it, it is hoped to adjust medical service in such a way as to get the best possible results with the medical personnel of the country both in civil and in military life.

There are, in the United States, about 144,116 men who are qualified to practise medicine and about 5,000 women. Up to the first of this month,

about 40,000 of these were either in the government service or had offered their services. Up to July 12, the Surgeon General had recommended 26,733 doctors for commissions in the Medical Reserve Corps, while about 9,000 had applied and been rejected. Deducting those who had declined commissions, or who had been discharged for physical disability or other causes, the Medical Reserve Corps, on August 23d, numbered 23,531 officers, 22,232 of whom were on active duty. Adding the 1,194 officers of the Medical Corps of the National Guard and the 1,600 in the navy, this gives a total of 38,527 physicians who were either in the service or had applied for commissions, constituting 26.73 per cent. of the legally qualified physicians of the United States who had volunteered in the service of their country.

Commissions in the army, navy, and Public Health Service are being issued to doctors at the rate of 540 a week. There are now 28,674 medical officers in the three services, and it is estimated that 50,000 will eventually be necessary for an army of 5,000,000 men.

These figures show clearly the need for the systematic organization of the entire medical profession so as to make the best possible use of the personnel of the profession and to prevent the infliction of any unnecessary hardships on the civilian population. The withdrawal of so large a proportion of the active men of the profession from civil practice will necessarily lead to much inconvenience and even to occasional hardship. Unless some widespread and farseeing system is put into operation, some communities will be left without adequate medical service. This condition exists in many sections of England and France. Through the organization of the service into the Volunteer Medical Service Corps, it may be possible to so coordinate the work of the physicians still left in civil practice as to prevent the imposition of any real hardship upon any section of the people. The members of the profession should therefore give their hearty support to this movement.

## IMPORTANT STUDIES IN PIGMENT FORMATION.

Certain important studies by Bloch and his fellow workers are made the subject of discussion by Arthur Whitfield in the *British Journal of Dermatology and Syphilis*, January-March, 1918 [On Some Recent Researches on the Nature and Formation of Pigment]. These contain some

valuable discoveries in regard to skin pigmentation. The reagent used for the studies is 3,4-dioxyphenylalanin, called by Bloch, for convenience, "dopa." Sections of skin are placed for twenty-four hours at room temperature or at 37° C. in a one per cent. watery solution of dopa, after which they are washed and mounted.

Various elements of the cutis, such as sweat glands or sometimes nerve cells, are partly affected by the stain, but it is the epidermis which shows the more important effect. There is change in the basal layer especially and, varying with the depth, there is a continuous grayish brown to a deep black wavy band corresponding to the epidermis, or isolated patches more or less separated by lighter areas between. The nuclei of the involved cells are unaffected, only the rest of the protoplasm being stained. The staining appears in a diffuse form with which a granular form is often combined, or rarely the latter is seen alone. In human skin the reaction may be slight and is usually discontinuous, with varying intensity of reaction in different cells, even to no reaction in some cells. This reaction is strongest in the germinative layer, but extends upward in a varied measure. The nevus cells are the only ones in the cutis vera in which there is any reaction, no cells of mesodermal origin being affected.

The process which constitutes this reaction is the result of the oxidation of the dioxyphenylalanin as a related agent, the molecule being changed by oxidation and condensation into a dark melaninlike substance, dopa melanin. This is brought about by a ferment in the cells called dopa oxidase, whose presence in the skin Bloch succeeded in establishing. Dioxyphenylalanin was proved to be the only body found which could be acted upon by this ferment.

Bloch believes that the natural function of this oxidase is to form the normal pigment or melanin of the skin, and he finds that the reactions vary according to the difference in activity of pigment formation in the skin. The oxidase can be demonstrated in the pigmented area in brown and white variegated animals, but not in the albino portions. Moreover, in case of vitiligo where there is loss of pigment there is absence of dopa reaction.

Pigment can probably be explained chemically as the result of the action of the oxidase on some substance related to dioxyphenylalanin, and adrenalin is by its structural formula a pyrocatechin derivative, which is one of the substances entering into the composition of dopa. Hence a

close relationship exists structurally between pigment and adrenalin. The hyperpigmentation of the skin after destruction or disease of the suprarenals finds an explanation related to these facts. There is probably an increased supply of the substance which is the source of pigment. The skin serves a regulatory function in regard to the substance out of which both pigment and adrenalin are produced, appropriating that which the suprarenal is no longer able to utilize.

Whitfield records in this connection a case which might seem to confound Bloch's conclusions, since in this instance there was a typical leucoderma, with exaggerated surrounding melanoderma, and autopsy revealed a tuberculous destruction of the suprarenals. He suggests, however, that there might have been a coincidence of an ordinary leucoderma along with Addison's disease, the latter accounting then for the increased melanoderma on the portions unaffected by the leucoderma.

#### THE ESTABLISHMENT OF A BUREAU OF VENEREAL DISEASE.

New York State has definitely stepped up to the front in the matter of venereal disease. The legislature of 1918 has passed an amendment to the public health law giving power to local boards of health to exercise control in this very important province. A new article, Article 17-B, is inserted into Chapter 49 of the laws of 1909, a public health law. This new article provides for the examination of suspected persons by a public health officer or other licensed physician, this examination being, however, restrainable by a magistrate at his discretion. Examination shall be made of persons convicted of vagrancy under provisions already on the statute book or of frequenting disorderly houses or houses of prostitution, before such persons are released by court or magistrate. Treatment of those found infected with or suffering from venereal disease is also to be required and regulated, with free treatment provided for indigent persons.

Only licensed physicians shall be allowed to prescribe for or to treat such persons, and prescriptions shall be carefully guarded. Provision is also made that all reports and information shall be confidential as far as the carrying out of the provisions of the article will permit. Violation of any of these provisions or of any rule or regulation made under them is to be accounted a misdemeanor, while special protection is extended to the naval and military service by mak-



ing it a felony for any person aware of a venereal infection to have sexual intercourse with any person in either of these two branches of service.

A Bureau of Venereal Diseases has already been established in the New York State Department of Health in accordance with this new law. Its purpose is to assist in carrying the act at once into force in the most practical and far reaching manner. Its efforts will be chiefly educational, the arousing of public interest in the prevalence of the disease, its communicable nature, its far reaching effects upon individuals and the community, and to train the public in methods for the control and suppression of these diseases. These efforts will be directed to the public through organization work or public addresses. Mothers' Clubs, Y. W. C. A., and other women's organizations may be reached through a public health nurse, who is one of the members of the bureau. Literature will be provided and distributed and other means will be used as may seem desirable.

The bureau also contains an organizer and inspector of clinics and dispensaries, for an important step will be to provide clinics and dispensaries for the treatment of indigent persons. This must include the furnishing of arsphenamine (salvarsan) for the treatment of such cases, and on the production of this substance the State laboratory is now experimenting. A small appropriation will soon become available for this purpose.

The definiteness of program and vigor of campaign take their place among the most important of war measures, while at the same time they strike directly at one of the most crying needs of the civil population. The campaign will later extend itself to the dividing of the state into sections, where each section will be made a unit for carrying on the work.

#### MONTREAL AND INFANT MORTALITY.

The number of deaths among infants in a large city like Montreal is a disgrace to modern preventive medicine. Either that city needs cleaning up or else it is lacking in determined and intelligent direction of effort. That it easily leads all other North American cities in the annual death rate among infants is not a matter for pride. That it has been doing so is notorious. Surely the medical profession of that city should search out the cause and remove it. Fifty thousand children have died in the past thirteen years without attaining the first anniversary of their

birth; and thirty-five hundred infants died in one recent year. It is a glaring fact also that this depletion of the infant life of that city is continuous from year to year, although some slight improvement has been evidenced in recent years, which may be presented as follows: From January 1st to July 13th in each of the years 1914 to 1918, the totals have been 2,352 deaths; 2,425; 1,883; 2,231; 1,820.

Comparisons may be according to Shakespeare odorous, or as commonly put, odious—which is Smollett—but when put forward they are generally meant to be for betterment somewhere, and that betterment is sorely needed in Montreal. Some time ago Toronto established health centres, and an active, well directed campaign was instituted. The result is that Toronto's infant mortality is about one half that of her big sister in the east. Where Toronto spends seventy cents per capita in modern preventive medicine, Montreal spends thirty cents. Given Montreal a double financial, or even a treble, arm, the results would be correspondingly satisfying.

Recently a municipal expert was investigating the conduct of affairs in the city of Montreal. He found out that Montreal had a so called Board of Health that scarcely ever met, and recommended that it be abolished, and that a new one composed of prominent citizens interested in public health should take its place. When the new board is in active working order, and more money is forthcoming, then Montreal may expect to free itself from this lamentable stigma which now clings to its skirts. To the community belongs the blame and the disgrace!

Statistics have been published by the Immigration Department at Ottawa, which show the infant mortality rate in the largest centres in Canada, and which, incidentally, show that Ottawa cannot be too self congratulatory in this respect. Vancouver had sixty-one deaths per 1,000 of births in 1917; Calgary, seventy-seven; Toronto, eighty; Edmonton, ninety-nine; Winnipeg, 108; St. John, N. B., 118; Montreal, 185; Ottawa, 222. Inquiry of the Records Branch, Department of Health, Toronto, elicits the information that in Toronto in 1917 there were 12,110 births, and that the mortality under one year was 1,112 cases, which would give a rate about ninety-two per thousand births. Perhaps Doctor Bryce, of the Immigration Department, Ottawa, should look more carefully into his statistics.

As there never was a time when the conservation of human life should be so emphasized, especially in all English speaking communities, it

most assuredly behooves the medical profession as a body to be active in spirit and active in doing. It is to the man and woman of action that the cry of the youngsters should appeal. See what action has done for Toronto: Up to 1913 infant deaths had been increasing year by year. In that year they reached 421 for every 100,000 of the population. The Health Department became very active. In 1914 there were 331 deaths; in 1915, 300; in 1916, 293; in 1917, 235.

#### MALIGNANT GROWTHS OF THE SKIN.

The history of cutaneous sarcomata is of recent date, the first case report having been published by Kobner in 1869. This was followed by the epoch making papers of Vidal, Perrin, Hallopeau, and Kaposi. But, with all that has been written on this subject, the question is still very obscure.

Cases of sarcoma are far from being comparable with each other, their structure and clinical picture presenting marked differences. In one group the evolution and generalization of the process are sufficiently fixed so that they can be compared to a definite disease. On the other hand, there is a second group comprising neoplastic forms having little similarity either in their evolution or development.

In sarcomata assuming the form of a disease may be placed the generalized pigmentary sarcomatosis of Kaposi and the multiple hypodermic sarcomatosis of Perrin. Pigmentary sarcomatosis begins on the limbs, at first in the form of a hard edema accompanied by "wine spots." Then gradually these infiltrated areas assume a dark color and coincidentally slowly growing nodules appear. In a short time the sarcomatosis has become generalized, no viscus escaping its ravages.

The type described by Perrin is quite different. In this variety the process begins at any point of the body surface excepting the extremities. The onset may be either slow or rapid. At first only a few nodules are found, but soon they multiply in the areas involved. The hands and feet are always exempt from the process.

In the case of sarcomata developing as a cutaneous growth a distinction should be made between the melanotic and the nonmelanotic sarcoma. The first are characterized by their pigment content, melanin, a pigment quite different from that present in Kaposi's pigmentary sarcoma. Melanin is found normally in the iris, choroid, in certain parts of the meninges, in the

basal membrane of Malpighi's bodies, and in certain small congenital neoplasms. Therefore, this type of sarcoma frequently arises in the above named structures, particularly in pigmented nevi.

At the outset a melanotic sarcoma is usually single and very small in size, gradually increasing to the volume of a small orange. It is oval or spherical in shape. It is frankly black in hue. It may remain stationary for a certain lapse of time, but its generalization is not long in making itself manifest. These growths are malignant in the highest degree, their recurrence after removal is practically a certainty, and the patient is doomed to an early death.

The nonmelanotic sarcoma of cutaneous origin occurs in the form of a primary nongeneralized unpigmented sarcoma and in the form of a secondary sarcoma. The latter form is merely a cutaneous metastasis of a sarcomatous growth in some viscus, so that only a few words are necessary regarding sarcomatous transformation of primarily nonmalignant cutaneous neoplasms.

Now, since nonmalignant and malignant growths are connected by near relationship, it is evident that nonmalignant tumors of the skin very frequently undergo malignant transformation. In point of fact this has been clinically known for a long time and pathologically has been but imperfectly explained. Renoul, for example, has published the account of 120 cases of papillomatous growths on the skin out of which thirty-four showed epithelial degeneration, while the same condition has been met with by Raprock in 182 cases of facial or labial cancer.

Pigmented nevi easily transform into pigmented cancers; they have been shown to be an epitheliomatous transformation by Renoul and pigmentive connective tissue neoplasms by Trasbot, Perrin, and others.

The neoplasms termed hydradenomata by Darrier and Jacquet have been shown to be an epithelial transformation, and similar data have been published by Balzer and Ménétrier in regard to cutaneous adenomata, while Malherbe has even maintained that a chancroid is always derived by transformation from a sebaceous adenoma.

From all that has been written on the subject of malignant cutaneous growths, it may be said that the nonmalignant skin growths tend to epithelial transformation, while connective tissue transformation is far less common, although a number of authentic cases have been recorded in recent years.



## News Items.

**Medical Society of Woman's Hospital, Philadelphia.**—The following have been elected as officers of this society: President, Dr. Anna H. Thomas; treasurer, Dr. Mary Gilbert-Knowles; secretary, Dr. Mary R. H. Lewis.

**General Gorgas in France.**—Announcement was made from Washington on September 9th that the Secretary of War, accompanied by Major General W. S. Gorgas, Surgeon General of the United States Army, arrived in France on a tour connected with the work of the War Department.

**Navy Medical Corps Examinations.**—Examinations for permanent appointment in the Navy Medical Corps will be held on October 30th and 31st. The examinations will be held at the naval hospital at Washington and at such places as the candidates are at present on duty. The candidates must be physicians who are now members of the Naval Reserve Forces or temporary medical officers of the U. S. Navy. No one will be permitted to take the examination whose application was not received on or before September 5th.

**U. S. General Hospital No. 16, Enlarged.**—This hospital at Azalea, in the mountains of North Carolina, near Asheville, was designed for the treatment of tuberculous sailors and soldiers; but since the climatic conditions have proved to be advantageous in gas cases, it has been decided to enlarge the scope of the institution to admit gassed soldiers. The hospital was opened on August 20th, with accommodations for 1,000 patients, and orders have been given to add twenty-two buildings, which will provide for an additional 500 patients. The cost to date is \$1,500,000.

**Leave of Absence for Medical Officers.**—Secretary of War Baker early in the summer sent a memorandum directly to the Surgeon General requesting that all medical officers, who have been engaged for six months continuously at their desks on department business, be required to take at least two weeks' leave of absence, such leaves to be enforced in a manner to give the least interference with the operations of the Medical Department. This order applies to all medical officers, and any officer who comes within the scope of the order may obtain his leave on application to the Surgeon General.

**Volunteers for Pennsylvania Hospital, Philadelphia.**—Daniel D. Test says that the institution has lost more than seventy-five per cent. of its medical and surgical staff in service overseas and that in all the other departments the employees have left to obtain situations with concerns turning out work for the government. Those serving in the hospital are doing a patriotic service since the hospital has offered its wards to the United States for disabled, wounded, or sick. At present two wards are filled with sailors from the immediate naval district. The superintendent calls on patriotic citizens to volunteer their services and relieve this serious situation.

**Special Registration Rules.**—The Committee on Public Information has supplied the following information from the office of the Provost Marshal General: Any person, within the designated age limits, who on account of sickness cannot register in person on Registration Day, must cause some person to apply to the local board for a copy of the card and for authority to fill it out. When made out the card will be mailed by the sick person, or delivered by his agent to the local board having jurisdiction of the area in which the sick person permanently resides. 2. Inmates of every penitentiary will be registered by the warden, but the reports will not be included by the Adjutant General in the consolidated state report; nor will the registration cards be consolidated with the records of the local boards, nor copies with the cards of the state; they will be kept in a separate file, i. e., felons will not be drafted into the army. 3. Persons awaiting trial, and those convicted merely of misdemeanors, are not to be regarded as felons; they will be treated as absentees, and their cards must be forwarded to the respective local boards of the areas within which they permanently reside. 4. Inmates of asylums will also be treated as absentees, and their registration cards must be forwarded to their respective local boards.

**Increased Pay for Officers.**—A bill has been introduced into the House of Representatives by Mr. Dyer providing for an increase in pay for officers of the army as follows: Colonel, \$4,500; lieutenant colonel, \$4,000; major, \$3,500; captain, \$2,900; first lieutenant, \$2,500, and second lieutenant, \$2,200.

**Philadelphia Doctor Awarded the Croix de Guerre.**—Lieutenant Wilfrid B. Fetterman, commanding health service unit No. 581, has been cited for gallantry in action and awarded the Croix de Guerre. He was educated in St. Joseph's College, Clougowes College, Ireland, and the University of Pennsylvania Medical School. The citation declares him distinguished for the rapid clearance of the wounded in the midst of difficult and dangerous surroundings.

**Sick and Wounded of the American Expeditionary Forces.**—Only thirty-seven sick and wounded soldiers were invalided home to the United States during the week ending September 4th. This compares favorably with 423 for the preceding week. Many convalescent American soldiers are being transferred from English hospitals to the American Red Cross Hospital at Paignton, on the South Devonshire coast. The hospital is the former country home of a wealthy American, has a capacity of 300 beds, and is in charge of American doctors and nurses.

**Death of Bacteriologist Noted for His Work in Leprosy.**—Moses Tran Clegg, formerly laboratory director in the Health Officers' Department, Port of New York, has just died at Honolulu, where he was superintendent of Queen's Hospital. Mr. Clegg was graduated from the University of Arkansas. In March, 1911, he joined the United States Hospital Corps, serving through the Philippine insurrection. He was assistant bacteriologist in the Bureau of Science, Philippine Civil Service, from 1902 to 1910. From 1910 to 1915 he was assistant director of the United States Leprosy Investigation Station at Hawaii, and he is accredited with the discovery of the leprosy germ in 1909, which achievement revolutionized the further research work in leprosy. Mr. Clegg was a member of the Far Eastern Society of Tropical Medicine, Philippine Island Medical Association, and Honolulu Medical Society.

**Health of the Troops.**—According to the War Department, the health conditions among troops in the United States, including Porto Rico, for the week ending August 30th, were as follows: Noneffective rate per 1,000: Divisional camps, 46.1; cantonments, 40.1; departmental and other troops, 29.5. Annual death rate per 1,000 (disease only): All troops, 3.35; divisional camps, 5.4; cantonments, 3.7; departmental and other troops, 2.5. The admission rate continues to show a decline, while the noneffective rate is slightly higher than last week. The death rate for disease continues low (3.35), though slightly higher than last week (2.96). Pneumonia continues as the cause of the majority of deaths occurring during the week. Pneumonia shows an increase in the number of new cases as compared with last week. Malarial admissions are remarkably few, considering the season of the year. Forty-two less cases of measles are reported over last week.

**Personal.**—Dr. Charles B. Penrose has been made the head of the Philadelphia Municipal Court's new department of diagnosis which has been formed from the court's various medical agencies. Associated with him are Dr. D. J. McCarthy, Dr. Charles S. Potts, Dr. S. W. D. Ludlum, Dr. John C. Da Costa, Jr., Dr. Thomas A. Shallow, and Dr. J. M. Baldy.

Colonel Herbert Alexander Bruce, Consulting Surgeon of the British Army in France, who was recently in the United States as a member of the special British medical mission, has been cited by Field Marshal Haig for bravery in the field.

Dr. Seth Lake Strong, who was graduated from the Harvard Medical School in 1913, has been appointed lecturer in surgery at the Royal Medical College at Bangkok, Siam, and will also act as surgeon to the Siravaj Hospital there.

Dr. Samuel T. Darling, a member of the International Health Board, has been appointed professor of hygiene and director of laboratories in the School of Medicine and Surgery, Sao Paulo, Brazil.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### VICIOUS CIRCLES IN RESPIRATORY DISORDERS AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

#### PULMONARY TUBERCULOSIS.

*(Continued from page 432.)*

An important part is played by nervous influences in the rapidity of progress of pulmonary tuberculosis. Poisoning of the nerve centres through absorption of toxic material from the involved tissues accounts for a variety of attendant disturbances, both physical and mental. The early loss of general muscular tonicity and strength is ascribed by Lawrason Brown, 1913, to toxic action on the nervous system. Sweats in early tuberculosis are attributed in general to intoxication of the sweat, heat, and vasomotor centres by the tuberculous poison, though later the sweat glands, it is stated, may themselves be directly excited. Toxic changes in the nervous control of the heart are responsible, in part, for the marked instability of the pulse and tendency to tachycardia in this disease; disturbances of the alimentary tract may at times arise upon a nervous basis. Excessive irritability of peripheral neurons may be manifested in exaggeration of certain reflexes, and tremor may occur. Neurasthenic manifestations, unusually common in tuberculosis and at times so pronounced as to distract attention from the earlier local changes, are thought due to intoxication of the higher centres. The psychic disturbances vary in their nature and degree. While unwarranted hopes of recovery are frequent in the minds of advanced cases, many patients develop a nervous pessimism or melancholia which, occurring sometimes relatively early, is of greater practical significance in its harmful influence than is the opposite condition—*spes phthisica*,—where present as a helpful factor in cases already far advanced.

In all of the above nervous disturbances there lurks the possibility, if not the probability, of a vicious circle. Reduction of muscular tone, excessive sweating, tachycardia, disordered digestion, and nervous depression—each of these, if sufficiently marked, will tend to disturb and weaken one or more functions upon the maintenance of which at a normal level the maximum defensive effort against the invading infection must depend. Where, as a result of such functional impairment, the defensive process does suffer, progress of the disease is likely to be more rapid, with extension of tissue involvement, increased liberation of toxic material, and consequently, enhanced toxic effects upon nerve centres, thus completing the vicious circle. A pessimistic mental attitude, where present, seems to exert a particularly harmful influence by precluding a firm determination to recover on the part of the patient. The marked significance, from the prognostic standpoint, of a proper psychic

state in this disease has been widely commented upon and is indirectly confirmed by the striking benefit often noted from new therapeutic measures, independently of their actual organic value as shown by subsequent events. To whatever extent mental depression is here the result of toxic effects on nervous tissue, by so much will its harmful influence be likely to operate in the form of a vicious circle, mental depression weakening resistance to the disease, and this in turn, resulting in increased toxic action on the centres. The mental condition, according to Lawrason Brown, directly affects the weight in tuberculous cases.

Interruption of the vicious circles just alluded to, however manifested, is most directly accomplished through reduction, or at least prevention of increase, of the amount of tuberculous poison exerting its harmful effects upon the nerve centres. Such a result is obtained more or less successfully by persistent application of the general hygienic dietetic treatment of tuberculosis. In addition, however, it will doubtless often be worth while to attack other segments of the circles by, e. g., the prevention of exhaustion from excessive sweating, in so far as possible; preservation of the patient from influences which augment further an already increased heart rate, and appropriate treatment of disturbances of the alimentary tract. States of mental depression may improve along with a reduction of toxic absorption, but in any case, cheerful surroundings, encouragement by the physician and attendants, and a careful explanation of the aim of each measure in the treatment, with stress on the hopeful outlook afforded by careful observance of hygienic rules, should prove helpful in overcoming pessimism and its prejudicial effects on the course of the disease. An important prophylactic precaution consists in careful avoidance of nervous excitement and undue exercise, which increase the absorption of tuberculous poison from the disease foci.

Probably the most important of all the vicious circles that may aggravate pulmonary tuberculosis are those involving the alimentary tract, for proper cell nutrition has admittedly a preeminent influence on recovery, and conversely, interference with digestion and assimilation reacts most unfavorably and rapidly on the morbid condition. According to Hays, a vicious circle may be initiated through the direct effects of the tuberculous poison upon the alimentary canal, a deficiency in the digestive ferments being produced, with loss of appetite and consequent prevention of repair of the waste of the body, this, in turn, favoring extension of the disease and increased liberation of tuberculous poison, which completes the circle. E. E. Watson, 1918, explains the hyperacidity, hypermotility, and spastic constipation frequently met with in early tuberculosis as being due to increased vagus tone through irritation of the vagus nerve endings in the diseased lung parenchyma. In advanced cases, on the other



hand, toxemia may centrally excite the sympathetic system and cause decreased motility and secretion, with resulting symptoms such as coated tongue, hyp acidity, poor appetite, and atonic constipation. Again, as Watson sees it, lessened depth of inspiration and diaphragmatic excursion in advanced cases may cause retardation of blood flow through the abdominal organs; combined with the usually weakened heart action, this results in actual passive congestion, impaired secretory functions, and accelerated malnutrition and emaciation. A general visceroptosis from malnutrition of the abdominal muscles, loss of panniculus, and cough may here complicate matters. Lessened tone of the musculature at the cardiac orifice has been thought to account for the ease with which food in the stomach is vomited during cough in pulmonary tuberculosis; malnutrition through insufficient retention of food because of emetic cough may appreciably reduce the general capacity of resistance and hasten the progress of the disease.

In each of the above mentioned disturbances the elements necessary for the formation of a vicious circle are plainly evident. The opportunities offered the practitioner to impede the progress of the disease and strengthen the patient's resisting power for the final decision against it are correspondingly numerous. In those vicious circles in which the tuberculous poison forms part of the circle, hygienic dietetic treatment will tend to arrest aggravation of the circle. Deficiency in the digestive ferments may be artificially compensated. For hyperacidity and hypermotility, Watson reports gratifying results from alkalies, atropine in doses of 1/200 to 1/100 grain one half hour before meals, and the usual diet. The subsequent hypomotility and reduced secretion he treats with nux vomica and a bitter tonic before meals, and hydrochloric acid and pepsin after meals. Intraabdominal circulatory stasis and heart weakness may be favorably affected by digitalis and the effects of visceroptosis by mechanical support. Emetic cough forming part of a vicious circle is best treated by a rest in bed, hot water half an hour before meals, limitation of fluids at meals, quiet after meals, and if indicated anesthetizing applications to the pharynx. To be carefully avoided, because they may sooner or later aggravate one or more vicious circles, are excessive forced feeding and the overuse of laxatives.

(To be continued.)

**Transfusion with Preserved Red Cells.**—Oswald H. Robertson (*British Medical Journal*, June 22, 1918) uses the method of preserving human red cells which was described by Rous and Turner. The blood is obtained only from donors of Group IV and is drawn directly into a mixture of a five and four tenths per cent. solution of glucose with three and eight tenths per cent. solution of sodium citrate. These solutions are used in the proportions of 500 mls of the isodextrose and 350 mls of the isocitrate for each 500 mls of blood. After the blood is drawn it is mixed with the solutions, stored in the icebox and allowed to settle. By the end of about four days the red cells will have settled to

about 800 to 900 mls and this portion can be used after siphoning off the supernatant fluid. Smaller amounts of blood may also be drawn and kept in readiness. In every case when a transfusion of the red cells is to be made the desired volume is taken and made up to a total bulk of one litre with a two and five tenths per cent. solution of gelatin in normal saline. The transfusion, as well as the collection of the blood can be carried out easily by one physician with the aid of an attendant. The blood cells thus obtained can be preserved and used up to about thirty days after their collection. They can be transported readily and blood thus becomes available for use in emergencies near the front. Blood collected and preserved in the manner described was used by the author for twenty-two transfusions in twenty patients. The blood varied in age up to twenty-six days, and the age did not seem to have any influence on the results obtained. The patients selected for its trial were such as would have died without transfusion, yet such as offered some hope of recovery if it were done. Of the twenty men transfused eleven were discharged to the base in good condition and nine, or forty-five per cent. died. All of the patients who died, however, showed the immediate stimulating effects of the transfusion. The effects of giving this preserved blood were quite as marked as those seen in direct transfusion and the method offered many advantages over the direct. Thus it was possible to prepare for emergencies by having a supply of the preserved blood on hand, the blood could be transported, the transfusion became a simple injection which one man could make, operating theatre room was economized as the transfusion could be given at the bedside, and finally the time saved was of very great value, especially under rush conditions.

**Gunshot Wounds of the Knee Joint.**—Richard Charles (*British Medical Journal*, June 29, 1918) urges the desirability of operating upon every wounded knee that needs it at once and before transferring the patient to the base, especially since the results are so much better when the operation can be performed within twenty-four hours of the wound. The present conservatism depends upon improved technic. In every case before operation an accurate radiographic study of the location of the missile and the extent and nature of the damage to the joint should be made. For the operation the field should be made perfectly bloodless by an Esmarch bandage and the skin all about the joint should be well washed, shaved, cleaned with alcohol and painted with a five per cent. alcoholic solution of picric acid. The wounds should then be packed lightly with gauze to prevent leakage of fluid on to the skin. Attention must be given to every detail which contributes to the excision of the damaged tissues without contamination of the fresh tissues. It is usually possible to excise the entire wound track down to the joint capsule without having the glove or instruments touch the infected wound surface. But should such happen the soiled instrument or glove is to be discarded at once. The skin wound is first isolated by an elliptical incision and then undermined close to the wound track. Then

the incision is carried down into the joint cavity on one side to give a view of the deep end of the track. Finally the entire wound track is excised according to these landmarks. This part of the operation requires the most patient dissection under severely aseptic conditions. Next all used instruments and gloves are replaced by fresh ones, the original opening is enlarged, and the condition of the joint is investigated. If the missile is loose in the joint cavity it is removed, the cavity irrigated and if there is no injury the joint is closed in layers for primary healing. If the missile is impacted in bone the incision may have to be enlarged even by division of the ligamentum patellae to give free access. The site of the missile is isolated with moist saline gauze and the missile is removed by clean excision of the bone containing it. At times the original opening is closed and one made on the opposite side to reach the foreign body, which is removed by excision. Grooved bone injuries are treated by complete excision. In deep bone injuries in the centre of the joint, excision is sometimes not possible but the application of the Carrel treatment will often save the joint, or the wound can be curetted and the joint closed after free irrigation. In some cases of comminution the patella may have to be excised, which should be done in one piece with the primary excision. Small injuries to the patella should be removed *en masse* with a metacarpal saw. The irrigation fluid for the joint should be normal saline. In clean cases fat can profitably be transplanted into holes in the articular surfaces. In closing the joint the most important step is the complete closure of the synovial membrane without tension, which may require the loosening of its lateral reflection, or the use of the suprapatellar pouch. The remainder of the wound is then sutured in layers and the leg is put up in a Thomas splint.

**Treatment of Empyema at Camp Lee.**—The Empyema Commission, headed by Major Edward K. Dunham (*Journal A. M. A.*, August 3, 1918), has investigated 140 cases of empyema due to hemolytic streptococcal infection and has found the following general plan of treatment to be the most rational and to give the best results, both with reference to life and to restoration of lung function. During the acute stage of the illness the patient should be confined to bed and treated and nursed carefully with the object of maintaining his strength and enabling him to combat the infection. The chest should not be opened at this stage because of the poor general condition and the danger of causing septicemia. If necessary the chest may be aspirated through a needle from time to time to relieve mechanical embarrassment. When the fluid has changed from a serofibrinous one to frank pus and the patient's general condition has improved, as shown by drop in temperature and respiration and disappearance of cyanosis and air hunger, operation may be undertaken. In a few cases it will not be necessary because of the total disappearance of the fluid after one or more aspirations. The operation should be done under local anesthesia by infiltration or blocking or both. The site of the incision should be chosen with reference to drainage in both the recumbent and sitting positions. The incision

must be long enough to give good access to the underlying structures, which are divided as exposed, the pleura usually being incised in an intercostal space. A double drainage tube of large calibre may be used, permitting both drainage and irrigation through the insertion of Carrel tubes, or a single tube may be inserted and connected with a series of water bottles and a reservoir for Dakin's solution to permit of continuous suction and the instillation of Dakin's solution. The cavity should be irrigated with Dakin's solution every day until the washings return clear, and the tubes and dressings should be changed daily, the strictest asepsis being observed. After the cavity has become sterile and the discharge has almost disappeared its diminution in size usually goes forward with remarkable rapidity and it is seldom necessary to perform secondary operations for its obliteration. This is especially the case when the interval has not been too long between the operation and the beginning of the use of Dakin's solution.

**Oil of Chenopodium in Amebic Dysentery.**—Milford Edwin Barnes and Edwin Charles Cort (*Journal A. M. A.*, August 3, 1918) record a number of cases of amebic dysentery, or of carriers of cysts, which were treated with oil of chenopodium as the result of a casual observation that the oil had promptly relieved dysentery when given for hookworm disease. In most of the cases in which it was tried there was very rapid relief of the clinical symptoms, the cases having been subacute or chronic. The drug was proved to be a powerful amebicide when given either by mouth or per rectum, as shown by the prompt disappearance of the amœbe from the stools. The tendency to relapse was not greater in the series studied than under the use of emetine. Oil of chenopodium would seem to be of distinct value for dysentery, since it can be given with safety when combined in a single dose with castor oil. Emetine has been shown to be somewhat dangerous in doses sufficient to cure amebic dysentery and has also not proved entirely satisfactory as a specific in any of its forms. The oil of chenopodium should be given in doses of one to two mls in forty-five mls of castor oil, in one dose, or it can be given by rectum in an emulsion with acacia. In the latter case the enema should be given slowly with the buttocks raised; should be retained for at least an hour, and the anal mucosa and skin should be protected from irritation by liberal application of petrolatum.

**Abuse of Drainage Tubes.**—Frank Hathaway (*British Medical Journal*, June 29, 1918) urges surgeons to take courage and give up the use of drainage tubes, practising primary suture and thus preventing the dangers of secondary infection. In wounds of the extremities he practises complete primary excision followed by suture. Where bone is involved he cleans out part of the medullary cavity and fills the dead space with a mixture of thymol, petrolatum and candle wax, closing the wound by suture. He even has gone so far as to close the incision in cases of perforated gastric ulcer, pus tubes, gonococcal peritonitis, and empyema after treatment and mechanical cleansing of the peritoneum or pleura. His results have been excellent.



**Sterilization of Local Anesthetics.**—M. Macnaughton-Jones (*Lancet*, June 29, 1918) advocates the preparation of any of the local anesthetics in the form of very concentrated solutions along with sodium chloride, which in the high concentrations employed not only preserves sterility, but also renders contaminated solutions sterile in a few days. The solutions should be made of such strength that they will require dilution forty times with sterile, distilled water for use. These concentrated solutions should be kept in sealed glass tubes. Since the reduction of the osmotic pressure of the solution to a point equal to that of a four tenths per cent. solution of salt materially enhances the anesthetic property of any solution, the most desirable solutions to be used are such as will have this osmotic pressure. The amount of drug to be used along with the salt can be determined by its molecular weight. Thus the molecular weight of procaine is four and six tenths times that of sodium chloride, and therefore one part of sodium chloride is equal in osmotic pressure to four and six tenths parts of procaine. The simplest method of preparing the concentrated solutions is to use the quantities of the anesthetic, salt, epinephrin, etc., which are desired, per 1000 parts of solution and to make them up to twenty-five parts. Two most serviceable formulas for concentrated solutions follow, each requiring dilution with forty parts of distilled water for use:

I.	
Procaine, .....	3.25;
Sodium chloride, .....	8.25;
Epinephrin hydrochloride (1-1000), .....	8.00;
Water to make, .....	25.00.
II.	
Cocaine hydrochloride, .....	2.0;
Sodium chloride (approximate), .....	3.75;
Epinephrin hydrochloride (1-1000), .....	6.0;
Water to make, .....	25.0.

**Achylia Gastrica.**—J. L. Mortimer (*Colorado Medical*, May, 1918) says that dietetic management is the foremost factor in the treatment of this condition and that this must be strictly individualized, according to the predominating symptoms. Since meat is generally poorly tolerated it should be served minced or hashed, if at all, and should be of the white variety by preference, including fish. Such vegetables as potatoes, spinach, carrots, string beans and asparagus should be given in the form of purées. Excepting butter and cream, the fats are poorly tolerated and should be reduced to the minimum. The flow of the gastric juices may be stimulated by the use of bouillon, meat broths and carbonated waters. All milk taken should be boiled, and cocoa, malted milk, rice, tapioca, eggs, buttermilk, toast, zwieback, and reheated stale bread may be allowed. Medicinal treatment is of less importance, but the effort should be made to substitute some of the hydrochloric acid and pepsin by administration of these two agents. The bitters are useful at times. Gentle lavage with normal salt solution, or salicylic acid or resorcin in 1:1,000 solution should be practised about three times weekly, where there is gastric fermentation and accumulation of mucus. Gentle abdominal and general massage, abdominal faradization and the Priessnitz or hot abdominal compress, or alternating hot and cold abdominal douches may be of value.

**Treatment of Empyema.**—S. M. Rinehart and Anton W. Oelgoetz (*Journal A. M. A.*, July 27, 1918) say that, like pus anywhere, empyema requires drainage. The practice of thoracotomy or costectomy is the common one, but except in some very virulent cases requiring rapid drainage it does not seem necessary or desirable to resort to either if other means are available. The disadvantages of both operations are the formation of dense adhesions which interfere with lung expansion; prolonged convalescence; chest deformity; etc. To provide drainage and aid the control of the infection the authors have tried the plan of immediate aspiration of the chest through a large needle with the injection of two per cent. formaldehyde in glycerin. The aspiration was done every other day so long as there were physical signs of fluid, and quite without reference to the presence or absence of constitutional symptoms. This treatment should be instituted when the diagnosis is made and should be continued until fluid no longer accumulates or until the very small amounts are sterile. The method has given most excellent results, avoids the disadvantages of the operative methods, and is followed by much more rapid recovery than either of the operative methods. The aspirations are done under ethyl chloride local anesthesia and can be repeated as often as necessary.

**Antimeningococcic Serum.**—G. W. McCoy, N. E. Wayson and Hugh B. Corbitt (*Journal A. M. A.*, July 27, 1918) point out that there has recently been much discussion of the therapeutic value of antimeningococcic serum and that the question of its potency is still under debate. In recent outbreaks of meningitis in England and continental Europe the use of serum of American manufacture was followed by conflicting reports as to its value. The failures and confusion seem to be due in part to the occurrence in the epidemics of strains resistant to the serum and in part to low potency of the serum. In an effort to render the various commercial serums more uniform the authors took up their standardization at the Hygienic Laboratory and it was required that all serum be polyvalent, that is that it represent all of the recognized strains of organisms. Since the grouping of meningococci is not definitely established representatives of each group in the broadest classification yet adopted were included. The methods of testing, hitherto employed, have differed widely, but in the interest of uniformity of product the agglutination and complement fixation tests were adopted. Each manufacturer was provided with the materials for the tests and was required to subject his preparations to the tests before sending them to the Hygienic Laboratory for final test and release for sale. In the examination at the Laboratory of 101 lots of serum twenty-five have failed to come up to the standards prescribed, nine of which were produced early in 1917 and six by an institution not licensed for interstate traffic. As a result of this work all serum now for sale is required to be polyvalent and to meet certain standards of potency. Much yet remains to be done, however, for different lots of serum from the same manufacturer may vary widely in potency.

**Delayed Primary Suture.**—W. Girling Ball (*Lancet*, June 29, 1918) says that the ideal method of treating a wound after cleansing and excision of damaged tissue is primary suture, but that there are conditions which render this method impossible and in such cases it is most desirable to practise the so called delayed primary suture. In order to bring the desirability of this method of treatment to the notice of surgeons the author presents his own results in a series of 100 consecutive cases. Among the 100 cases there were fifty-nine complete successes, twenty-six partial successes and fifteen failures. A partial success was recorded when there was any stitch suppuration or an opening of the wound without suppuration. An adequate primary excision of the wound is essential as a prerequisite of delayed primary suture. Those wounds, which on the removal of the packing have a dry or slightly moist surface and are free from pockets of pus or unexcised damaged tissues, are suitable for delayed primary suture. Suture should be carried out on the second to fourth day from the receipt of the wound. A dry, clean wound should be sutured without being touched, but a moist one should be washed out with an antiseptic. Old or fresh blood should also be washed from the wound before suture. Before removing the wound packing the skin must be scrupulously cleansed with ether and some antiseptic, preferably two per cent. picric acid in alcohol. All dead spaces must be obliterated, for which deep sutures of catgut or thread may be used if required. Fascia or the muscle sheath should be sutured over muscle if possible. Where there are fractures as many tissues as possible should be drawn together over the break. The skin should be sewed with silk worm gut. Every wound should be completely immobilized by splinting, plaster, extension, or other suitable means. The skin sutures generally should be removed on the eighth day, but may have to be left longer. The method has many advantages among which are: The greatly increased rapidity of healing, the average time having been less than ten days; the shortening of the period of healing even in the cases which are only partially successful; the avoidance of large and deep deforming scars; the immediate covering in of exposed vessels; the conversion of compound into simple fractures; and the avoidance of many painful dressings. The criteria for the selection of wounds suitable for delayed primary suture should be the clinical appearance of the wound, not its bacteriological cleanliness.

**Bronchopulmonary Spirochetosis.**—H. Violle (*Bulletin de l'Académie de médecine*, June 4, 1918) from a naval hospital at Toulon, France, reports thirty cases of this affection, originally described by Castellani in India over ten years ago. The most striking feature of the disease, which is due to the *Spirochaeta bronchialis*, was the constant reddish coloration of the sputum, due to blood, and causing the fluid to resemble currant juice. This peculiarity is in itself pathognomonic, and occurred in every case of the author's series. Half the cases had been diagnosed as tuberculous, but tubercle bacilli were never found, while smears stained with silver nitrate by the method of Fontana, as modified by Tribon-

deau, showed innumerable spirochetes of varied sizes and shapes, often with practically no other bacterial accompaniment. These spirochetes do not occur in the nasal mucus, urine, nor blood. The Bordet-Wassermann reaction is negative. The affection begins insidiously, and the signs are those of ordinary bronchitis or at times of apical bronchitis or of basal congestion. Cough is frequent, raucous, and chiefly nocturnal. The general condition remains good and there is no fever, and but slight headache. The affection runs its course in an average period of one month, but relapses are frequent. It is mainly dangerous because it favors tuberculosis, pneumonia, and bronchopneumonia, the germs of which enter the lung tissue at the points of bleeding. This danger is transmitted to other individuals by the spirochete carriers. The disease seems to be very contagious, was probably brought to France by Asiatic contingents, and appears likely to become acclimated there, one fourth of the author's thirty cases occurring in Frenchmen. It is transmitted by spores.

**Spinal Anesthesia.**—Desplas and P. Millet (*Presse médicale*) state that experience in 550 cases since August, 1915, has only served to confirm their previous impression that spinal anesthesia is a rapid, efficient, and safe procedure. They use a ten per cent. stovaine solution in ampoules; inject at most 0.5 mil of the solution (0.6 mil where the anesthesia is repeated), introduce the needle between the second and third lumbar vertebrae, mix the solution with the spinal fluid in the syringe, inject slowly, and administer a preliminary injection of 0.01 gram of morphine. Some have held that spinal anesthesia entails greater immediate danger than general anesthesia, and may induce late complications involving the cauda equina. The authors, however, had no deaths from spinal anesthesia on the operating table, nor any serious aftereffects. Headache almost always yielded readily to pyramidon or aspirin, and bladder paresis, in the exceptional cases where it was present, to suprapubic hot compresses. In the severely wounded, the authors are convinced that spinal anesthesia gives better results and greater safety than general anesthesia. Chemical tests showed the stovaine already largely eliminated at the second hour after the injection, and completely in eight hours. Blood pressure estimations in forty cases showed a fall of pressure only in three, or 7.5 per cent. Of ten cases in which the pressure was studied every four hours for one day after the operation, none showed any pressure disturbance. In those gravely injured, shock already present ran its course without being influenced by the anesthesia. The reputation credited to spinal anesthesia of increasing shock is not justified.

**Should the Sphincter Muscles Be Divided?**—Rollin H. Barnes (*Interstate Medical Journal*, January, 1918) asserts that anatomical study of the ischioanal space has convinced him that it is not only unnecessary but even inadvisable to divide the sphincters in the surgical treatment of infection in that space. He maintains that an infection in any part of the ischioanal space can be satisfactorily drained by direct skin incision.



# Miscellany from Home and Foreign Journals

**The Influence of Menstruation on Acidosis in Diabetes Mellitus.**—George A. Harrop, Jr., and Herman Mosenthal (*Bulletin of Johns Hopkins Hospital*, July, 1918) report a case of diabetes mellitus in which menstruation seems to have exerted a marked effect on the condition of the patient. The case is especially interesting as the authors, in a search of the literature, were not able to find any references to the effect that menstruation may have on acidosis. The patient was a girl eighteen years old who entered the hospital on September 21, 1917, was discharged on November 11th, and died on November 27th. On admission she was suffering from a severe type of diabetes mellitus with a marked degree of acidosis. The urine could be made only temporarily sugar free by starvation; the acid substances in the urine were fairly high; the percentage of ammonia nitrogen of the total urinary nitrogen was above the normal and the carbon dioxide tension of the alveolar air was low, in spite of the fact that she was given large amounts of bicarbonate of soda. Although the patient was weak, she showed none of the subjective symptoms accompanying marked acidosis and impending diabetic coma. Every attempt was made to improve her condition, so that at the end of one month the acidosis was less, though it was impossible to increase her carbohydrate tolerance. On the 28th of October, at the beginning of the menstrual period, her condition changed completely. There were marked hyperpnea and twitching of the facial muscles; she was extremely drowsy, and very restless at times, and the carbon dioxide tension of the alveolar air was twenty mm. The following day the symptoms were the same. On the third day she began to improve and when menstruation had ceased all the symptoms had disappeared. She was given large doses of bicarbonate of soda by mouth, rectum, and intravenously, and was subjected to starvation treatment. During this time the tests showed no appreciable increase in the degree of acidosis, though there was a slight rise in the amount of acid substances and ammonia; the glycosuria and the quantity of nitrogen in the urine were both much increased. The patient left the hospital and at the next menstrual period the same sequence of events occurred. Deep coma came on at this time and the patient died. Harrop and Mosenthal sum up the case by saying that menstruation was accompanied by an increase in acidosis, the symptoms becoming more marked with each successive menstrual period, until fatal diabetic coma occurred. They suggest that possibly diabetic patients should be closely watched during the menstrual period.

**Nervous and Mental Symptoms in Exophthalmic Goitre.**—Lewellys F. Barker (*Journal A. M. A.*, August 3, 1918) makes the statement that nowhere is the intimate interrelationship between the endocrine glands and the nervous system better illustrated than in the symptomatology of exophthalmic goitre. Three of the four cardinal symptoms—tachycardia, exophthalmos, and tremor—are due to abnormal innervations. Many of the symp-

toms now viewed as nonneural may later be found to have some neural link. It is in the vegetative nervous system that the greatest deviations from normal are found and the greatest number of symptoms of nervous origin. Among those referable to the vegetative nervous system are: Von Graefe's sign, Dalrymple's sign, protrusion of the eyeballs, epiphora, dry eyes, Loewi's phenomenon, excess or lack of saliva; asthmatic attacks, dyspnea or tachypnea; tachycardia, pulsus irregularis respiratorius, vasomotor angina, palpitation, transitory changes in blood pressure, vasomotor skin symptoms; gastrosphasm and pylorospasm, hyperacidity, hypoacidity, spastic constipation, unmotivated diarrheas and vomiting; pollakiuria, polyuria, oliguria, menstrual and lactational disturbances, disturbances of sexual libido and potentia; and profuse sweating. These symptoms are referable to one or the other of the two divisions of the vegetative nervous system, the sympathetic or the autonomic, but it is remarkable that in a single patient there may be symptoms due to stimulation of both symptoms present simultaneously. On the other hand, certain of the symptoms enumerated are opposites and can never exist simultaneously. While the greatest number of nervous manifestations in this disease are referable to the vegetative nervous system, the peripheral cerebrospinal neurons may also be affected. Thus there may be toxic degenerative changes in both motor and sensory neurons, and palsies of the several cerebral nerves are not infrequent. Finally, the neuron systems of the brain and cord may be affected as manifested especially by various neurotic and psychotic symptoms. Of the conative, affective, and cognitive components of the instinctive mechanisms it is striking that in exophthalmic goitre the affective conative processes seem to be involved much more than the cognitive. The author leans to the belief that the nervous symptoms arise chiefly as a result of the indirect effects on the higher nervous apparatus of an intoxication of the vegetative nervous system.

**Sarcoma of the Uterus Arising from the Endometrium.**—Leo Brady (*Bulletin of Johns Hopkins Hospital*, July, 1918) reports the case of a woman who entered the hospital complaining of slight uterine bleeding and a small tumor in the left breast, the latter condition being the one for which she sought relief. Her history was negative. The menopause had occurred several years before, but for the last six months there had been a scant bloody discharge from the uterus. Frozen section of uterine curettings showed a typical round cell sarcoma, so that the uterus, tubes, and ovaries were removed. The case is interesting in that the sarcoma arose from the connective tissue of the endometrium rather than from a malignant degeneration of a fibroma, as is usual, and also because it emphasizes the importance of paying attention to any menstrual irregularity occurring in women of the cancer age. No matter how obvious the apparent cause it should be carefully examined into to make sure that there is no cancer.

**The Acetonemic Syndrome in Children.**—A. Rémoud and R. Poux (*Bulletin de l'Académie de médecine*, May 28, 1918) deem cyclic vomiting only a single, separate manifestation of the acidosis of children. The cases of acidosis in which it is absent are more numerous than those in which it is present. The underlying condition is an essential functional disturbance of the liver, small intestine, and pancreas. Passage of the fecal matter from the small to the large bowel suddenly stops. The stools consist merely of epithelial debris and mucus, are colorless and practically odorless, vary greatly in frequency and amount, and may later become blood stained or of the green color of spinach. At once or within five or six hours, acetone and diacetic acid begin to appear in the urine, and in a day or two the breath is found to have an acid or stale odor. The temperature may be markedly subnormal or febrile, and often exhibits a paradoxical curve. A few of the cases encountered manifested nervous symptoms suggesting meningitis. Others simulated beginning typhoid fever or cholera infantum, while still others were first seen in a condition bordering on coma. The treatment applied consisted regularly of subcutaneous injections of a total extract of fresh pancreas and of sodium bicarbonate in large doses. In one particularly grave case a one per cent. alkaline solution was administered intravenously. In the remainder, from twenty to sixty grams of bicarbonate a day were given by mouth as well as by continuous rectal installation. Temperature, nervous condition, stools, and urine returned to normal in a few days. Acetonemia through pancreatic insufficiency plays, as shown by cases previously wrongly diagnosed and treated unsuccessfully by other measures, a far more frequent rôle in children's diseases than has hitherto been thought. In all intestinal or nervous affections in children, an acetone diagnosis should be promptly made. The condition being recurrent, prophylactic measures should be instituted, such as elimination of cooked fatty articles from the diet, as well as of excess of meats, and the systematic ingestion of alkaline waters. The Vichy treatment seemed highly efficacious.

**Significance of Cardiac Murmurs.**—Claude Wilson (*British Medical Journal*, June 22, 1918) says that not very long ago practically all cardiac murmurs were regarded as evidences of serious trouble, but that, especially since the beginning of the war, murmurs have become rather generally suspected as to their significance. He discusses various physiological or functional murmurs, citing illustrative cases to show their want of serious significance. Even systolic murmurs of endocarditic origin may be of relatively slight significance when there has been little or no associated damage to the myocardium, but the determination of the true importance of such murmurs early in their development is not easy and prognosis must therefore be guarded at first. Their association with other murmurs, with pericarditis, myocarditis, and with vegetations naturally imparts a serious import to their discovery. The occurrence of auricular fibrillation along with such murmurs adds gravity to their significance. In all cases in which systolic murmurs

are found a careful general survey must be made and no heart is to be condemned upon a solitary sign. The point is emphasized that murmurs which occur during the period of ventricular diastole are always of graver significance than those occurring in systole, all being indicative of serious disease. Thus it may be stated as a generalization that systolic murmurs are often negligible while diastolic ones are seldom so, if ever. Mitral and tricuspid systolic murmurs are often physiological though due to an actual regurgitation of blood. The reason for their being of relatively little import, even when the regurgitation is considerable, lies in the immediate filling of the auricles from the overdistended veins through relaxation and dilatation, forward pressure in the veins, and aspiration by virtue of reduction in the intrathoracic pressure. A further reason, when the murmur is mitral, lies in the fact that the nutrition of the heart is unimpaired. Aortic systolic murmurs alone are of relatively slight importance because the slight narrowing of the orifice can be readily compensated by slight hypertrophy and because the stenosis does not interfere with cardiac nutrition. When the stenosis is more than slight the adhesion and thickening of the cusps leads to regurgitation. The grave import of diastolic murmurs such as those of mitral stenosis and aortic insufficiency is because of the fact that they are due to conditions which materially hamper the mechanical action of the heart and because they impair the circulation through the coronaries and hence interfere with the nutrition of the myocardium.

**Successive Transplantation of Thyroid Tissue into the Same Host.**—Cora Hesselberg and Leo Loeb (*Journal of Medical Research*, March, 1918) during the past four years have carried on a series of experiments in which a lobe of thyroid of one guineapig was transplanted into a subcutaneous pocket of another, and usually nine to eleven days after this first transplantation a second lobe from a third guineapig was transplanted subcutaneously into another part of the first guineapig. In some cases the second lobe of thyroid from the third guineapig was transplanted into a control guineapig, which had not previously received a first lobe of thyroid. The lymphocytic reaction in and around the homeotransplants of thyroid tissue seems to depend upon the condition of the host and the implanted tissue, while the factor of time has some effect on the reaction. The lymphocytic reaction is not prevented by such conditions as pregnancy, loss of weight, dying state, or a greater age of the animal. It may be modified by a change in either host or transplant, and the authors hope through successive homeotransplantations to determine the significance of these factors. The transplanted thyroid shows such variations from the normal structure of the thyroid as the development of solid strands from acini, connective tissue growth into and destruction of acini, and cells phagocytizing colloid. It was noticed that if fat tissue is transplanted with the thyroid the part of the transplanted acini adjoining the fat usually becomes necrotic. In discussing the conclusions deduced from their work the authors state that while there is some re-



semblance between the lymphocytic infiltration brought about by certain tumors and the homeo-transplanted thyroid tissue, yet the second homeo-transplant and the second transplantation of tumor are different in their reaction, since an acceleration of the lymphoid infiltration could not be definitely established in the case of the second homeo-transplantation of the thyroid. In some cases the lymphocytic reaction was stronger about the second than about the first transplant, so they believe it may be possible that immune homeotoxins play some part in the production of the lymphocytic reaction.

**Action of Adrenalin on Gastric Motility.**—Pron (*Presse médicale*, June 10, 1918) reports good results in dyspeptics with gastric atony by prescribing eight to ten drops of one in one thousand adrenalin solution one hour before each of the two main meals, lunch and dinner. The results consisted in a diminution or disappearance of post-prandial discomfort or sensation of weight, a diminution of splashing sounds, and cessation of pain.

**The Retina in Hemeralopia.**—Magitot (*Paris médical*, May 11, 1918) states that the power of adaptation of the eyes to a reduction of light depends closely upon the state of nutrition of the pigmented epithelium of the retina, which in turn nourishes the rods and cones. Hemeralopia is not due to a single cause, but to many. Sclerosis of the choroidal capillaries, e. g., may produce it by reducing nutrition of the pigmented epithelium, and toxic material in the blood, by poisoning the epithelium and arresting the secretion of visual purple. Lavron has reported that in a certain district of Russia eighty per cent. of all adult males are afflicted with night blindness, due to poor food and excessive physical labor. Hemeralopia may occur with or without ophthalmoscopically visible lesions of the retina. It is constant in retinitis punctata and in detachment of the retina. It is especially important in certain frequent syphilitic conditions, such as retinitis or chorioretinitis pigmentosa, which may be ascribed to parasitic thrombosis of the nutrient capillaries. Hemeralopia unaccompanied by visible lesions may be due to various causes. One variety is the so called essential hemeralopia, congenital and often inherited. In old men partial hemeralopia is due to retinal capillary sclerosis; premature senescence particularly in alcoholics, produces the same result. Powerful electric shocks cause hemeralopia by arresting the secretion of visual purple and quinine, either by direct toxic action or spasm of the capillaries. Certain nephritic and hepatic affections are also toxic causes of it. Among soldiers it is rather frequent. Some of these cases have had a relative hemeralopia in civil life, due to myopia and thinning of the choroid, the condition being then aggravated by hard trench life, a diet almost exclusively of meat, and attacks of enteritis. Chronic alcoholism has proven an important factor, acting in conjunction with fatigue and lack of sleep, generally in men between the ages of thirty-five and forty-five. Rest in bed, a milk diet, and diuretics, followed by a meatless diet, soon improve bona fide cases. Malingers can be detected by inquiry among their comrades in arms.

**Heat Stroke.**—Pierce McKenzie and E. R. Le Count (*Journal A. M. A.*, July 27, 1918) have investigated several of the problems of heat stroke and find that the condition is most common in the river valleys and the lowlands of the Mississippi and the eastern and southern coast states. Excessive humidity combined with high temperature are chiefly responsible both for insolation and simple heat stroke. Causes of less importance are heavy and tight clothing, and the consumption of too little water. From post mortem examination of the bodies of thirty-seven persons who died of heat stroke the following were found to be the common changes: Edema of brain, leptomeninges, or both; marked general passive hyperemia, especially of the brain and lungs; edema of the lungs; hyperplasia of the spleen; cloudy swelling of the liver, kidneys, and myocardium; and petechial hemorrhages in the mucous membranes and skin, with irregular and lessened yellow material in the suprarrenal cortex. The spinal fluid was clear and colorless in all the cases and usually increased in amount. Actual determination of the water content of sections from the brains of a number of the cases showed that in practically every instance this was appreciably above the normal. The prophylaxis and treatment of heat stroke should include a diet largely of carbohydrates, of low caloric value and low protein and fat content; the wearing of loose, light clothing, protection of the head from the sun; abstinence from alcohol; avoidance of extreme muscular exertion when the air is hot and humid; and especially the drinking of large amounts of water, up to three gallons daily for a man working in the hot sun. In treatment, in addition to the use of cardiac stimulants and the application of cold baths or ice packs, the rectal or intravenous administration of a solution of sodium chloride and sodium bicarbonate seems of value. Where coma has lasted for several days lumbar puncture is sometimes beneficial.

**Traumatic Neurosis.**—Walter F. Schaller (*Journal A. M. A.*, August 3, 1918) from a careful investigation of the literature of this subject, and a painstaking study of a series of civil cases, sufficiently long after the accident to determine the final outcome, concludes that traumatic neurosis is curable but that many factors influence the prognosis. Of the psychic factors, that of compensation is one of the most important and recovery is more rapid after the final settlement or following an early lump sum payment than under the periodic payment plan. Influences which also favor recovery include favorable environment for the patient, the absence of unfavorable suggestion; the absence of a fixed belief on the patient's part that he has been seriously and permanently injured or has received improper treatment; the absence of organic disfigurement or defect; the presence of a cheerful frame of mind; and the occurrence of predominantly neurasthenic, rather than hysterical symptoms. The nature of the original injury seems of little significance so far as recovery is concerned. These observations are of importance in guiding us in the handling of the cases of war traumatic neurosis and they should be borne in mind in treating military patients.

# Proceedings of National and Local Societies

## ASSOCIATION OF AMERICAN PHYSICIANS.

The President, Dr. F. H. WILLIAMS, of Boston, in the Chair.

*Thirty-third Annual Meeting, Held in Atlantic City, N. J., May 7 and 8, 1918.*

*(Continued from page 443.)*

**The Relation of War Wounds to Acute Endocarditis.**—Dr. H. T. KARSNER, of Cleveland, reported that the incidence of acute endocarditis following wounds of the war justified calling attention to its bearing on pathology, clinical medicine, and surgery. In France, during the early months the surgery was much as is seen in civil life and the great contamination of war wounds was not sufficiently considered. In eight months' experience Doctor Karsner said he performed autopsies on all deaths, eighty-eight in number, occurring in a military hospital. At first they were handicapped by lack of laboratory facilities, but later exact measurements were taken of the weight of organs. Fourteen of the eighty-eight showed lesions of acute endocarditis following septicemia and pyemia. The organisms responsible were mostly streptococci. Three showed staphylococcus aureus. In one case the perfringens was found in the blood stream at death. These infections followed multiple extensive wounds, not of any particular type, where an attempt was made to save the injured parts and where the wound was allowed to drain pus for weeks. In the effort to save the joint, extensive damage was done to the heart and kidneys. In the later months of the war, an effort was made to determine whether the age of the soldier and the length of his term of service had any influence on these conditions. It was found that if the man was less than twenty-seven years of age and had less than twenty-two months service, the kidney weight and the heart weight was normal. The principal factor was the length of service, prolonged service leading to a great increase in the weight of the heart.

Dr. W. W. FORD, of Baltimore, stated that in experimental work with the gas bacillus there was a failure of the organism to multiply in the blood stream but if one introduced a young culture into rabbits or guineapigs the animals died. Rapid multiplication of the organism was found at the site of inoculation. Smears of the blood of heart, liver, or kidneys showed a Gram positive, encapsulated organism, or the gas bacillus. No multiplication was found in the blood stream. The organism was anaerobic and multiplied at the site of inoculation.

**Trench Fever.**—Dr. EUGENE L. OPIE, of St. Louis, gave the result of his studies by himself and Doctor Strong, Doctor Swift, Doctor MacNeal, and Doctor Pappenheimer. From the beginning of the war, in 1914, and more in 1915, there had appeared outbreaks of an ill defined fever, observed first by Graham, and named trench fever. Studies on the infectivity of the disease were convincing, and it

was proved capable of transmission to human beings. The disease was characterized by sudden onset, inability to continue work, and paroxysms of fever. It was thought at first to be a modified form of typhoid in inoculated men. Pains in the limbs and skin spots occurred with the fever. The spleen became palpable and there were marked vascular disturbances. The disease might last for several weeks or months. Since it was thought that the disease was transmitted by lice, experiments were made by allowing lice which had bitten trench fever patients to bite healthy persons. The rôle of lice had been the subject of much discussion, and no steps had been taken by the British authorities to effect their extermination. Major Strong therefore obtained Red Cross funds for an investigation, and volunteers, from the American Expeditionary Force, offered themselves for experimental purposes. The volunteers were subjected to careful physical examination and charts were kept for a week preceding the experiment. Careful studies of the urine and feces were made, to exclude possibility of typhoid. Two problems were studied: First, infectivity of the blood, and second, transmission of the disease by lice. Of sixteen men inoculated with infected whole blood, fifteen developed trench fever. Of five inoculated with clear plasma, all contracted the disease. The corpuscles of the blood, then, did carry the infection. Inoculations of plasma, passed through a Berkefeldt filter, did not cause infection, i. e., filtered virus, did not produce the disease. The inoculation period was from five to twenty days. The disease was transmitted through three generations subsequent to the first inoculation. The second problem was to determine whether lice transmitted the disease. Of twenty-two volunteers, bitten by infected lice, fourteen developed the disease; eight volunteers, not bitten, did not develop the fever. Lice from trench fever patients were put upon the volunteers and kept there thirty days till the fever developed. After forty-eight hours lice were removed from half of the volunteers, and put on other volunteers, to exclude possibility of mechanical transmission, directly from patient to individual. It was proved that the virus carried the infection. The lice were put on the arm in a piece of old undershirt, so that eggs and larvae were reproduced normally, and these were strapped on and the men were allowed to scratch so that normal skin irritation was produced. The inoculation period after biting was nineteen to twenty-five days as compared with five to six days with the plasma infection. The conclusions from these experiments were that first, direct transmission was not essential; secondly, if lice carried the disease, measures should be taken to eradicate the lice, a not impracticable procedure. In connection with this paper, Dr. Thomas B. Fletcher, of Baltimore, told how he had had an opportunity of seeing cases of trench fever in an English base hospital. Distressing nocturnal pain was a symptom of the disease. Sir David Bruce had conducted some experiments in



the Hampstead hospital. He found that if lice that had bitten trench fever patients were allowed to bite volunteers, the results were negative as far as transmission of the disease was concerned. It was not stated how long the lice had fed on trench fever patients. In discussing these experiments it was asked if the patients had been allowed to scratch and it was found that they were prevented from scratching. Another series of experiments were then started. The arms of the volunteers were scarified. The lice were allowed to bite and the bodies of the lice were rubbed into the abraded surface. In seven days the volunteers developed trench fever.

Dr. E. L. OPIE, in conclusion, said that he had not tried scarification experiments. It seemed to add little to the knowledge obtained by injecting whole blood, but there was obviously possibility of introducing the virus directly through the skin. The incubation period of seven days corresponded to that when whole blood was injected into the circulation.

**Pneumonia in the Army Camps.**—Dr. RUFUS COLE, of New York, gave his experience in one army camp where Doctor MacCallum had charge of the pathological work. Pneumonia among soldiers was a most serious disease. Previous experience on the Mexican border had convinced the authorities of the seriousness of the condition. The past winter had shown alarming increase of pneumonia and a high incidence of measles. In studying types of pneumococci, many abnormal types were encountered. At Camp Wheeler and Bowie Doctor Zinsser and Doctor Dochez found that many cases were due to streptococci. Under the direction of Colonel Russell, a study was then made of all types of pneumonia. Two definite types were discovered. The first type occurred in the measles ward, where there were many cases of severe pulmonary infection. These were similar to cases seen by the pediatrician and not usually seen in adults. The patients were mentally alert and extremely anxious. There was intense respiratory disturbance and deep cyanosis. The physical signs differed greatly from lobar pneumonia, there being few signs of consolidation. In cases which came to autopsy Doctor MacCallum found small hemorrhagic spots on the lungs. The alveoli were congested and contained blood. The later lesions showed small punctate areas with opaque forms resembling miliary tubercles. Purulent exudate was found in the bronchioles. This pneumonia following measles was often mistaken for miliary tuberculosis. Streptococci were found in the sputum of these patients, and shortly before death in the blood stream. The second type of the disease, in the pneumonia wards, resembled the cases seen in civil life. These cases had pneumococcus infection and the mortality was lower. There was increased prevalence of empyema. Often there was double infection. At autopsy both streptococci and pneumococci were found. Three types were distinguished at autopsy: Acute pneumonia, of the ordinary type; bronchial interstitial pneumonia, due to streptococci, and interstitial bronchopneumonia. In other camps there had

been cases of streptococcic empyema without previous involvement. It was of the utmost importance to know if infection spread from one man to another, or if there was a common cause. It was known that puerperal infection, wound infection, and septic sore throat spread by direct transference. Epidemiological evidence showed that the latter infection followed the milk routes, but direct transmission could not be excluded. In the camp wards direct transmission evidently took place, as in fifty-five per cent. of throats streptococci were present. In the measles ward on admission eleven per cent. of patients showed streptococci in the throat; after ten days this rose to thirty-eight per cent.; in two weeks to sixty per cent. The question now arose as to whether this form of infection was spreading into civil life and whether the streptococci were becoming more virulent to man, so that more normal persons were becoming infected.

**The Serum Treatment of Lobar Pneumonia.**—Major C. N. B. CAMAC, M. R. C., presented this subject. A marked difference existed in the pulmonary involvement in measles and in lobar pneumonia. Four hundred cases of measles were studied in hospital No. 6. There were forty-three pulmonary complications with twelve deaths. One marked condition was a serositis, the lung appearing like a sponge dipped into blood. The term pneumonia could hardly be used for the pulmonary complication of measles. Colored troops were especially susceptible to this form. In serum treatment a desensitizing dose was first given. Six hours later fifty c. c. of serum were gradually given, by a holder, a syringe not being allowed. Only one case of anaphylaxis occurred. The clinical features of this treatment were: Marked variations in temperature; rapid recovery; absence of toxic symptoms. It was not found advisable to wait for the return of the type of infection, a polyvalent serum was used at once, and if type I were returned, type I serum was used later. The mortality was much higher in the streptococcus infection cases. It was found that the fatal cases were those that came to treatment late. These men were stevedores, husky men who did not easily complain. Therefore an important point was early diagnosis, with immediate use of serum. If cases did not respond to one type of serum, they were quickly changed to another. The pneumococcus infection was comparatively harmless compared with streptococcus infection. The leucocytes were not a reliable guide as to the condition. An immunizing streptococcus vaccine might be tried at the same time as the serum treatment. The patients should receive 2,000 calories of food and 3,000 c. c. of water daily.

Major E. P. JOCELIN, M. R. C., remarked that the increased number of cases at Camp Devens was due to the arrival of 5,000 negroes in the camp. The morbidity for the negroes was twenty per cent. higher than that for white troops. Hemolytic streptococci were prevalent among the officers. Seventy-one per cent. of the officers and sixty-two per cent. of the nurses showed positive throat cultures of this organism. The question arose whether

to protect the patients against the officers or the officers against the patients. During April, sixty-six negroes came into hospital with pneumonia; the mortality of fourteen per cent. rose later to twenty-five per cent. There were no fatal cases of type I pneumonia. In all negroes that came to autopsy lobar pneumonia was found.

Major H. BROOKS, M. R. C., said that when he heard colored troops were going to Camp Devens, he had remarked that trouble was coming to Major Jocelin in the shape of a black cloud. One colored regiment had furnished more patients than seventy-seven white divisions.

Dr. AUGUSTUS WADSWORTH, of the N. Y. State Health Department, told how he had studied the effect of different organisms in conjunction with the pneumococcus, experimentally, in the rabbit and dog. There was a difference in the progress of the lesion induced by pneumococci and that by streptococci. The induction of a true exudative type of lesion followed by complete recovery in the lung tissue and complete disappearance of the organism was seen in the former case. Following the introduction of large numbers of pneumococci and streptococci, in many instances, there was considerable destruction of tissue.

Major W. W. HERRICK said that they had had hundreds of cases of streptococcus pneumonia following measles at Camp Jackson. They found that patients with measles were extremely susceptible to cold. It was best to keep these cases at an even temperature with beds carefully screened. The cough must be thoroughly controlled, and, under these conditions, a very much lower percentage of streptococcus pneumonia followed.

Dr. Rufus COLE, in conclusion, said that the streptococcus form of the disease was spreading to the civil population. There were probably many types of hemolytic streptococci, but at the present time differentiation was impossible. There was no doubt of the significance of the studies made at Camp San Antonio. Whether the men were becoming more susceptible to the disease was not known.

Major C. N. B. CAMAC remarked that if dichloramine-T was used for a throat spray there were very few pulmonary complications. The process of infection seemed to be from above down and seemed to run like wild fire through the respiratory passages. If it could be controlled in the throat, it did not spread downwards.

**Antiscorbutics and Intravenous Therapy for Scurvy.**—Dr. ALFRED F. HESS, of New York, emphasized the necessity of antiscorbutics in any diet. In ships, in the days of sailing vessels and prolonged voyages, there were always cases of scurvy. The civil population was also dependent upon antiscorbutics in the food, and it was not always realized how narrow the margin of safety was. In Ireland, when the potato crop failed, scurvy at once appeared. From the military point of view antiscorbutics were important. In Russia, during the war, there had been thousands of scurvy cases. In France, in one sector, of 1,000 men, 850 had the disease. If the war kept on this might assume serious aspects, and it was necessary to consider what foods were antiscorbutic. Experiments showed that dried vege-

tables soon lost antiscorbutic properties. Orange juice, if preserved, also lost this property. Orange peel, which was a waste product, seemed to have the property of staying antiscorbutic in action. Its use in asylums where the price of oranges made their use prohibitive, would be an economic measure. It was found also that boiled orange juice, given in intravenous injection, acted like a charm in scurvy. Scurvy could be absolutely controlled by giving heated and neutralized orange juice intravenously, on a large scale.

**Thyroid Hormone in Relation to Metabolism.**—Mr. E. C. KENDALL reported that a definite chemical substance had been isolated from the thyroid gland, containing six per cent. of iodine. This was found to have a marked effect on cretinism and myxedema. The substance existed in two forms, an amino group and an acetyl one, which bore to each other the same relation as creatine did to creatinine. In the myxedematous patient the metabolism was forty per cent. below normal and could be increased to normal by the injection of this hormone. The iodine content of the hormone did not enter into its action, but merely increased the reaction of the functioning groups.

**Unusual Types of Diarrhea.**—Dr. T. R. BROWN stated that the mechanism of normal peristalsis was easily disturbed. Vasomotor abnormalities, abnormal substances, psychic stimuli, etc., were all causes of diarrhea. Diarrheas were of many kinds—gastroenterogenous, achylic, of Graves's disease, of tabes, of sprue, of cholecystitis. In the thyrogenous diarrhea the nervous syndrome was the cause. In the diarrhea after cholecystectomy the stools showed absence of trypsin and diastase. These diarrheas were pancreatogenous in origin, but gastric diarrheas were not. In tabes there was the true neurogenic type. In sprue there was no trypsin or diastase in the stools; pancreatin could be given with good result. In appendicitis and colitis there were probably erosions of the mucosa, due to bacterial infection. Open drainage for three months would cure these cases by changing the bacteria of the lower valve from anaerobic to aerobic.

**Chronic Septicemic Endocarditis and Splenomegaly.**—Dr. DAVID RIESMAN, of Philadelphia, pointed out in his paper that patients with this disease might become bacteria free and yet succumb. The symptoms often included anemia, joint pains, albuminuria, nephritis, abdominal pain, and heart murmur. The spleen was always enlarged and obscured the underlying heart effect. The disease might be mistaken for splenic anemia. The accumulation of bacteria in the spleen often prevented the cure of the disease. If this focus could be controlled, the heart lesion might be improved. In the case of a man fifty-seven years of age, in whom Doctor Deaver removed the spleen, the condition cleared up after operation.

**The General Theory of Clinical Diagnosis, with Special Reference to the Application of a Key Principle to Major Groups of Mental Disease.**—Dr. E. E. SOUTHARD, of Boston, said that books on medical logic were dust covered, or even remained with pages uncut. The question of "what is diagnosis" was rarely considered. There



were various methods of diagnosis and different factors such as inspection, and type matching formed part of these methods. Other forms, such as diagnosis by exclusion, were used, and the form called "ex javantibus" which was to treat the patient for syphilis, and if he got well to say that he had syphilis, was often in use. In mental disease type matching was impossible as any symptoms of mental disease would match all forms of mental disease, in other words, there was no indicator. In regard to exclusion, every mental case deserved to be tested for syphilis. This should be excluded if possible. In most mental diseases there was no difference in treatment, and therefore there was not much use in differentiating the disease. About fifteen per cent. of mental disease was due to syphilis. Some sort of pragmatical scheme for orderly arrangement in diagnosis should be followed, first observation, then comparison, then exclusion, then addition of statistical data. This method was largely neglected in the text books and even in class A schools.

Dr. LEWELLYS F. BARKER, of Baltimore, like Doctor Southard, urged a pragmatical method. It was necessary to work from the pragmatical standpoint. There was only one real diagnosis, the one which considered the patient as a whole. The somatic, psychic, and all other systems must be considered. The steps in diagnosis were briefly: Feeling of a difficulty; suspension of judgment until evidence was collected; making of an anamnesis; laboratory tests; x ray tests. All this should be done before thinking of the diagnosis. The whole man should be studied, and then the data arranged in order to stimulate suggestion. The different systems should be next considered, cardiovascular, nervous, alimentary, etc. The mind could now range over facts and leap to certain conclusions in which process, experience and intuition would play a large part. Then by process of deduction and reasoning the diagnosis could be made.

**Clinical Types of Paralysis.**—Dr. J. RAMSAY HUNT, of New York, said that paralysis agitans was one of the types of paralysis due to effect on the corpus striatum. Associated movements were due to effects on the striospinal system, and dissociated movements to the cortical system. In normal individuals these systems worked together, in pathological conditions they became dissociated. Paralysis represented this phase. There were two types of movement: in the cortical type clonus was present, in paralysis agitans it was absent. Often the two types were combined owing to the juxtaposition of the corpus striatum to the internal capsule. Recognition of the two types of paralysis would help in diagnosis.

**Certain Phases of Hypertension.**—Dr. E. S. SMITH, of Boston, read this paper. To avoid brain disaster, hypertension must be controlled. Factors entering into normal circulation were the peripheral resistance of the vessels, the propulsion of the blood through the arteries, and the vaso-motor control. Hypertension was often caused by accumulation of toxic end products of bacterial proteins. If it persisted it caused strain on the heart and cardiac fibres. The cases where arterioscler-

osis had resulted from hypertension were different from the luetic type. In regard to treatment, attention was paid to focal infection, absolute rest was ordered, and the protein intake of the diet was limited. Digitalis was given, but no vasodilators, unless in extreme emergency.

**Function of the Thyroid Gland.**—Dr. H. S. PLUMMER, of Rochester, Minn., said that the products of the thyroid were thyroxin, a hormone, and colloid. The latter did not play any part in general functioning. Hypertrophy was an indication that the thyroid was over stimulated and was supplying the body with too much hormone. Colloid deposit in the gland showed it was hard worked to make enough hormone. It was either normal or subnormal. The thyroid contained fetal rests and thyroid adenomata developed post nately and were not coordinated with the needs of the body tissues. Increased metabolism would stimulate these adenomata to erratic functioning. If the adenomata were removed from the thyroid the metabolism would at once drop to normal. These cases constituted one third of exophthalmic goitres. A metabolic laboratory had been begun to carry out this work. Twenty-five cases of exophthalmic goitre were examined and it was found that the metabolism was running one per cent. above normal. Removal of the adenomata caused the metabolism to drop to normal ten days from operation.

## COLLEGE OF PHYSICIANS OF PHILADELPHIA,

### SECTION ON INDUSTRIAL MEDICINE AND PUBLIC HEALTH.

*Meeting Held Wednesday, May 15, 1918.*

Dr. JAMES M. ANDERS, Head of Section, in the Chair.

At this meeting Dr. A. J. LANZA, U. S., P. H. S., Pittsburgh, Pa., read a paper on the hazards of metal mining, which was later the topic of a discussion. Metal mining in contradistinction to coal mining had always been recognized as hazardous to health. Moreover, metal mining had contributed to medical science an occupation disease of the first magnitude, the so called miners' consumption, not confined, however, to the miner. Miners' consumption, silicosis, was a pneumoconiosis caused by the inhalation of siliceous dust. It was among hard rock miners, however, that it had become the scourge of mining camps. Hippocrates spoke of the metal digger who breathes with difficulty and is of pale complexion. From twenty to thirty-five per cent. of hard rock miners were affected, a condition taking precedence over any other occupational disease. Individual susceptibility played little part. The amount of silica in the dust, the duration of exposure and the intensity of work were the determining factors. The cardinal symptoms of silicosis were dyspnea on exertion and pain in the chest associated with diminished expansion. The dyspnea appeared insidiously in from two to ten years and grew gradually worse until total disability might result. It might be the only symptom. Pain in the chest became definitely located and there was gen-

erally a bronchitis with cough; in some cases cough was not present. Loss of weight was not as great as in tuberculosis. Aside from their dyspnea the patients felt and looked well; they had no fever or night sweats; hemorrhage was occasionally present. Physical examination showed little except in advanced cases. At any stage of a silicosis, tuberculous infection might occur and this disease usually ran a fairly rapid course. In Joplin, where the type of silicosis had been very severe, tubercle bacilli practically always appeared in the sputum before death. In Butte, where the silicosis was not of such an aggravated type, tubercle infection was not so frequent. The prognosis was bad after silicosis had been once well established and when tuberculous infection had occurred the prognosis was usually hopeless. An outdoor life seemed to afford the only chance for recovery in early cases. In the pathology of the disease there was first a peribronchial thickening, followed by small nodular fibrous areas tending to coalesce in dense fibrous areas which might undergo anemic necrosis. The relation of the tubercle bacillus to this process was not clear. Inability to obtain necropsies prevented study of this feature. It had been shown that dust particles lodging in the lungs were not larger than from two to five microns and even smaller. The prevention of the disease lay in the use of water in drilling, a matter not always as simple as it would appear to be. It was evident from the small size of the dust particles that the use of respirators was futile.

Dr. HENRY K. PANCOAST said that he had had the privilege of interpreting for Doctor Lanza about fifty pairs of stereoscopic plates made among the hard rock miners at Butte, Montana. A great similarity was noted in the appearance of these plates and those made in connection with the investigations of Doctor Landis, Doctor Miller and Doctor Smyth and himself in dusty occupations in this part of the country. The röntgen ray was the most accurate method of determining the condition of the lung in the living subject. Authorities were practically agreed upon the interpretation of the x ray plates in pneumoconiosis. Three stages of the disease had been found. In the first the appearance was that of an enlargement of the hilus shadow and an increase in the thickness of the linear markings. The age of the patient and place of residence had to be considered: those living in large cities were apt to have more or less evidence of pneumoconiosis with advance in years. In the second stage there was mottling in the parenchyma of the lung due to small deposits of dust and an associated circumscribed fibrosis. These spots gradually enlarged and finally coalesced. In the third stage there was a diffuse fibrosis which picked out certain portions of the lungs and seemed to originate from a coalescence of the small areas just mentioned. There seemed to be certain anatomical distributions for the mottling and the diffuse fibrosis and the findings in this connection had been fairly uniform, both in Doctor Lanza's plates and in his own. In the appearance of the second stage the mottling began especially around the root of the lung and in most cases there was greater

progress on the right side. Then the mottling spread around the lung from base to apex. In the plates examined for Doctor Lanza the most intense mottling was a little above the centre of the lung from the second to the fourth interspace, and in this region most of the diffuse fibrosis was to be seen in the older cases. In some of the more advanced second stage cases it was often most difficult to find very marked enlargement of the hilus shadow or thickening of the bronchial trunk shadows. This was true also of the third stage cases. It seems as though some of the cases progressed rapidly in the second stage, while others remained in the first stage for a long period of time. Fluoroscopic examinations were always valuable in this study and explained in large measure the difficult breathing. In some instances the diaphragm seemed not to move owing to the fibrosed condition of the lungs, particularly in a line with the linear trunk shadows running to the bases. The real cause was, no doubt, an inability of the lung to expand. In some cases the inner portion of the diaphragm was fixed, whereas the outer portion moved to a certain extent and seemed to be hinged at the point of contact of the linear trunk shadows.

Dr. H. R. M. LANDIS remarked that the cases studied by Doctor Lanza in Joplin, presented the most serious cases of silicosis, even outranking those of South Africa. The x rays had done much in discriminating between dusts entirely harmless in the sense of producing no definite pathological changes in the lungs, and those causing serious and crippling lesions. They differentiated the effects produced by the organic and the inorganic dusts. At one end of the scale was pure silicosis, which of itself and entirely aside from any secondary tuberculous lesion, was sufficient to cause absolute incapacity. There were other forms of inorganic dust, however, exposure to which did not prevent workers from being able to follow their trade for forty to sixty years. In one instance a potter who had been apprenticed when a boy of ten had worked at the trade until he was seventy. One slide exhibited by Doctor Pancost showed the lungs of a man who had been working in a coal mine for thirty-two years and another had worked outside on a breaker for thirty-eight years. While there was much dust in the work on the breaker, being outside, there was not the same concentration as in the mine. In the case of the man working outside for thirty-eight years there was probably not one quarter of the pulmonary change as shown in the man working for thirty-two years underground. The only explanation of the susceptibility to tuberculosis of the cases studied at Joplin was that the condition was so very acute. There was no means of knowing whether the great irritation produced an acute inflammatory change rendering the tissues more susceptible to the tubercle bacillus. As Doctor Pancost had said, physical signs were absent or extremely indefinite in the first stage. In the advanced stage ability to elicit marked physical signs was of no particular moment so far as the patient was concerned, as the damage had already been effected.

Dr. ALFRED STENGL spoke on the subject of man-



agement of industries under war conditions. There had been excessive speeding up of industries with an associated degree of carelessness excused on the ground of war conditions. We had sooner or later to take cognizance of this prevailing form of excuse. Fortunately the Government through various agencies was taking up the regulation of industries. The new industrial poisons, suddenly let loose, and concerning which there had been until very recently the most inadequate knowledge, had occasioned many cases of illness and perhaps a considerable number of deaths. Physicians, apart from the few who happened to have special knowledge of industrial medicine, were familiar with even the scanty literature which existed upon this subject. Cases of apparently obscure illnesses, located at times some distance from the industrial plant, were very ordinary instances of industrial poisoning and perfectly apparent to those experienced with them. It was time that the medical profession realized the probability of encountering such industrial disease. Doctor Stengel suggested that there should be instituted public meetings to which physicians should be encouraged to come that an educational program might be enforced. Many hundred thousand in the industrial centre of Philadelphia were exposed to fumes of the most intense poisons, and were in the habit of going from place to place, as mentioned by Doctor Patterson, in each industrial plant having renewals of the poisoning, so that the amount of incapacitation and death was a serious matter. Doctor Stengel believed all medical schools had consented to incorporate in their curriculum, definite courses of lectures with examinations and tests, to make it incumbent upon students to acquaint themselves with these diseases.

## Collectanea

### Standards for Discharge in Venereal Disease.

—The following are the minimum requirements for a complete cure in syphilitic cases as given in *Public Health Reports*, July 19, 1918: No treatment for one year, during which time there have been no symptoms, no positive and several negative Wassermann reactions; a negative provocative Wassermann reaction; a negative spinal fluid examination; a complete negative physical examination, having special reference to the nervous and circulatory systems; a luetin test may also be included. A patient may, however, be discharged as noninfectious when a complete clinical examination in which special emphasis is laid on thorough exploration of the skin and mucous membranes, particularly those of the orifices of the respiratory, gastrointestinal, and genitourinary tracts, shows the absence of any area from which infectious matter can be disseminated. Such a discharged patient should be warned to remain under observation until such time as a complete cure is effected by a proper course of treatment carried on for a definite period; because although noninfectious at the time, he may become again infectious to others through contact, and the disease will be probably transmitted to his offspring until he is actually cured.

In gonorrhea, before discharging male patients as noninfectious, the following requirements must be met: Freedom from discharge; clear urine, no shreds; the pus expressed from the urethra by prostatic massage must be negative for gonococci on four successive examinations at intervals of one week; after dilatation of the urethra by passage of a full sized sound, the resulting inflammatory discharge must be negative for gonococci. In female patients there must be no urethral nor vaginal discharge; and two successive negative examinations of secretions of the urethra, vagina, and the cervix, with an interval of forty-eight hours, and repeated on four successive weeks. The patient should be requested to return at frequent intervals for examination. Careful technic should be followed in procuring smears from female patients. Frequently smears are made by doctors which have absolutely no value—the whole field is so filled with contaminating organisms that no diagnosis can be made, either positive or negative.

### Pharyngeal Hemorrhage Due to Leeches.—

J. M. Biggs (*Journal of Tropical Medicine and Hygiene*, April 1, 1918) reports the case of a white man who had been in Egypt eight months and had taken a drink of water in his cup from a running stream. A few hours later he began coughing and brought up some blood. This continued up to the time of his admission to hospital, ten days later. The pharynx was congested and the voice hoarse. During the fourth night after admission he complained of a choking sensation and coughed something into his mouth which he did not expectorate, as he "feared it was a piece of his lung." Next morning he found it had stuck to his upper gum, and was a leech about one and a half inches long, presumably swallowed a fortnight before. Thereupon all discomfort and hemorrhage ceased. In a second similar case the patient complained of a tickling cough, sore throat, dysphagia, and blood spitting. A leech was found attached to the upper jaw and resting in a cavity left by two extracted teeth in the lower jaw.

## Births, Marriages, and Deaths.

### Died.

CHARD.—In Jersey City, N. J., on Friday, August 30th, Dr. John A. Chard, aged fifty-four years.

FRIES.—In Philadelphia, Pa., on Friday, August 30th, Dr. Charles J. V. Fries, aged fifty-five years.

GIRARD.—In San Antonio, Tex., on Sunday, August 25th, Colonel Joseph B. Girard, M. C., retired, aged seventy-two.

JEFFERIS.—In Chester, Pa., on Monday, September 2nd, Dr. Daniel W. Jefferis, aged seventy-seven years.

LAWRENCE.—In Summit, N. J., on Tuesday, August 6th, Dr. William H. Lawrence.

MACKELLAR.—In Philadelphia, Pa., on Sunday, September 1st, Dr. James MacKellar, aged fifty-four years.

MARKLEY.—In Belvidere, Ill., on Sunday, July 28th, Dr. Robert William Markley, of Winnebago, aged forty-six years.

MOORE.—In Kennett Square, Pa., on Tuesday, August 27th, Dr. Rebecca Moore, aged eighty-three years.

SCOLLAY.—In Brooklyn, N. Y., on Saturday, August 31st, Dr. Maria V. M. Scollay, aged forty-five years.

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## Original Communications

### THE GENERAL DIAGNOSTIC STUDY BY THE INTERNIST.\*

*Cooperating with Groups of Medical and Surgical  
Specialists.*

By LEWELLYS F. BARKER, M. D.,  
Baltimore.

#### INTRODUCTION.

The making of a diagnosis, whether by a general internist or by a specialist, involves the application of the methods of reflective thought to the solution of a problem. But the problem of a general diagnostic survey by the internist is very different from the problem that confronts the specialist who is asked to make a diagnostic study in a single domain. The duty of the internist is to survey the patient as a whole psychophysical organism; whereas the task of the specialist, in the more limited study mentioned, is to confine his attention to a smaller or larger part of the structure and functions of the organism. The internist who undertakes to make a general diagnostic survey should know enough about the methods of all the medical and surgical specialties to realize how to value their application in a given case; he should gain the cooperation of groups of skilled specialistic examiners whose objective findings he can rely upon, and he should learn how to judge of the importance or unimportance, in relation to the patient's whole state, of the reports that come in to him from the several specialists.

In such studies there should be closest cooperation between the general diagnostician and the specialists. Even a surgeon, viewed from the standpoint of the general diagnostician, is to be regarded mainly as a specialist in therapy, though, in many instances, on account of an intensive experience in a special field, his opinion regarding the diagnosis in some special domain may be sought and prove to be important as a part of the general diagnostic survey. As my experience has grown I have become ever more convinced that it would be well if more patients could be first studied as a whole by a cooperating group of specialists, associated with a broadly trained general diagnostician. After a full diagnosis has been arrived at, the general deviations from the normal having been properly coordinated and subordinated, the therapy should be comprehensively planned; and for carrying out this therapy some division of labor among experts in special domains will often be necessary.

*The five steps in diagnosis.*—In this analysis I have been much helped by the study of the simpler books on logic and on the psychology of thinking (1). As in reflective thinking in general there are five main steps in the process of diagnosis. This statement applies not only to the general diagnostic study, but also to the study of a single domain by the specialist. The first step is the feeling of a diagnostic difficulty, the recognition that we are confronted by a problematic situation. The second step is the collection of data that will permit a more precise diagnostic problem. It begins with restraint of inference and suspension of judgment until enough facts have been collected to make the nature of the diagnostic difficulty clearer before we try to solve it. As medical students, we have all been trained in methods of collecting facts regarding a patient. In the accumulation of such data we do best to follow some systematic plan. The third step is the summarizing of the more important facts, the arrangement of these facts in a certain way, and the recording of suggestions that arise in our minds that will help us to describe them more briefly and to understand their meaning. The process may consist largely in a hunt for general conceptions that will permit us to classify and, in a sense, interpret the problematic phenomena that we have encountered. If no general notion that is accepted or unquestioned can be found to apply, we may try to form a new one that will be satisfactory. The fourth step is the development, by reasoning, of the bearings or implications of each of the several descriptive or explanatory suggestions that occur to us. We consider what the facts should be in the case if any one of the conjectures formed were really applicable to it. The fifth step is the testing of the several suggestions as elaborated by reasoning to see which of them are corroborated by the facts and which of them are not corroborated. In making these tests, we often find that further observation, or experiment may be required before we are justified in arriving at a concluding belief. For though some of the suggestions may quickly be accepted or rejected, others may demand an extension of the fact accumulation before acceptance or rejection is permissible. In complex situations, in which several of the conditional suggestions are found to be applicable, an arrangement of these in the order of their importance for the patient is desirable.

*To summarize.*—We feel a diagnostic difficulty; we locate and define the diagnostic problem; we stop observing and begin to think, allowing sug-

\*Address delivered at the New York Academy of Medicine, December 6, 1917.



gestions of possible explanation to occur to us; we develop by reasoning the implications of each of these several suggestions; and, finally, we accept or reject the conceptions suggested, according as they are, or are not corroborated by the facts already collected or by the facts obtained through further observation and experiment.

*Feeling a diagnostic difficulty.*—You may ask why I consider this feeling of difficulty important enough to record it as a separate step in the process of diagnosis. I do it to arrest attention, for one of the main causes of insufficient diagnostic study is, in my opinion, a failure in many instances to realize that there is a difficulty at all in arriving at a diagnosis, in other instances to recognize fully how difficult it is to make a sufficiently comprehensive diagnostic survey of a given patient.

To be a good diagnostician, one should be endowed with a strong instinct of curiosity with its associated emotion of wonder, and its accompanying impulse to approach and to examine more closely the object that excites it. The innate strength of this impulse closely to examine things varies greatly in different persons. Moreover, it is an impulse that grows weaker if not made use of; fortunately it grows stronger through exercise. The curious mind is ever on the alert, always exploring, ever seeking new material for thought. It remains sensitive to all that is doubtful or unsettled. It should be a fundamental pedagogical principle to cultivate a healthy curiosity, to encourage a normal eagerness for experience and to protect the spirit of inquiry in medical students.

It is not so very long since a single symptom, namely, the complaint of the patient, sufficed for the making of a diagnosis by certain physicians. If a patient complained of a cough, or of a pain in the back, no diagnostic perplexity was felt but therapy could at once be undertaken in accordance with some supposedly universal principle or dogma. Such extreme naiveté of diagnosis, it is true, does not obtain among practitioners who have had a training in scientific method as applied to medicine. But it must be admitted, I fear, that even men who have been educated in modern medical schools sometimes fail to appreciate the extent of diagnostic investigation that may be necessary, in an obscure case, to ensure the patient's getting the full benefit of the diagnostic and therapeutic knowledge that exists today. It should not require much clinical experience to make one acquainted with the dangers of "snapshot" diagnosis. We soon find out that conditions that at first sight appear to be simple may be very complex, requiring a thoroughgoing analysis before the exact nature of the diagnostic problem can be discerned. Unless the feeling of difficulty is adequate, the diagnostic study is likely to be detrimentally curtailed.

#### A.—COLLECTION OF DATA FOR THE MORE ACCURATE LOCATION AND DEFINITION OF THE DIAGNOSTIC PROBLEM.

It is because, when confronted by a patient with a complaint, suspension of judgment pending investigation to determine more exactly the nature of the diagnostic difficulty is essential for good diagnosis, that we are all, as students, taught to follow

some systematic plan of questioning and examining the patient to ensure the accumulation of data that will suffice to locate and define the problem. While engaged in this work, suggestions of solution are likely to arise in our minds as we go along, but no matter how plausible they may be, we do well not to yield assent to them at this stage of the diagnostic procedure, though we may make use of them in determining the direction in which the explanation shall be especially extended, or in deciding that in the case before us certain methods of collecting facts need not be applied. Though a systematic plan of studying a patient is highly desirable, one must take care that his curiosity does not become fibrosed by too rigid adherence to a routine process of examination. This is one of the dangers to which the instinct is subject, and one must safeguard himself against it, especially as he grows ever busier in practice. The routine that an expert internist uses today is very different from that followed by skillful diagnosticians five or ten years ago; each year the routine followed will to a certain extent require change in order that practice may keep pace with the growth of knowledge and that inquiry may conform to needed alterations in emphasis.

For convenience of discussion, the methods of collecting the facts for a general diagnostic survey may be dealt with under the five headings of the following table:

#### A.—COLLECTION OF DATA.

1. Recording the anamnesis.
2. Dictating the results of a general physical and psychological examination.
3. Requesting the application of certain laboratory tests.
4. Requesting certain x ray examinations.
5. Requesting examinations by experts in certain special domains.

1. *Recording the anamnesis.*—The better acquainted one becomes with the processes of accumulating facts that may prove to be helpful in the making of a diagnosis, the more emphasis he is likely to lay upon an orderly recording of the anamnesis, that is, of the data that can be secured from the patient or his friends regarding himself, his family, and his environment previous to the time of the diagnostic study. As one gets busier in practice, the tendency is to make short cuts, but this is to be done only with great caution for the most experienced worker may easily overlook important clues if he fail to follow a definite systematic plan of inquiry or if he limit too greatly the number of questions that he asks. Besides becoming acquainted with the family tendencies of the patient, his occupation and habits, any earlier illnesses or experiences that could have an important bearing upon his condition, it is the object of the anamnesis to record accurately any abnormal sensations, moods, or acts that the patient may have observed himself or that others have noticed; the time of appearance of these, their duration, and any modifications in them that have occurred spontaneously or as the result of treatment are also important anamnestic data. It is surprising how often the precise chronology of the appearance of different symptoms throws light upon the diagnosis; as a single striking example of this, I may mention the

time relations among the symptoms of a tumor of the acoustic nerve developing in the cerebellopontine angle. It is always interesting, too, to record any explanation or interpretation of the illness, or of the single symptoms, that the patient may give himself, no matter how improbable or how erroneous it may be. An interesting article might sometime be written upon the interpretation delusions that patients harbor. When asking about the presence or absence of special symptoms, it is well to include in the questionnaire the principal symptoms that occur in different diseases of the several anatomical systems of the body; by so doing we throw out a dragnet that is likely to enclose all the self observed pathological phenomena of the patient that may be serviceable in directing the further progress of the diagnostic investigation. A general outline of the principal points of the ordinary anamnesis is given in the accompanying table:

- a. Main complaints of the patient.
- b. Family history (parents, brothers, and sisters; children; other relatives).
- c. Personal history (habits; education; experience; diseases; operations; traumata).
- d. Present illness (onset; causes; course; previous treatment; epitome of symptoms referable to definite domains).

Among the symptoms and signs to be asked about in every case, I include the following:

#### PROMINENT SYMPTOMS.

Pain (topography; time relations; severity; quality; modifying influences; associated phenomena).  
 Headaches.  
 Dizziness.  
 Tinnitus.  
 Otorrhea.  
 Nasal catarrh.  
 Sore throat; hoarseness.  
 Cough; sputum, including hemoptysis.  
 Dyspnea.  
 Palpitation; irregular action of heart.  
 Retrosternal or precordial oppression (relation to effort).  
 Swelling of ankles or face; varicose veins.  
 Ingesta (quality; quantity; disturbances of appetite and of deglutition; teeth and gums).  
 Nausea; vomiting, including hematemesis.  
 Gaseous eructations; flatulence.  
 Constipation; diarrhea; blood or mucus in stools.  
 Hernia; hemorrhoids; fistula.  
 Dysuria; pollakiuria; polyuria; nocturia; hematuria; pyuria.  
 Disturbance of sexual functions (male; female).  
 Symptoms referable to muscles, bones, or joints, including the spine.  
 Skin eruptions; pigmentations; loss of hair.  
 Disturbances of motility (paralysis; weakness; wasting; rigidity; twitching; tremor; spasms; cramps; fits; ataxias; dysarthria; aphonia; apraxia).  
 Disturbances of sensibility (anesthesia; hyperesthesia; parasthesia; defects of smell, taste, sight, and hearing).  
 Mental disturbances (nervousness; insomnia; amnesia; losses of consciousness; delusions; exaltation; depression; fears; indecision; feelings of unreality; social maladjustments).  
 Obesity; emaciation; changes in weight.  
 Signs of infection (fever; chills; sweats; petechiae; etc.).

Any one who has difficulty in holding in mind such a catalogue of prominent symptoms in systematic sequence will be helped by keeping the list before him on his office desk while he is recording the anamnesis. I do not need to refer to the reduction or the extension of the questionnaire that may be necessitated by the single case. The experience and the common sense of the questioner

must guide him in this, especially in his interrogations regarding sexual, psychical, and social details. Even the wisest and most tactful inquirer will err in judgment sometimes; and the beginner especially will do well to be on his guard to avoid making the impression of being offensively prying or inquisitorial. In psychoneurotic states, patients are often very sensitive to questions bearing upon their personal life and their social adaptations, and it is among these hypersensitive ones that it is, unfortunately, most often necessary to make a thorough search for so called psychogenic data. When the approach to such material is difficult, it is usually wise to postpone the inquiry into the more intimate life of the patient until the sympathetic attitude of the physician and a better acquaintance have established full confidence and the *rapport* necessary for the breakdown of reticence.

If the net of questions that I have just referred to be carefully drawn, the information disclosed will go far toward enabling the examiner to appraise the physical, the psychical, and the social status of the person under study. The facts thus decided will be most helpful too as a guide to the systematic physical, chemical, and psychical study of the patient which is next to be taken up.

2. *Dictating the results of the general physical and psychical examination.*—The general physical and psychical examination as at present conducted includes so many details that the examiner ought not to trust his memory of the results, even in so far as to attempt writing or dictating the report after the examination is made. Instead, he should dictate his notes to a stenographer familiar with medical terms, or to a stenotypist, item by item, as his examination proceeds, for only in this way can a full, objective record be obtained.

In making the general physical and psychical examination, it is most convenient first to note certain general points and then to examine the body by regions. After this has been done, the regional method may to a certain extent be departed from in order to supplement the record with details regarding the state of the nervous system (or any other anatomical system that may require an especially intensive study).

The general points that should be noted in every case are summarized in the accompanying table:

- a. General points.
  - i. Body temperature; pulse at both wrists; respiration.
  - ii. Height; weight; calculated ideal weight; build or habitus; nutrition; musculature.
  - iii. Posture; gait; behavior.
  - iv. Skin (color; thickness; moisture; eruptions; ulcers; pigmentation; scars; striæ; superficial blood vessels; edema).
  - v. Lymph glands (epitrochlear; cervical; axillary; inguinal); bones; joints; muscles.
  - vi. Blood pressure (systolic; diastolic).

Continuing the general physical examination, I prefer exploration at first by regions rather than by systems, for at this stage of the inquiry it is desirable to suppress, as far as possible, explicit diagnostic inferences, confining one's attention strictly to the accumulation of facts in a systematic way without too much regard to their bearings upon the conclusions toward which the whole examination is



aimed. Examination by regions rather than by systems helps to maintain that preliminary suspension of judgment regarding the nature of the patient's ailment that I have already referred to as desirable.

The points to be noted in the regional examinations and in the examination of the nervous system are indicated in the accompanying table:

- b. Regional examination.
  - i. Head (skull; face; eyes; ears; nose; mouth; throat; glands).
  - ii. Neck (form; thyroid; tracheal tug; esophagus; blood vessels; lymph glands; cervical spine; cervical ribs; tumors; wry neck).
  - iii. Thorax (form; bones; coverings; breasts; axillary hirci and glands; lungs; pleuræ and mediastinum; heart and aorta).
  - iv. Abdomen and pelvis (inspection; palpation; percussion; auscultation of abdomen and abdominal viscera; examination of rectum and of urogenital apparatus).
  - v. Extremities (skin; bones; joints; muscles; nerves).
- c. Examination of the nervous system.
  - i. Sensory functions (cutaneous and deep sensibility, stereognosis; special senses).
  - ii. Motor functions (muscular power; finer movements, including speech and writing; coordination; tonus).
  - iii. Reflexes (pupils; deep reflexes of extremities; superficial reflexes; plantar and abdominal; sphincters).
  - iv. Autonomic functions (vasomotor; secretory; trophic).
  - vi. Mental state<sup>1</sup> (orientation; memory; calculation; attention; sense deceptions; pathological ideas; mood; psychogenic data; etc.).

Such a general, physical, and psychical examination can be made very quickly by any one who has been thoroughly trained in internal medicine and who has worked long enough to acquire skill in the technic of the methods of examination. The report, when typewritten, is placed in a numbered folder, along with the record of the anamnesis, and to these records are added, as they come in, the reports of the laboratory examinations, x ray examination, and examinations by specialists. All this material is accumulated before any attempt is made to summarize the data and to arrange them according to the anatomical physiological systems to which they may especially be related.

3. *Requesting the application of certain laboratory tests.*—The clinical laboratory is now so firmly established as an indispensable part of the outfit necessary for clinical studies that pretend to any kind of thoroughness that one no longer assumes that any internist can do satisfactory work without calling upon it extensively for aid. Many internists make their own laboratory tests, especially in the earlier years of their practice, and it is certainly important that every working internist shall have had an extensive first hand knowledge of the procedures of the clinical laboratory and that, even after he becomes too busy to make the routine tests himself, he should keep in close touch with men working in clinical laboratories, inform himself thoroughly of the principles, advantages and limitations of new tests as they are devised and, preferably, continue through his lifetime to engage at

least to some extent in laboratory practice himself. The time soon comes, however, as well for the successful general practitioner as for the consulting internist when it is impracticable for him to make his laboratory tests, either routine or special, for himself and he is compelled to choose and to rely upon either assistants or colleagues who specialize in laboratory work to make these tests for him and to send him reports of the results. It is essential that whoever makes the laboratory tests shall be not only conscientious but well trained. Very serious diagnostic errors are often the result of reliance upon reports from unreliable laboratory workers.

The number of possible laboratory tests that may be made is legion, and each internist must decide for himself which he will choose as a minimum routine requirement in a general diagnostic survey. My own practice for some time past has been to have made as a routine in every case in which there is no contraindication the tests listed in the following table:

- a. Routine tests.
  - i. Examination of the blood.
    - Red blood corpuscles count.
    - White blood corpuscles count.
    - Examination of the hemoglobin.
    - Differential count of white blood corpuscles in stained smears.
    - Search for parasites.
    - Wassermann reaction.
  - ii. Examination of sputum, especially for tubercle bacilli.
  - iii. Examination of stomach contents.
    - Free HCl, combined HCl, and total acidity.
    - Occult blood.
    - Lactic acid.
    - Oppler-Boas bacillus.
  - iv. Examination of feces.
    - Macroscopic appearance.
    - Undigested food.
    - Occult blood.
    - Bile.
    - Parasites or their eggs.
  - v. Examination of urine (night and day specimens).
    - Physical (color; reaction; specific gravity).
    - Chemical (albumin; sugar; diacetic acid).
    - Microscopical (red blood corpuscles; white blood corpuscles; casts);

In addition to these routine tests, applied in every case,<sup>2</sup> it is often desirable to have certain other laboratory tests made. Thus, an examination of the cerebrospinal fluid may be thought necessary if there are meningeal symptoms, or if nervous symptoms exist in a man who has had lues, though no one would be so foolish as to think of examining the cerebrospinal fluid of every patient as a routine matter. Again, when continued fever is present it is advisable to have a blood culture made; when the blood pressure is high or other signs suggestive of renal disease are present, special tests of renal function may be applied; when a peculiar cardiac arrhythmia is found on physical examination, polygraphic tracings or electrocardiographic studies will be indicated. And of the like many more instances might be cited. Among the special laboratory tests that I employ most often I would mention particularly those in the following table:

<sup>1</sup>If the exploration in this direction has been full enough and systematic enough in the recording of the anamnesis, it may be omitted here.

<sup>2</sup>Sometimes, of course, no sputum can be obtained for examination. In certain instances, too, the passage of a stomach tube may be contraindicated.

## 2. Special tests (in certain cases).

- i. Cerebrospinal fluid (lumbar puncture).
- ii. Tuberculin tests.
- iii. Excision of gland, muscle, or nodule for histological examination.
- iv. Bacteriological cultures (blood; sputum; urine; pus; cerebrospinal fluid, etc.).
- v. Blood chemistry and other special blood examinations.
- vi. Renal function tests.
- vii. Metabolic studies.
- viii. Protein sensitization tests.
- ix. Pharmacodynamic tests.
- x. Electrocardiography.
- xi. Sphygmography.
- xii. Exploratory punctures.
- xiii. Animal inoculations.

Now and then the findings obtained by laboratory examinations are pathognomonic. But this is only occasionally true, and the mistake is often made by practitioners of expecting too much of their co-workers in the laboratory. The results of the tests made in the laboratory should be valued only in association with the results obtained by other methods of investigation. The same remark holds true for the results of röntgenological examinations, to which we may now turn.

4. *Requesting certain röntgenological examinations.*—When x rays first came into clinical use they were employed chiefly by surgeons. Today internists make even greater use of x ray examinations than do their surgical colleagues. Indeed so extensively are röntgenological examinations made in diagnostic studies in general medicine that most internists either install a röntgenological department in their own offices, or form a close working alliance with a colleague who is an x ray specialist. Röntgenological apparatus has recently been so greatly improved and the technic has been so much simplified that any intelligent person may after a relatively brief training become competent to make good röntgenograms of the skull, paranasal sinuses, teeth, chest, alimentary canal, bones, joints, etc. But the satisfactory interpretation of the röntgenograms is a far more difficult matter, requiring, like röntgenoscopic interpretations, long experience, much clinical knowledge and sound judgment. It seems to me desirable that internists themselves become skilled in the reading of röntgenograms and in the interpretation of what can be viewed on the röntgenoscopic screen. It is hard to see how otherwise they are to become able to value the findings in a proportionate way in their diagnostic work, even when objective reports of the findings are made to them by skilled röntgenologists. There is an immense autodidactic advantage in the combination of personal röntgenological interpretation with one's general clinical work. Of course, the majority of internists can never expect to become as proficient in plate and screen interpretations as are those professional röntgenologists who give their whole time and energies to x ray work. But close association of the expert internist with the expert röntgenologist is essential to the best work of each. The internist who does not see the plates made from his own patients misses much; and the röntgenologist who only reports on his x ray examination and knows nothing of the clinical history of the patient is not likely to grow rapidly in power of interpretation. I am afraid that röntgenologists are often

pressingly solicited by physicians for specific diagnostic judgment and that they too often yield to the impotency when they should make it plain that their duty is done when they give an objective description of their findings. So common has it become for röntgenologists to attempt to arrive at diagnostic conclusions from their studies alone that it is sometimes difficult to get from them the objective description that one desires, either alone or accompanied by a diagnostic impression. Instead, the reports of "chronic infectious arthritis," "pulmonary tuberculosis," or some other diagnosis come in. That this unsatisfactory state of affairs, which still exists in many places, will soon be remedied, every one who desires that röntgenology and internal medicine reciprocally benefit one another to the utmost will hope.

Certain x ray examinations I have made as a routine in every case in which I attempt a general diagnostic study: 1, paranasal sinuses; 2, dead teeth and unerupted teeth; 3, thorax with heart, aorta, lungs, pleurae, and mediastinum; and, 4, gastrointestinal tract after ingestion of barium. In addition, special x ray examinations are made according to indications derived from the anamnesis and the general physical examination.

## 4. Röntgenological examinations.

## a. Routine.

- i. Röntgenogram of paranasal sinuses.
  - ii. Röntgenogram of dead teeth and of unerupted teeth.
  - iii. Röntgenogram of thorax.
  - iv. Röntgenogram of gastrointestinal tract.
- b. Special (when indicated).
- i. Stereoscopic röntgenograms of skull and sella turcica.
  - ii. Stereoscopic röntgenograms of lungs and pleurae.
  - iii. Teleröntgenograms of heart.
  - iv. Serial röntgenograms of gastrointestinal tract.
  - v. Röntgenograms of gallbladder area.
  - vi. Röntgenograms of bones, joints, and spine.
  - vii. Röntgenograms for renal calculi.
  - viii. Pyelograms and ureterograms after thorium injection.

The reports from the several röntgenological examinations are filed with the other reports until the data from specialists' examinations have been collected.

(To be continued.)

## Surgical Treatment of Tuberculous Peritonitis.

—L. J. Hammond (*Pennsylvania Medical Journal*, June, 1918) advocates a median abdominal incision. In the adhesive form care must be taken not to injure the intestine which may be adherent to the peritoneum. In the ulcerative form the results are not particularly good as intestinal fistulas are liable to develop. Contraindications to operations are fever, advanced pulmonary disease or amyloid changes in the kidneys and intestines. Tuberculous lesions in the abdomen should not be removed until after the patient has recovered unless they are localized in the appendix, tubes, or omentum. Intestinal anastomosis may have to be performed. The helpful factors are probably the relief of the tension by the evacuation of the fluid exudate, the irritation of the serosa, and the establishment of collateral circulation.



## LOCOMOTION AS AN AID IN DIAGNOSIS.\*

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There is a group of diseases, mostly of the nervous system, which at a certain point of their evolution, stamp the sufferer with a characteristic mode of locomotion. To observe such a modification of the normal walk is often sufficient to make a correct diagnosis. It is strange, however, how little attention this important subject has received from the medical profession. In fact, other than the work of the brothers Weber who established the physiology and mechanism of human locomotion, of Neugebauer and of Gilles de la Tourette, who developed the ichnogram method of gait study, scarcely anything of importance has been done along these lines for the last quarter of a century. The study of the mode of locomotion in various diseases and ailments remains, therefore, a fertile field of research for the podiatrist.

The act of locomotion or the power of progression is not a simple one. Various correlated movements combine to form what we ordinarily term the walk. The three chief elements are: 1, Posture; 2, station, and 3, gait. These three factors may be influenced by local or general diseases, either separately or together.

Posture is the term applied to the position of the body in space and is not of much interest to the podiatrist except as corroborative of the two other elements of locomotion. It has, however, its value in diagnosis and the new practitioner of podiatry will do well to learn to observe the position of the body at various angles and in various diseases. One should learn early, for instance, that immobility is not always due to paralysis. It may be due to pain, as in rheumatism or to a disinclination to move as in scurvy, rickets or any condition causing dyspnea. The restlessness in fevers and in large hemorrhages, as well as the throwing about in renal, gallstone or intestinal colics, is known to all. Equally characteristic are the agitation and irregular movements in chorea and hysteria; the gunhammer posture in cerebrospinal meningitis, and the opisthotonos in tetanus and strychnine poisoning.

Station is the power of standing more or less firmly on one's feet. It includes attitude, which is the manner of standing, i. e., the relation of the rest of the body to the erect position. The carriage of the head and shoulders should be noted; the shape of the entire body, whether bending forward, as in "stooped shoulders" (faulty attitude habit) and in paralysis agitans, or bending backward, as in ascites and abdominal tumors, should be closely studied and differentiated from the actual lordosis which is seen in spinal diseases, in advanced pregnancy, in pseudohypertrophic paralysis and in cretinism. The strictest attention should be paid to the attitude of the lower limbs, their shape and their relation to each other when the erect position is assumed. The degree of firmness with which the individual stands should always be taken into consideration before a final diagnosis is made. Sway-

ing is the term applied to any departure from the ideally rigid erect attitude and perpendicular station. The normal individual, with eyes open and heels close together, sways about one inch forward and three quarters of an inch from side to side. In functional and static ataxias, the swaying may become so extreme as to produce absolute incapacity to stand.

Gait means the specific manner of walking. It is a narrower term than locomotion which is the power of walking. It is, however, the chief factor in the act of progression and in the majority of cases it is characteristic enough to stamp itself indelibly on the normal as well as on the diseased individual. While in character reading gait expression may not be as popular as face expression, it is often more reliable and in certain diseases it is simply invaluable as an aid in diagnosis.

## Methods of Diagnosis

*The observation method.*—This is the usual method of ascertaining the gait of an individual. It is practised by the average physician and podiatrist and consists in observing the patient while he or she walks up and down the room, taking notice of the peculiarities of gait which may develop. The patient may be allowed to roam freely about the room or should be directed to follow a carpet seam or a crack in the floor at right angles to a previous line of vision. This may be varied by opening or closing the eyes, stretching out the arms, with legs wide apart, or keeping them close together. Brisk walking should alternate with a slower gait and the effect of stopping abruptly and turning sharply at command should be closely observed. It is best to have the patient uncovered from the hips down. In women, the nightgown or chemise can be pulled tightly between the thighs and fastened anteriorly with a safety pin. Due allowance should be made for nervousness and a careful watch must be maintained against a serious fall.

*The ichnogram method.*—This consists in studying the impressions left by both soles (previously colored) when walking on paper for a distance of about twenty-five feet. Ichnograms (from the Greek—*ichonos*—trace, and *gramma*—to write) as a method of gait diagnosis are more exact than the method of observation and should supplement it. Besides, they inform us, at the same time, of the state of the plantar arch as each peltatogram (the impression of a single foot) shows more or less clearly a posterior oval which changes but little, and an anterior oval, as well as toe marks which undergo characteristic contour changes, depending on the state of the ligaments, of the tarsal and metatarsal bones and phalanges, and the relation of these structures to the musculature and innervation of the foot.

## Classification of Gaits.

Strictly speaking there are only three types of gait: 1, the *paretic*; 2, the *ataxic* and 3, the *choreic*. In some diseases there may be a combination of the three, while in others one type of gait predominates during the early stage and another during the later developments. At times, one comes across a gait that combines characteristics of the three types and hence is difficult of classification.

\*An advance chapter from a textbook on *Practical Podiatry* published by The First Institute of Podiatry, 213 West 125th Street, New York.

## I. PARETIC GAIT.

Paresis means a lessening of the normal motility of a muscle, while the term paralysis denotes entire absence of motor power. We may have, therefore, two or three distinct paretic gaits according to whether the muscle is slightly or severely weakened or entirely paralyzed: A. The mild paretic gait;



FIG. 1.—A. Pelmatogram of a normal female foot. B. Modified pelmatogram showing weight bearing points.

B. the moderate or flaccid paretic gait; C. the severe or spastic paretic gait.

A. *The mild paretic gait* is caused by muscular weakness due to a large number of etiologic factors. It results in slowing of locomotion, the steps being shortened on account of an exaggerated flexion at the knee joint. The following are examples of mild paretic gaits:

## 1. The pompous gait.—

The upper part of the body leans backward, the back is hollowed, the abdomen is protuberant, the feet are widely separated and appear to move with deliberation and dignity, giving the impression of conscious importance—hence the name. This gait may be seen in obesity, pregnancy, ascites, large abdominal tumors, cretinism and rickets.

## 2. The hobbling gait.—

The pelvis tilts toward the sound side, while the trunk leans over to the affected side, causing more or less pronounced limping. This gait is limping. This gait is seen in people afflicted with corns, rheumatism, gout, sciatica, plantar neuralgia, Morton's neuralgia, metatarsalgia, hip or knee joint disease or injury (recent or old), sacroiliac disease, sprains, inflammatory diseases of the lower extremity, chimation, short leg, paralysis of one leg, abdominal aneurysm, and subacute and chronic appendicitis.

FIG. 2.—Ichnogram of a normal gait.

3. Intermittent limping (disbasia angiosclerotica or intermittent claudication) may be classified here

and is a curious limping gait which develops in arteriosclerosis of the lower extremities. There are pain and fatigue on walking, which disappear after a short rest, to reappear again soon after walking is resumed. The pulse is weak or absent below the knee.

4. The waddling or goose gait.—The pelvis and head of femur are jerked forward at each step, knee advanced and extended only after foot is flat upon the ground. There is more lordosis and swinging of the body from side to side at each step, than in the pompous gait. It resembles the gait of a goose. The patient cannot stand on tiptoe. It is seen in congenital dislocation of both hip joints and in pseudohypertrophic muscular paralysis, an hereditary disease seen mostly in boys under ten years of age, and characterized by inability to get up from the floor.

5. The wobbly gait.—Resembles the above and is due to atrophy or paralysis of the three glutei muscles and prevents the patient from climbing. This inability to climb is also seen in those exhibiting the waddling gait.

6. The tottering gait.—Seen in those who have taken large doses of bromides for long periods; also in hydrocephalus, in Korsakoff's disease (psychosis polyneuritica) and in idiopathic muscular atrophy.



FIG. 3.—Pelmatogram of a male, showing flat foot.

7. The shuffling gait is the gait seen in normal old age or senility and is associated with slowly progressive loss of strength and mentality. It is also seen in general paresis and is the usual gait of the longterm prison inmate. The patient gives the impression of being too lazy to lift his feet and instead pushes them along with his legs.

8. The "Charlie Chaplin" gait has been erroneously described as an ataxic gait. It is rather a combination of the "funny part" of several gaits in which the waddling, shuffling, tottering paretic gaits predominate and to which some elements of the spasticparetic, as well as the ataxic gaits, have been added. The inspiration must have come originally to the celebrated movie star from some waddling cripple whom he proceeded to imitate and later burlesqued.

B. *The moderate or flaccid paretic gait*.—In this form of the paretic gait there is commonly a paresis of a certain group of muscles, usually the extensors of the foot or the peronei, causing toe drop and apparent lengthening of the affected extremity. It corresponds to the wrist drop of the upper extremity. To compensate for the lengthen-



ing of the limb, overflexion at the hip or knee, or at both joints, takes place. The limb is flaccid or flabby. The foot is lifted high up with each step in order to raise it clear off the ground and avoid tripping. As the foot is brought down, heel first, this gait may sometimes be confused with tabes and is therefore sometimes referred to as the pseudotabetic gait. It is, however, easily differentiated from the true tabetic gait by its characteristic high action or high stepping quality which made Charcot compare it to the gait of a horse and call it:

1. The steppage gait, mostly seen in the chronic intoxications producing neuritis. It resembles the gait of a man walking through thick grass or brushwood and stepping over constantly recurring but nonexistent obstacles. The typical steppage gait is seen in arsenical neuritis with ankle drop, also in alcoholic neuritis, polyneuritis potatorum (ataxia of drunkards) and in lead neuritis (lead palsy, plumbism, saturnism), in which first the peroneal muscles are affected, later the extensor communis digitorum and finally the extensor proprius hallucis. Phosphorus, copper and grain (ergotism) poisoning may give rise to a neuritis in the lower extremities and produce the characteristic steppage gait. Tuberculosis, malaria, diabetes, and diphtheria (motor form) may sometimes produce this gait. It may also develop as a sequel of sunstroke (thermic fever, insolation) and in fact following any disease which will cause peripheral neuritis of the anterior tibial nerve.

2. The prancing gait is an exaggeration of the preceding gait. It is seen in epidemic anterior poliomyelitis (infantile paralysis) when the disease affects the anterior horn cells of the lumbar cord, causing atrophy of the extensor muscles of the foot, resulting in foot drop. It is also seen in acute ascending paralysis (Landry's disease), which is probably a form of poliomyelitis, and in progressive hereditary muscular atrophy of the leg (Charcot-Marie-Tooth type) when the muscles of the leg, not the foot, are primarily affected, i. e., first the peronei become atrophied, later the extensors of the toes and finally the calcaneal muscles. Finally the prancing may be seen in connection with certain tumors of the cord, unilateral hip disease, dislocation, or injury, and in multiple neuritis and beriberi (epidemic multiple neuritis).

C. *The spastic or severe paretic gait.*—The spastic gait is due to the hypertonicity of the weakened muscles, the resulting stiffness causing a slowing of locomotion and diminished excursion of the affected limb. The hypertonicity is produced either by direct stimulation of the motor cells in the anterior horn of the spinal cord, as in traumatic myelitis, or by impulses coming down from the cerebral cortex. The limb is spastic or rigid, due to the tonic spasm. When the tonic spasm is of long standing, it is termed a contracture. The lower extremity moves as a whole, the toes clinging to the ground, scraping it, and very often catching. Contrary to the moderate paretic gait, this group presents difficulty in flexion which is partly overcome by the elevation of the pelvis on the side of the swinging leg.

1. The mowing or hemiplegic gait.—This is the

prototype of all spastic gaits and is encountered in its simplest form in all hemiplegias, i. e., in paralysis of one side of the body, which may be caused by cerebral hemorrhage, embolism, thrombosis, syphilis, brain tumor, multiple sclerosis of a cerebral hemisphere, meningeal hemorrhage or suppuration, Raynaud's disease, general paresis of the insane; sometimes it may be due to hysteria (functional hemiplegia), or to uremia (transient hemiplegia). No matter what the cause of the hemiplegia, there is always the typical mowing gait. This mowing movement is due to the fact that the spastic limb swings lateralward, describing an arc of a circle, outward, and strikes the ground in a flail like manner. Technically speaking, circumduction takes place by tilting of the pelvis and the swinging of the foot outward and around to the front. The patient afflicted with hemiplegia makes the same movement with his limb as does the reaper with the hand in which he holds the scythe. The only paralytic gait in which there is no moving movement occurs in hysterical (functional) paraplegia, which is very rare. In this condition the leg is dragged forward instead of outward. An important shoe sign in paraplegia is that the sole of the shoe is worn down on the inner side.

2. The small step gait (*La marche à petit pas*).—This gait is seen in cerebral softening following an apoplectic stroke, especially in pseudobulbar paralysis; the steps are very short and the feet are lifted from the ground with difficulty, the patient seeming to count his steps.

3. The crosslegged gait.—This gait is due to a spasm of the adductors of the thigh causing the knees to rub against each other, resulting in crosslegged progression, the lower limbs having a tendency to cross during locomotion. It is seen in both Little's congenital and Erb's syphilitic form of lateral spinal sclerosis. In the syphilitic form a dragging and shuffling gait is often associated with the crosslegged type.

4. The ill defined spastic gaits.—Ill defined spastic gaits are seen in tetany (paroxysmal tonic spasm) from any cause, and in amyotrophic lateral sclerosis, which is the spastic form of progressive muscular atrophy (Charcot's disease). This involution disease, due probably to developmental defects of the lateral pyramidal tracts, has the combined symptoms of spastic spinal paralysis, anterior poliomyelitis and bulbar palsy, hence the difficulty in classifying it. Myelitis (inflammation of the spinal cord) may be due to trauma, alcoholism, syphilis, vertebral caries (compression myelitis), tumors, aneurysm, hemorrhages into the cord, etc., and will exhibit various gaits according to the stage and severity of the disease. It may begin with a mild paretic gait passing through several stages of the spastic gait on to complete paraplegia (paralysis of both lower extremities). In complete paraplegia there is of course no gait, as the patient cannot walk, there being a loss of the power of locomotion but not of progression (a patient so afflicted may still move from place to place on his hands).

5. The dragging gait.—In hemiplegia one foot only is dragged. Dragging of both feet is seen in multiple neuritis, hereditary peroneal atrophy, spas-

modic spinal paralysis, and spinal and syphilitic spinal paralyses.

6. The dromedary gait, so called on account of its resemblance to the gait of a camel, is seen in children suffering with progressive torsion spasm (Flatau-Sterling disease).

Finally, spastic paretic gaits are often observed in pellagra (maidism, Italian leprosy, Alpine scurvy) and in lathyrism (lupinosis), where the slow toxic spinal sclerosis finally leads to spastic paraplegia and loss of the power of locomotion; also in caisson disease (diver's paralysis).

## II. THE ATAXIC GAIT.

The ataxic gait may be either the static ataxic gait or the functional ataxic gait, and these are termed either 1, spinal or 2, cerebellar, according to the location of the lesion.

*A. The static spinal ataxic gait.*—This is the most easily recognized gait, and once seen, is never forgotten. There is an exaggeration of all the movements of locomotion. The hips are overflexed and rotated laterally, the foot is raised suddenly and too high, the toes are lifted and the whole limb is thrown suddenly forward with unnecessary vehemence and is then brought down heel first or flat footed, with a stamping sound. The feet are kept wide apart and while in the air they move in an undecided manner, as if the patient was doubtful where to put them. The eyes of the afflicted person are glued to the ground or fixed to the limbs so as to supplement the lack of muscular and articular sensation by the sense of sight. In the cerebellar type of this gait the movement excursion is not as extensive as in the spinal type. A sudden turning movement or an abrupt sitting posture is difficult or impossible to assume in this type of locomotion. In order to test static ataxia, the patient is made to stand heels and toes together, whereupon marked swaying takes place. The swaying is increased when the eyes are closed and the patient looks like a "chicken on a clothes line." If there is more than one inch forward swaying and more than three quarters of an inch lateral swaying, the patient is considered ataxic. In the disease known as tabes dorsalis, or locomotor ataxia of syphilis, the swaying may be so pronounced as to produce absolute incapability to stand or to walk.

*B. The cerebellar (functional) ataxic gaits.*—These gaits are produced by a disturbance of the equilibrium accompanied by vertigo resulting in a very irregular swaying from side to side, resembling the gait of an intoxicated person. The patient makes short steps, keeps his feet wide apart, staggers, rolls, sways to and fro, and reaches a set point by zigzagging toward it. The swaying is relieved when support is given under the armpits.

1. The titubating gait is a form of functional cerebellar ataxic gait seen in the following affection: Friedreich's (disease) ataxia; hereditary cerebellar ataxia; dementia paralytica; ataxic paraplegia; labyrinthine disease and to some extent in vertigo; syringomyelia; and in some cases of general paresis, and various chronic intoxications like lead or arsenic or alcohol affecting the cerebrospinal system.

2. The reeling or staggering gait is seen in acute alcoholic intoxication and Mésnière's disease (disease of the middle cerebellar lobe).

## III. THE CHOREIC GAIT.

The choreic gait, which is sometimes referred to as the spasmodic or hysterical gait, is very variable in quality depending on the cause of the tremor. It consists of a series of quivering or trembling movements of varying intensity, but nearly all due to clonic spasm and disappearing during sleep or passive motion. This distinguishes it from the spastic or paraplegic gait in which the spasm is tonic in quality, lasting from one minute to one month. The clonic spasm, on the other hand, consists in rapidly alternating contractions and relaxation of the muscle.

1. The stumbling gait is seen in chorea (St. Vitus's dance) and Huntington's (hereditary) chorea, in Friedreich's paramyoclonus multiplex (which is not to be confounded with Friedreich's ataxia), in Unverricht's progressive myoclonus, and in multiple sclerosis of the spinal cord. The gait resembles that of a schoolboy, who clownishly stumbles or trips over his heel to attract attention. Technically, there exists rotation of the legs, which soon renders locomotion impossible. When these abrupt twitches and jerking movements, which are involuntary and purposeless, affect only one half of the body, we speak of the condition as hemichorea. The patient appears restless, unsettled and fidgety.

2. The festination gait is typical of the disease known as paralysis agitans (Parkinson's disease, shaking palsy) and is an advanced choreic gait in which there may be observed the curious phenomena of propulsion and retropulsion, i. e., the impossibility of stopping, once the patient is pushed either forward or backward. In some instances, when pulled suddenly backward, the patient will take a few backward steps with increasing rapidity, while the body remains in the characteristic posture of paralysis agitans; namely, in the forward leaning attitude. In festination "the body tries to overtake its centre of gravity" (Trousseau).

3. The saltatory gait ("the jumpers") is a very rare condition occurring the instant the weight of the body is put upon the feet. It consists in strong and rapid contractions of the muscles of the thigh and leg causing the patient to jump up violently. It is probably an hysterical spasm.

4. The myotonia gait occurs in Thomsen's disease and consists of tonic, painless spasms whenever a certain group of muscles begins to function. The steps are first checked and delayed; but this gradually wears off. This curious condition returns again when the same group of muscles is called into action. Owing to the tonic spasms, this gait might have been properly classified as a spastic paretic gait, were it not for the fleeting and irregular character of the spasticity.

5. The hysteria gait, known also as astasia-abasia, is notable by the ease with which it may simulate any and all of the gaits described above, the spastic as well as the flaccid types of paralyses, —even the cross legged gait, ending in complete



inability to stand or walk. It differs from all of them, however, in the ability of the patient to perform all the nervous functions of the limb when lying in bed. The hysterical gait may also end in:

Catalepsy which is a state of muscular rigidity enabling a limb to maintain a posture in opposition to gravity for one hour or more (waxy flexibility). This curious phenomenon of retaining the leg or any other part of the body in a fixed attitude (given to it by the operator) is sometimes seen in catatonias, general paresis, brain tumors and, (rarely) in meningitis.

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## THE TECHNIC OF INTRAVENOUS MEDICATION.

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The ever increasing importance of intravenous medication, especially in the treatment of syphilis, makes it desirable to simplify, if possible, its technic sufficiently to make this promising therapeutic measure safe and reliable at the hands of the less experienced physician. The part that seems most difficult and, therefore, needs improvement more than any other is the introduction of the needle into the vein. As simple as it may seem at the hands of the expert, it has frequently proved disastrous and is fraught with serious consequences if performed under unfavorable conditions by any one who lacks experience. Not only should the vein be entered, but the point of the needle must be properly placed; it should neither perforate the opposite wall nor should a part of its outlet be left outside of the vessel.

The success of introducing the needle into the vein and placing its point correctly depends mainly upon the degree of the filling of the vessel. If it is filled well and is hard, the introduction of the needle is easy and offers no difficulty. However, as the filling grows less and the vein flabby, the trick of introducing the needle gets more difficult and uncertain, until finally, when the filling gets below a certain point, even the expert will fail at the attempt.

Theoretically and practically, the best filling of the vein is obtained if the constriction of the arm is regulated so that the pressure remains just below the point at which the arterial flow is interrupted. If this is done, the blood enters the arm under the full force of the arterial pressure and, after passing the capillaries, crowds into the veins until they are completely filled and hard. On the other hand, if the pressure is too high or too low, so that either the arterial flow is interrupted or the venous flow is sufficiently blocked, the filling of the vein becomes incomplete and, in a corresponding measure, the introduction of the needle grows more difficult or is impossible.

Of a technic, that may be depended on by the less experienced physician, we must, consequently, demand that this optimum degree of pressure can be obtained in any and all instances quickly and accurately. Taking this stand, it becomes evident that the customary rubber tube, universally used as a tourniquet for the constriction of the upper arm, is not the best instrument for the purpose. Even the most experienced and skilled operator can at best but make a guess that the pressure is right. There is no possibility of controlling with this tube to any degree of accuracy the variations in pressure and the proper filling of the vein must, of necessity, be left to the uncertainty of good luck.

Looking for a better and more satisfactory instrument I decided to give my Tycoas a trial. With this as well as with any other sphygmomanometer the very degree of pressure needed for our present purpose is easy to find and readily obtained at the point of the systolic pressure; the artery is open and the veins are tightly closed. It seemed to me to be the ideal instrument to supplant the rubber tube.

So it proved to be. The results of the trial have been most satisfactory and pleasing to myself and to my patients. This is due to several reasons: 1. The selected vein being always filled to its maximum degree, the introduction of the needle is easy and readily accomplished. Its point can safely be pushed forward into the lumen without fear of perforating the opposite wall. 2. As the pressure rises gradually and is applied to a broad surface by means of the cuff, the well known pain, due to the constriction of the arm by the rubber tube, is conspicuous by its absence. A number of patients who had had experience with the rubber tube have expressed their surprise and gratification at the improvement. 3. The release of the pressure by simply opening the air valve is handier and easier than taking off the rubber, an advantage readily appreciated by those who make intravenous injections without assistance. 4. Should need be, the constriction of the arm is readily restored without much manipulation and without disturbing the needle by simply reinflating the cuff.

The technic I employ is as follows: The patient is placed upon the operating table with the upper body fairly well elevated and with the arm slightly slanting downward in the direction from the shoulder to the finger tips. In this position, a better filling of the vein is secured without interfering with the injection. Then I apply the cuff, attach the inflating bulb and manometer, disinfect the arm and put on pressure. If the blood pressure is known—and it should be—the pressure may be raised immediately to this point; if the blood pressure is not known, the oscillations of the hand on the dial may serve as a guide. As they cease, just enough air is released to make them reappear. I wait and watch, my left index finger controlling the selected vein. No hurry is necessary. There is no pain. I give plenty of time until the vessel is full and hard. Then the needle is introduced. As the blood begins to show, I make connection with the glass cylinder containing the solution, release the pressure of the cuff by opening the air valve and proceed with the injection.

The sphygmomanometer, thus used, improves and simplifies the technic of intravenous medication or of taking blood for the Wassermann test. It has proved to me of decided advantage over the plain rubber tube ordinarily employed. It obviates unnecessary pain and does away with guesswork.

30 NORTH MICHIGAN BOULEVARD.

## ANIMAL POWERS NOT MENDELIAN CHARACTERS.

BY CASPER L. REDFIELD,  
Chicago.

Chemical compounds are made up of unit characters. Thus,  $H_2O$  represents two units of hydrogen combined with one unit of oxygen to form water.  $NaCl$  is one unit of sodium and one unit of chlorine combined to form common salt. And  $H_2SO_4$  is composed of two units of hydrogen, one unit of sulphur and four units of oxygen, the compound being sulphuric acid.

All of these things, and all chemical substances, are physical bodies which occupy space. This division into units such as molecules, atoms, or electrons, is characteristic of every thing which we classify as matter. But changes in velocity are not similarly divided into units. A cannon ball passes through all conceivable changes in velocity from zero to maximum. Velocity is a factor in measuring energy, the amount of energy in a moving body being determined by multiplying its mass by one half of the square of its velocity. Because a factor of energy is not of unit composition, it follows that energy itself is not of unit composition.\*

An Austrian monk named Mendel made some experiments on the physical characteristics of plants and discovered that they were composed of unit characters which combined and separated in heredity very much as chemical bodies combine and separate. The men to whom Mendel communicated his discoveries were not very brilliant. They either could not or would not understand him for thirty-five years. Apparently they wanted to wait until he was dead before they would admit that an outsider could dig up facts which they had overlooked.

But ultimately the biologists discovered that unit characters were a real factor in heredity, and they proceeded to apply such characters to everything without any discrimination. Like the scientists of a hundred years ago who thought that heat was some kind of matter the biologists of today try to represent animal energy in terms of physical bodies. They try to explain the inheritance of human intelligence, physical strength, resistance to disease, and other forms of energy, in terms of unit characters, when, as a matter of fact, energy is not divisible into natural units. It belongs in a different order of things and demands different methods of measurement.

If a man winds up a spring he stores work in it. The work so stored is plain mechanical energy and is known to be subject to the laws of thermodynamics. But that identical energy came out of the muscles of the man, and it is certain that it was subject to the same laws when in those muscles and on its way to and from those muscles. If a man performs a mathematical calculation he performs mental work. But a calculating machine driven by ordinary mechanical power does the identical work. Things which are equal to the same thing are equal to each other, and things which may

be transformed into the same thing are different forms of the same thing. Human intelligence is simply a form of mechanical energy, and is subject to the laws of thermodynamics.

Resistance to disease, the process of digestion, and all other physiological processes, are operations in which work is performed. That work involves the energy known in mechanics, and comes under the laws of thermodynamics. All of these processes depend upon heat units, and heat units are nothing else than ordinary mechanical energy. Changes in the heat of a body are nothing else than changes in the velocity of the molecules of which the body is composed. Velocity is not divided into natural units. The heat units are artificial units used for convenience, and not the natural units of a chemical composition. Similarly, while we may represent animal powers by units, such units are artificial and do not correspond to the natural unit characters dealt with by the Mendelian theory.

Mendel experimented with tall and short peas, and peas of different colors. When he crossed tall and short, green and yellow, etc., he found that tallness and shortness and greenness and yellowness acted as natural units which would separate from each other in later generations just as the elements of a chemical compound will separate under certain conditions.

When a horse is put into training as a trotter he will gain in trotting power year by year, but such training adds nothing to either his tallness or shortness, and does not in any way affect the color of his hair. The muscular strength gained as a result of exercising the muscles belongs in an entirely different order of things from those investigated by Mendel. There is nothing of the unit character in such gain in muscular strength. The assumption that the presence or absence of developed trotting power in a horse would act as a Mendelian unit has no foundation in ascertained fact.

The same thing is true for mental development in the human being. The child gains in mental power year by year as a result of mental efforts. The Binet system recognizes this in the child up to sixteen years of age. The aerial service in war recognizes the same development of mental power from eighteen to thirty. The authorities have found by experience that while a man less than eighteen is commendably daring, he lacks judgment and too frequently falls a victim of older men in that life and death struggle in which intelligence is the main deciding factor. On the other hand, they find that a man over thirty is too cautious, which means that he lacks in that daring which is of advantage to the army as distinguished from advantage to the individual. The same continued mental development is recognized in the old saw about a young man for war, and an old man for counsel.

From feeble-minded parents we get feeble-minded offspring, and from powerful minded parents we get powerful minded offspring. That statement recognizes the fact that mental power is an inherited quality, and that the offspring inherits the kind of power which exists in the parent. It should be evident that the child cannot inherit something which the parent does not have. To assume that a child can be born with something not inherited from

\*The idea that an electron is a natural and definite unit of electricity, and that electricity is a form of energy, is not necessarily opposed to what is stated here. The electron may be nothing else than the amount of electricity which is normally associated with the smallest unit of matter.



the parent is to assume spontaneous generation, or special creation operating through the germ. No one boldly assumes either of these things, yet much of the present day eugenic teaching necessarily involves such assumptions.

The mutations which have been observed are distinguished from the matter here under consideration in two ways. First, they relate to physical bodies and not to power. The two things are in different orders, and it is not legitimate to determine one from the other without direct evidence of a relationship. Second, a mutation is properly a change in form of something already in existence, and not the production of something which did not before exist. A lump of putty may be molded into many different shapes, but no amount of molding will make one pound of putty into two pounds. Neither will any change in the shape of a piece of putty add to or subtract from its temperature. The quantity of putty represents matter, and its temperature represents energy.

There is room here for a lengthy discussion on the science of Energetics as applied to animal powers, but that is not the present object. What is intended here is to point out some fundamental distinctions which have been overlooked in the current teachings on heredity and evolution. Probably some persons think that I am claiming to have discovered all that there is and am giving the last word in science. Quite the contrary. I have opened a door and paved over a few of the nearest facts as samples. I am now pointing to a great mass of untouched facts, a mass great enough to keep thousands of men busy for many years to come. I am pointing instead of digging because I realize the utter hopelessness of any one person doing anything more than scratch the surface. And the way I am pointing is to tell something of the samples I found.

It is recognized that man descended from a common ancestor with the ape, and that that common ancestor had much less mental ability than the man of today. Also, that still further back the ancestors had still less mental ability. As a consequence there must have been, during the ages, a gradual increase in mental ability from generation to generation. This means that later generations inherited more power than earlier ones. How did that power get in? Was it a special creation, or a spontaneous generation? Or did it get in in some other way?

Perhaps some one will say that this assumed descent from inferior ancestors is mere theory and not a fact scientifically established like the law of gravitation or the rotundity of the earth. Very well then, we can take another case in which it is positively known that animal powers have increased from generation to generation. The American trotter is such a case. During the nineteenth century he improved from the three minute trotter to the two minute trotter, and we have detailed records of scientific tests for every year from 1818. The later generations inherited more trotting power than the earlier ones. An inherited quality got in somehow.

In this case we have detailed pedigree records, and a large amount of detailed horse history. From

these records and this history we can tell under what conditions trotting power gets in, and under what conditions it does not get in. This is not theory, hypothesis, or speculation as some persons want the public to believe. It is a plain demonstrable fact that, under certain definite conditions, new trotting power will get in and be inherited by later generations. Under certain other definite conditions, no new trotting power will get in. In fact, trotting power previously in will be lost and later generations will inherit less than previous ones.

A later generation will inherit more power than an earlier one provided the earlier one develops that particular kind of power by exercise before reproducing. A horse driven regularly and continuously at the trot will develop trotting power regularly and continuously up to at least seventeen years of age. We have official records for that matter up to that point. It can be determined with a close degree of accuracy just what is an average sire and an average dam in the horse breeding industry. An average so established is a standard for comparison. When any generation has its trotting powers developed more than this standard, then the next generation inherits more than the previous generation inherited. When any generation has its trotting powers developed less than this standard, then the next generation inherits less than the previous generation.

What I am saying here is not based on personal experiments conducted in a private laboratory. It is based on public records open to every one. I am pointing to where those records may be found, and I am explaining just how my statements may be tested. I am willing that a test should be made in any other way, provided it is carried out with some regard for scientific accuracy and is directed to the point.

Let us return to a consideration of human beings. Mental power develops year by year up to a high age, provided there has been mental activity. The child inherits the kind of mentality which exists in the parent. The average parent, male and female considered together, is about thirty years of age when the average child is born. Hence, a standard parent is one who has a mental development (at birth of child) which corresponds to normal mindedness in a thirty year old. That is a definite standard for comparison, and that standard can be used in pedigrees of different kinds for the purpose of determining the circumstances under which the race improves or degenerates.

Perhaps some one will say that we have no standard for what is normal mindedness in a thirty year old as distinguished from normal mindedness in a sixteen year old, and have no means for establishing the difference. Don't be so helpless. We know that muscular strength develops as a result of muscular exercise, and the records for the trotter show that this development will continue as long as the exercise continues. An analysis of those records shows that we may measure the amount of acquired trotting development in terms of the trotting work required to obtain it. The Holstein-Friesian records show that a cow's milk producing power will continue to develop under milk producing work, and

an analysis of these records shows that we may measure the amount of acquired milk producing power in terms of the milk producing work necessary to obtain it. Mental power develops as a result of mental work, and if the amount of such development is not measurable in terms of the mental work necessary to obtain it, then nature must be guilty of some extraordinary self contradiction. But tests of heredity show that there is no self contradiction, and that mental development may be measured directly in terms of the work necessary to obtain it.

It is quite possible and practicable to estimate with a fair degree of accuracy what would be the average mental activity of the average person between sixteen and thirty. If a person who is normal minded at sixteen is mentally active to the average degree, then at twenty he will have the mental status of a twenty year old; at thirty he will have the mental status of a thirty year old; at forty he will have the mental status of a forty year old; and so on. Even when we do not know or cannot express the average degree of mental activity with certainty, we can determine that certain degrees of activity are above the average, and certain other degrees are below the average. Thus in ten years of time, a lawyer, or physician, or editor would do more than the average amount of mental work and consequently would acquire more than the average amount of mental development as a result of that work. On the other hand, a coal miner or a street sweeper would probably be below the average in mental activity and consequently in acquirement.

The average individual would be a normal-minded person at twenty, but he would not be a normal-minded parent at that age because the average parent is a thirty year old and has the mental development of a thirty year old. At twenty he would be a relatively feeble minded parent. But the same person at forty would be beyond the thirty mark and would be a relatively powerful minded parent. Hence, the same normal person may be a feeble minded parent in early life, a normal minded parent in midlife, and a powerful minded parent in late life.

Try this out, and compound it so that it applies to parent, grandparents and greatgrandparents. Also remember that each person has eight greatgrandparents, each one of whom has an effect upon the heredity of the greatgrandchild. When this is done it is found that superior stock arises from successive generations in which the mentality of the parents is above the thirty year mark, and that inferior stock comes from successive generations in which the mentality of parents is below the thirty year mark.

525 MONADNOCK BLOCK.

**Pediculosis Capitis.**—E. A. Sainz de Aja (*Revista de Medicina y Cirugia Practicas*, May 18th, 1918), as parasiticides advises kerosene, two per cent. phenol, 1-500 bichloride, 1-1,000 sublimated vinegar, and five per cent. xylol. In men or children with short hair ointment of balsam of Peru, of calomel or yellow oxide of mercury in one per cent. strength may be used.

## APPENDICITIS IN CHILDREN.

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Appendicitis in juveniles, under fifteen years of age, is interesting to the surgeon because the liability to err in the diagnosis varies inversely as the age. Finney calls attention to the fact that with adults the usual tendency is to mistake something else for appendicitis, while with the child appendicitis is mistaken for something else. The percentage of clean cases in adults who come to operation is gradually increasing, the diagnosis is easily made, and few are treated medically: consequently peritonitis, either local or general, is the exception and not the rule. It has been our experience, however, that clean cases in children are unusual.

Two years ago on reviewing the case records of patients operated upon for appendicitis under fifteen years of age at the Samaritan Hospital, I found that the percentage of clean cases (those in which it was not necessary to insert a drain) was less than ten per cent. At least ninety per cent. had peritonitis, either local or general, and the mortality was four times greater than the mortality in a corresponding number of cases among adult patients. Referring to case reports we find that H. C. Deaver (*Journal A. M. A.*, December 24, 1910), reported 500 patients operated on under fifteen years of age. His statistics show, that of the acute cases, which numbered 403, 343, or eighty-five per cent. had abscess formation; and the mortality was 4.6 per cent.

In a similar number of operations on adults the mortality was less than five tenths per cent. These facts show the importance of early diagnosis. In an adult, we now know that an individual who complains of severe abdominal pain is not suffering from acute indigestion or gastritis—diagnoses such as these have had their day; we must now eliminate appendicitis, internal strangulation, gallbladder disease, renal colic, acute perforation of the stomach or duodenum, and acute pancreatitis, before we are justified in attributing his ailment to a functional disturbance. The same is true in children, and acute pancreatitis, perforation of the stomach and duodenum, renal colic, gallbladder disease, and internal strangulation (except in the very young) are rare. Therefore after excluding the gastrointestinal toxemias, acute inflammation of the appendix should be considered as the probable diagnosis. But, in many cases some member of the family remembers that the child had eaten a green apple the day before he was taken sick, and one begins to doubt, and perhaps (it has been known to occur) will harken to the grandmother who says, "Oh, give him a dose of castor oil and he will be all right in the morning."

### ETIOLOGY.

In considering the etiology in children, the predisposing factors play an important rôle: 1. Appendicitis in children is not infrequently associated with other infectious diseases: Influenza, measles, acute rheumatism, enterocolitis, typhoid, and tonsil-



litis. It is the opinion of many that the excess of lymphoid tissue together with a thinning of the submucous coat accounts for the frequency of associated appendicular inflammation in these cases. 2. Abdominal injury predisposes to appendiceal inflammation in the young adult, 2.5 per cent. of cases giving such a history. 3. Fecal concretions are usually larger and are more frequently found in early life. 4. Intestinal parasites are uncommon but are more frequently associated with appendicitis in juveniles. 5. Foreign bodies are more frequently found in appendices in children than in adults. We have seen lemon and grape seeds, toothbrush bristles, toothpicks, and, within the past month a common pin. In this instance the patient, two and a half years of age, entered the hospital with a history of lower abdominal pain, nausea, vomiting, and frequent urination, of four days' duration. At operation we found a localized abscess with a rusty pin well down in the pelvis. The tip of the appendix was markedly hypertrophied, the pin undoubtedly having lodged in this portion of the organ for some time prior to its passage into the peritoneal cavity.

The direct causative factors are the bacillus coli, staphylococcus, streptococcus, bacillus pyocyaneus, and the tubercle bacillus. This is the order of frequency with which the above mentioned germs attack the appendix. It must be remembered, however, that tuberculosis of the appendix in adults is invariably secondary to a pulmonary lesion, while in young adults it usually follows or accompanies a general abdominal tuberculosis.

#### SYMPTOMS.

The symptoms of appendicitis in children are the same as the symptoms in adults, the sequence being pain, nausea and vomiting, localized tenderness, rigidity, temperature, leucocytosis, and at times urinary frequency. The initial symptom of pain is of a variable quality in children. As a rule general abdominal, primarily; later, in the majority of cases, localized in the right lower quadrant. Owing to the relatively greater length of the appendix in children, a certain percentage complain of right hypochondriac, or left iliac pain, which renders a correct diagnosis rather difficult at times. Vomiting is more variable in appendiceal inflammation in children, due to the fact that children are more liable to gastrointestinal disturbance than the adult. In a fair percentage of cases the history shows that nausea and vomiting preceded the usual initial symptom pain, but after careful investigation it is found that in the greater percentage of cases nausea and vomiting followed the initial symptom. The severity of the nausea and vomiting depends upon the causative germ. In streptococcus infection the most severe vomiting occurs, less in staphylococcus, and least in colon and tubercle infections. The usual history is that there are one or two attempts at vomiting which subside and do not recur unless the peritoneum is involved. When this takes place the vomiting recurs and is more persistent, the vomitus consisting of the contents of the upper intestinal tract above the site of inflammation.

Localized tenderness before the involvement of the parietal peritoneum is not constant. It must be remembered that the appendix in children is more

liable to vary in position, so that we frequently encounter cases where, because of a post cecal position, or one low in the pelvis, we have very little abdominal rigidity. When, however, the parietal peritoneum becomes involved, the abdomen becomes rigid and distended. Temperature in children is more variable than in adults, and inasmuch as the colon bacillus is the most frequent offender, the temperature is usually of moderate degree; the staphylococcus producing a higher range, and the streptococcus the maximum degree of temperature, in these cases a sudden drop being indicative of perforation or gangrene. I would call attention to the fact that one may have a tubercular involvement of the cecum and appendix with little or no temperature, perhaps only an afternoon rise to 99.3°, or an entire absence of temperature for several successive days. A blood examination is valuable when one is in doubt about the diagnosis. A leucocytosis can frequently be obtained before there is involvement of the peritoneum and often before the appearance of temperature. Urinary frequency is a frequent accompaniment of the above mentioned symptoms and is undoubtedly due at times, to the position of the appendix low in the pelvis in a certain percentage of cases, its close proximity to the bladder accounting for this symptom.

Given a sequence of symptoms as previously narrated, one should be suspicious of appendiceal inflammation, especially if within the first eighteen hours a leucocyte count of 15,000, or upwards be present. If pneumonia can be excluded, the diagnosis is almost certain. Leucocytosis above 15,000 is unusual with catarrhal inflammation of the intestinal tract, cystitis, acute pyelitis, salpingitis, ruptured duodenal ulcer, strangulation, intussusception, ruptured graafian follicle, gallbladder disease, etc. The importance of a rectal examination should not be forgotten, it being possible at times to palpate a pelvic mass from below, when abdominal examination is practically negative.

In very young children where the possibility of a chest condition has been eliminated, one is justified in administering enough ether or chloroform to overcome the spasm of the recti. Careful palpation will invariably reveal in the early stages a mass of omentum near the inflamed organ. If, however, the process has advanced to abscess formation, palpation may not be necessary, increased abdominal fullness being distinctly noticeable in the right lower quadrant in the majority of instances. Of course, if the appendix is abnormally situated the value of this examination is considerably diminished.

#### DIFFERENTIAL DIAGNOSIS.

1. Ptomaine poisoning or acute gastrointestinal colic is the usual diagnosis in the large percentage of cases that come to operation. In these cases the presence of diarrhea rather than constipation, the absence of leucocytosis, and the cessation of vomiting following stomach lavage, together with a history of some indiscretion in diet, make the diagnosis of toxemia evident. 2. Acute pyelitis is common and not infrequently associated with abdominal pain. In these cases, however, the dominant symptom is usually fever, which, with a careful microscopic examination of a centrifuged specimen of

urine, is sufficient for making a correct diagnosis. Here one must exclude a possible vaginitis. 3. Intussusception in children may be ushered in by a sudden cry, (Murphy). A sausage shaped mass which varies in position, the presence of the characteristic overflow vomiting of intestinal obstruction, together with the bloodstained mucous stools, and the absence of rigidity, leucocytosis, and temperature, are the main features to be considered in diagnosing this condition. 4. Pneumonia: During the past eight years, at least four cases of pneumonia in children reached the etherizing room with a diagnosis of appendicitis. The points to be remembered in the differential diagnosis are the respiration, pulse ratio, and the intermittent spasticity rather than the continuous rigidity, of the recti; also herpes, and an excessively high leucocyte count. 5. Acute perforation of the stomach and duodenum: Two years ago I reported a perforation of the duodenum in a boy of fourteen years of age who was referred to the surgical service of the Samaritan Hospital. The diagnosis had been made by the attending physician prior to operation. The pain experienced is usually so severe that the patient cries out, falls to the floor, and writhes in agony. There is marked abdominal rigidity. And it is well to remember that these patients vomit immediately the drug or laxative which is given to them by mouth. This alone is suspicious of a perforation high up in the intestinal tract. If seen early these cases have a subnormal temperature and a pulse which is unusually slow compared to the severity of the shock present.

6. Acute pancreatitis: A girl fifteen years old, entered the hospital with a history of having had several attacks of abdominal colic which confined her to bed for several days at a time. These were associated with nausea, vomiting, and slight temperature. The last attack which occurred three days before she was admitted to the hospital was more severe than the preceding ones. The pain was markedly severe, and accompanied with vomiting of bilestained mucus. On one occasion she vomited a considerable quantity of dark blood. On admission to the hospital she showed evidence of general peritonitis. Her temperature was 100°, pulse 140, leucocytosis 15,600. A diagnosis of appendicitis was made. A low incision revealed a slightly engorged appendix with no adhesions, and free fluid of turbid quality in the abdominal cavity. A vertical incision above revealed advanced fat necrosis of the upper right abdomen, the gall bladder thickened, inflamed, and filled with small stones, about 200 in number. The head of the pancreas was thickened and engorged. In this case the history of preceding attacks of colic followed by one of unusual severity, which was accompanied by a rise in temperature, rapid pulse, and vomiting of blood, should have lead to a diagnosis of pancreatic inflammation.

7. Abdominal tuberculosis: Experience has shown that in ninety per cent. of the cases where a physician has made a diagnosis of appendicitis in a child who has had previous attacks of similar nature, characterized by general abdominal colic, nausea and vomiting of a moderate degree of severity, obstipation and temperature, we find abdominal

tuberculosis of one type or another. On opening, in this type, one usually finds an apparently normal appendix, which together with the rest of the contents of the abdominal cavity may look rather anemic. There is generally free fluid which varies in amount and is usually observed before the appendix is located. Enlarged mesenteric glands are a frequent accompaniment, these being more noticeable in the neighborhood of the cecum, or the bowel itself may be studded with numerous tubercles. Corner, in *The Lancet*, has called attention to the frequency with which these cases come to operation, and the universal improvement which follows appendectomy (the proper treatment in early tuberculosis of the abdomen being an exploratory laparotomy).

#### TREATMENT.

Immediate operation is generally accepted as being indicated in practically all types of appendiceal inflammation, the exceptions being: 1. Early perforations with widespread peritonitis due to the streptococcus. 2. Cases of general peritonitis of several days' duration, where an operation might turn the tide against a favorable outcome. In these cases many institute the Ochsner treatment with excellent results, (not easily carried out in children). At the Samaritan Hospital, however, it has been our experience that these cases do better if drainage is instituted. This may be accomplished with a minimum amount of shock to the patient by using either local or intraspinal anesthesia. The advantages gained by the use of the latter are: 1. The patient's emunctories are not interfered with as they unquestionably would be if ether were administered. 2. Relaxation of the abdominal muscles permits the insertion of a drain with the least possible amount of manipulation of the abdominal contents. 3. Paralysis of the bowel and sphincter, permits evacuation of contents of the lower bowel.

2033 WALNUT STREET.

#### MUCOUS COLITIS.

By ROY UPHAM, M. D., F. A. C. S.,

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The condition covered by this title has been one of the battlegrounds of medicinal pathology and treatment for the last two decades, proof of this fact being the many synonyms by which the condition is known, membranous colitis, pseudomembranous enteritis, tubular diarrhea, mucous colic, etc.

The first consideration of this condition must be from a combined etiological and pathological view. Nothnagel in describing this condition based his premises on the fact that the condition was one of a pure neurosis and that there was no concomitant colitis. The cases which have come to the autopsy table have been few and the pathological findings at variance, some authorities demonstrating a well marked enteritis and another school of pathologists determining a normal condition of the intestines.

In carefully analyzing the history of a large number of cases there has always been a stage of preliminary enteritis not characterized by the later



manifestations of mucus and colic. The diagnostic feature of this enteritis is the fact that the patient has noticed a tendency toward the easy occurrence of diarrhea and the further fact that, on careful questioning, it is found that, on waking, there was an uncomfortable sensation in the abdomen which developed into a crampy condition of more or less intensity, which was relieved by the passage of gas. The characteristic feature of this condition was that it appeared the first thing in the morning on the patient getting out of bed and undertaking active movements.

The next step in the pathology, after the condition of mild enteritis is established with the appearance of the aforementioned symptoms, is a consideration of the so called vagotonic and sympathicotonic states. It has been amply demonstrated that stimulation of the vagus in health produces motor activity along the gastrointestinal canal. This activity is held in check and controlled by the inhibition from the sympathetic nervous system. The wonderful phenomenon in this occurrence is the nerve balance in the normal individual whereby stimulation is combated by just enough inhibition to produce a condition of nervous balance with resultant normal functioning of the gastrointestinal system. But in an individual who has an over active vagus, which may be due to an excess of nerve activity of that structure, there occurs a series of spasmodic activities throughout the gastrointestinal canal. These spasmodic activities when in the stomach produce areas of ischemia and are the foundation of deficient circulation which makes possible the location of infection from any systemic source and the production of gastric ulcer. The same series of phenomena occurs in the large intestine: a condition is brought about which gives rise to spasmodic contractions of the colon, which are a feature of the condition of mucous colitis. The radiograph has shown that the characteristic feature of these cases is spasmodic contractions occurring along the course of the descending colon. These spasms cause areas of stasis in the gut and with these areas of stasis there occurs, due to irritation, an excess mucus formation which is precipitated in the form of mucous masses varying in size from small masses of one centimetre in diameter to actual tube casts of the entire large gut.

The secondary factor which allows this precipitation of mucus is the absence of a substance called mucinase, which is one of the secretions of the liver which is deficient in these cases, probably due to the same motor phenomena. Thus we have brought about the conditions which explain the pathological and etiological sources of the disease.

Symptomatically, the condition is characterized by pronounced constipation, the features of the constipation being the passage of hardened masses of fecal matter which are of small calibre and often broken into small pieces like the stool of sheep; a prolonged retention of the fecal matter in a spasmodic area of gut extracts entirely the fluid contents of the stool, leaving a very small mass in the gut, this producing the constipation by the fact that there is very little content of the intestine to stimulate motor action and produce a normal desire to empty the bowel. This is further increased by the

spasmodic contractions of the intestine, which have already been enumerated. This condition of motor spasm may be so severe as to simulate left sided renal colic and require narcotics in order to produce relief. The characteristic location of the spasm is along the descending colon and it usually occurs several hours after the intake of food. With the ribbon shaped stools masses of mucus are passed which are characteristic in their appearance, and due to fecal retention. The group of symptoms of a condition of intestinal autointoxication are presented: the cachectic skin, offensive perspiration, poor appetite, compression and distention, due to the complicating gastritis which is associated with belching of gas and the passage of gas per rectum, and nausea which rarely progresses to the stage of vomiting. Due to the poor elimination, these cases always undergo a voluntary diet with resultant loss of weight, approaching almost a cachexia, and with the most pronounced mental symptoms—depression, amounting even to melancholia, headache and dizziness, drowsiness after meals, periods of protracted sleeplessness, and irritability of the most pronounced variety.

The prognosis given by most authorities is very discouraging, but with the following treatment most encouraging results have been attained.

#### TREATMENT.

The first condition of treatment is to rid the intestine of the spasmodic colitis. A number of continental clinicians have based their treatment upon the ground that the first essential is to rid the intestine of all sources of irritation by means of a bland diet, rest, and elimination of nerve hypertension. After much experimenting along this line, this treatment appears to me to be radically inefficient, and the most effective method, in my opinion, is to disregard this stage of colitis and approach the problem from the standpoint of under nutrition and resultant nerve exhaustion. With this in mind the first step is to attempt super-alimentation of the patient, which can be accomplished most readily by increasing the caloric intake of the patient in a systematic manner. The patient is instructed to have weekly weight records kept and is given a diet list by which all articles of food can be readily determined in units of 100 calories. The patient is then instructed to start with a definite number of calories, depending upon his weight, arbitrarily speaking 3,000. This is increased 200 calories a week until the patient is gaining a pound a week. The success of the treatment depends not alone on the patient keeping an accurate list of the foods which are taken, but also the exact amounts in tablespoonfuls, or ounces, that the caloric value may be summed up after the evening meal. Should there be a deficiency in the required number of calories, before retiring the patient takes concentrated nourishment in the form of cream, milk sugar, malted milk, eggs, etc., to produce the required number of calories for the day, the whole success of the operation depending upon an accurate caloric record being kept by the patient. Unless the physician insists on this, no considerable degree of success will be attained.

A person beginning this line of work must not think that patients will gain weight steadily each

week, nor should an immediate increase in weight be expected. There may be no gain in weight for several weeks, and then in one week there may be an increase of three or four pounds, and similar spasmodic increases may occur until sufficient weight has been gained.

The principle of the high caloric intake is supplemented by the second factor in the treatment, the rapid passage of food through the intestine by natural means, unassisted by any of the so called cathartics. Success cannot be attained in these cases as long as cathartics are used, as practically every one is a spasmodic remedy and only aggravates the spasmodic condition already present. The bowels can be made to have normal times of functioning if in addition to the high caloric intake, articles of food are added which can not be absorbed and leave a large bulk to the stool, thus stimulating the intestine, as by a foreign body, to extrusion of its contents. The substances which are most effective are the agar-agar preparation, bran and flaxseed given in some form. Large quantities of these should be taken, especially agar-agar in its flake form, in the proportion of one to four tablespoonfuls in some kind of stewed fruit. This can be taken with one meal and Jackson's Roman meal, which is a cereal containing flaxseed may be used for the breakfast cereal, with the evening meal of grape nuts, combined with a half a cup of bran. This together with a Colax wafer at every meal, is usually a sufficient amount of insoluble substance to produce a desire for bowel movement. This can be further aided by the use of mineral oil, given in doses of from one to four tablespoonfuls several times a day. Undoubtedly every one who has had much experience with mineral oil has had patients complain that, sooner or later, the oil escapes while passing gas and causes distressing results, saturating the clothing and doing damage to the location that the patient happens to be in at the time. The author has overcome this unpleasant sequence by combining the mineral oil with ordinary grape juice and holding the oil in suspension by mucilage of acacia. This is a mixture of equal parts of oil and grape juice with one eighth the quantity of mucilage of acacia. Taken immediately before meals, no unpleasant results follow the use of the oil and the fine subdivision of the oil produces far more effective results.

On rising, the patient is instructed to take two glasses of water, in which is dissolved one tablespoonful of milk sugar. This is followed by a breakfast consisting of raw fruit, followed by a Jackson's Roman meal for a cereal and the free use of rye bread or Boston brown bread, upon which butter is used to enhance the caloric intake. Then if a weak cup of coffee, to which a large quantity of cream or condensed milk is added, be taken we have a breakfast which has a high caloric value and contains very little proteid matter. For the protein intoxication which these cases usually have, a Kellogg wafer should be taken with each meal. The patient is also instructed to take in the middle of the morning eight ounces of butter milk, preferably home made, because home made buttermilk contains the fat which is eliminated in commercial buttermilk.

Lunch consists of not over 100 calories of meat,

to which are freely added green vegetables, such as string beans, Brussels sprouts, cauliflower, carrots, parsnips, etc., and a simple salad or lettuce containing a large amount of sweet oil and lemon juice, to be followed by a dessert of stewed fruit, with which is eaten one of the commercial varieties of laxative biscuits containing bran.

In the middle of the afternoon a glass of milk, containing a half a cup of bran, should be taken.

Dinner is much the same as lunch, adding not over four ounces of a cream soup, with 100 calories of proteid, the same green vegetables, the plain salad with plenty of sweet oil, and for dessert grape nuts and agar-agar softened with cream. With this meal are also eaten several slices of Boston brown, rye or whole wheat bread, covered with thick layers of butter, wheat bread being interdicted. Before retiring, stewed figs and Kellogg's laxative biscuits are taken, or agar-agar, also with stewed fruit, is taken as an auxiliary dessert with the evening meal, the patient being reminded all the time to keep an accurate record and if necessary to supplant these meals with other food sufficient to produce the large caloric intake suggested in the early part of the paper.

From the standpoint of drugs applicable to these cases, the best results have been attained from the use of *magnesia salicylate* in eight grain doses, combined with one fifteenth grain of powdered leaves of *belladonna*, taken three times a day. Occasionally the author has used *eumydrine* in place of the powdered leaves of *belladonna*.

Favorable results have also been attained along the line of liver stimulation; the precipitation of mucus in these cases is due to deficient hepatic activity. The relation of the hydrochloric acid secretion of the stomach to the functions of the liver and gallbladder, is just beginning to receive the attention it deserves. Whether the gallbladder is an activator of the secretion of hydrochloric acid, as stated by one authority during the past few months, or, vice versa, whether hydrochloric acid is not the stimulator of the liver and the gallbladder, is a point open to discussion. It seems more logical to believe that the stomach stimulates the organ further along the digestive tract than the opposite state of affairs, and this has been verified by the beneficial effects of the free use of dilute hydrochloric acid in most liver conditions. When a study of the gastric findings already made in the diagnosis of such a case fails to reveal a condition of hyperacidity, fifteen drops of dilute hydrochloric acid with forty-five drops of essence of pepsin are given immediately after meals, taken well diluted through a glass tube. The deteriorating effect of hydrochloric acid on the teeth, if it is taken over a long period of time, must be remembered. This treatment is supplemented by the use of the various bile salts, glycolate of sodium, succinate of soda or acid sodium oleate and last, but not least, the free use of oxgall by mouth. These substances certainly enhance liver activity, and with the liver taking up its part of the digestive work conditions much more readily return to normal. Medicinal soap given in three grain pills several times a day is also of value in this type of case.



Extensive experiments have been made with lactic acid cultures and it is but fair to state that in my experience all varieties have been distinctly disappointing in their effect. It seems far more logical when beginning, even in small fluid doses or tablets of medicine, to supply them in large amounts of buttermilk if results are to be expected. A French preparation called "Antimucoose" has received its share of attention, but the results have not warranted its continued use.

To all operators the magnificent stimulating effects of pituitary solutions used hypodermically in post operative cases to promote peristalsis and the expulsion of imprisoned intestinal contents, have made welcome the preparation of liquid pituitrin which is taken in from one to five drop doses under the tongue two or three times a day. In using this preparation in this class of cases we must be mindful of the double action of endocranialogical remedies and must be wary of producing over stimulation of the motor powers of the gut. Therefore, with this pituitary liquid, very small doses, even of a drop or a half drop, must be used in the beginning, and an advance to a substantial amount may be made only after prolonged use of the drug and careful observation of its effects.

Auxiliary treatment, consisting of night injections into the bowel of a ten per cent. gelatin solution, eight ounces of which are taken as hot as can be borne and retained until morning, or, similarly, eight ounces of cottonseed oil taken warm and retained until morning, produces most satisfactory results. Hot applications, for their antispasmodic effects, are given in the form of hot flaxseed poultices, which can be further assisted by the use of hot water bottles over a prolonged period, or by use of the electric heating pad. Hot sitz baths and Presnitz compresses may also be used, and oxygen irrigations of the intestines, taken through a duodenal tube. There is no question but that oxygen does much to bring about a normal condition of intestinal flora, if it is gotten into the small and large gut. By means of a cylinder of oxygen attached to a duodenal tube, the patient takes treatments for about a half an hour in the morning, allowing the oxygen to pass slowly through the tube; the patient experiences no discomfort, is conscious of a fullness in the abdomen and passes the gas from the rectum within a few minutes of the time that the instillations are begun through the mouth. The author is indebted to Schmidt for this suggestion and has found it of extreme value in these cases.

Treatments can be taken at home, the patient readily learning to pass a duodenal tube, and the ordinary commercial cylinders of oxygen used for anesthesia are readily at hand. This can be supplemented by enemata of carbon dioxide gas, which has a wonderfully antispasmodic action on the large bowel, and which can be taken by using a rectal tube, attaching it to an ordinary siphon and inverting the siphon after enough water has been allowed to pass out so that the glass tube in the siphon is above the water level area; then the contained carbon dioxide gas is liberated and passes out into the rectal tube through the bowel.

Several years ago I conducted a prolonged series

of experiments on the use of autogenous vaccines in intestinal autotoxemic conditions. A report of 100 such vaccines failed to show any improvement in the intestinal condition, and I do not think that the patients should be subjected to the expense incident to such procedure. However, a suitable mixed vaccine is a valuable adjunct in the treatment of these cases.

The use of saline mineral waters has not appeared to be of especial value, the laxative waters especially being interdicted, but if after a careful urinary examination a condition of acidosis is found, the use of bicarbonate of soda in teaspoonful doses several times a day, combined with a lactose solution, produces a cure of the acidosis, and commercial Kalak water is most effective along this line.

The subject should not be left without tribute being given to electric modalities in producing results in these cases, Geiser reporting a series of cases in which there was marked relief from the use of the high frequency current applied by the diathermic method. Surpassing even this in benefit is the method of using the sinusoidal current, and the author, despite its irritating effect, uses a combined abdominorectal faradization, the important point being to use only a current with a long thin wire secondary coil, which is sedative in its effect, the ordinary commercial coarse wire secondary coils being irritating and doing more harm than good. Supplementing this the various actinic lights may be used, and where they are powerful enough to produce a sharp dermatosis over the abdomen with subsequent tanning of the skin, beneficial results are undoubtedly attained by the sedative effect produced on the irritated intestinal mucous membrane and musculature.

The clinical results attending surgery in this class of cases are not at all favorable, and surgical treatment of these cases should be discouraged. The hypertensive nervous system is only aggravated by the psychic shock incident to operation, and cases have been seen that have been put back a year on the road to recovery by the too free application of surgical measures.

It would be useless to attempt the treatment of any of these cases without first determining whether or not there is displacement of the stomach or intestines, or whether a general splanchnoptosis is present; and the fact has been repeatedly emphasized by the author that cases of misplaced abdominal viscera are not appealing from the alteration of their geographical position, but from their physiology, and efforts should be made to determine the point where the motility of the gastrointestinal tract is in error and correction brought about by the suitable application of supporting bands and corsets. An inflated air pad, which is placed in the lower segment of the corset, from the navel down, is the most effective present method of producing intraabdominal pressure. The musculature of the anterior abdominal wall, despite the spasmodic conditions below it, must be vigorously attacked to produce increased strength, and the general setting up exercises, and the use of the shot bag apron, will remedy this distressing feature.

300 McDONOUGH STREET.

# Medicine and Surgery in the Army and Navy

## MOBILIZING THE SPAS AND HEALTH RESORTS OF OUR NATION\*

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(Continued from page 465.)

### THE HOT SPRINGS OF ARKANSAS.

Nestled in a valley in the Ozark mountains, the famous thermal springs are found, flowing in seemingly endless quantity.

Frequented first by the aborigines, whose traditions credited the dwelling of the Essence of the Great Spirit in the hot waters, and more recently by the "pale face" for the relief of conditions unimproved by the usual incantations and dispensations of primitive and modern "medicine men," respectively, these springs have a reputation that dates from primeval times. When we speak of Hot Springs, Arkansas, we think of that metropolitan resort, with its many hotels, boarding houses, bath houses, drinking fountains, wide streets and roadways winding to the mountains, and the delightful social atmosphere of that city accustomed for so many years to entertain the thousands who flock there in quest of health. Surrounded on all sides by scenic grandeur, natural and artificial, one may revel in the artistic creations of nature and man with hygienic effect upon mind and relaxation of the nervous tension that wears so many physiques. The golf links are noted as one of the best in the country and many other attractions have been provided for the entertainment of guests.

In 1832 the government set aside a reservation, thereby protecting the springs and exerting a supervision of their control. In 1882 the Army and Navy hospitals were erected and have been in operation since that date—a substantial attestation of the regard that the Medical Departments of the Army and Navy hold for the therapeutic value of the waters. Numerous drinking fountains have been erected throughout the reservation, facilitating the use of the waters at all times and places. A system of graded paths, modeled after the scheme of Oer-

tel, has been built.

There are forty-three thermal springs and a number of cold mineral springs. The thermal springs issue from the ground at temperatures varying

from 135° F. to 145° F. They contain no mineral ingredients, and the therapeutic principle is chiefly radium emanation. One spring has a maximum charge of 265.6 Mache units. The waters are used for drinking and bathing. The cold springs are used for drinking purposes. The thermal waters are collected and mixed so that no bathhouse can be said to have a better water than another and claim superiority.

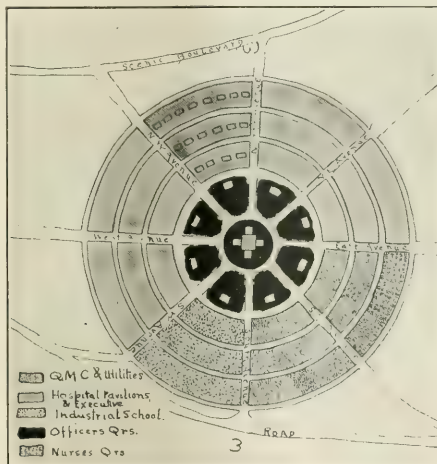
Since radium emanation is the feature property of the thermal springs of Hot Springs, Arkansas, a brief summation of what we know about the physiological effects of this therapeutic force is necessitated in order to understand the physiological action of the baths. While Hot Springs, Arkansas, may justly claim radioactive superiority over the other springs in this country and demonstrate beyond a doubt the therapeutic action of radium emanation on the diseased organism, it is by no means the only spa in this country that may ascribe results

to this force. However, it is the only spa that can claim results due entirely to radium emanation, because its waters are free from other chemical ingredients.

The physiological actions of radium are many and varied. That it is a metabolic accelerator is shown by its effect upon the blood making organs—increase of the blood cells, of hemoglobin and of the coagulability of blood; its stimulation of digestive processes, especially when taken internally; the increase of the functional activity of the kidneys, with a better elimination of the urea and uric acid, due to its promotion of their com-

plex chemical processes; favorable influence on the ductless glands, the liver, the lymphatics, and serous cavities. Respiratory rate is increased with a corresponding increase of carbon dioxide elimination. Blood pressure is lowered and the overburdened heart relieved. The sexual organs are stimulated.

Summed up in few words, the physiological effects of the baths are: Marked metabolic activity, manifested by an increase of body temperature, usually from two to three degrees Fahrenheit, in a bath of from five to fifteen minutes' duration, and persisting on an average for forty minutes, when it returns to normal; acceleration of circulatory activity, the heart rate increasing from thirty to fifty beats a minute; perhaps the increase of the opsonic index because of this metabolic activity; a profuse diaphoresis following the bath and, in this way, effecting a return of body temperature to normal, and the



Plan for spoke Base Hospital of 50,000 beds, near Hot Springs, Arkansas.

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usual reaction of hydrotherapy at the given temperature of the baths. For a more extensive treatise, the reader is referred to Dr. E. H. Martin's article in the March, 1916, issue of the *Southern Medical Journal* and to Dr. William H. Deaderick's article in the March 18th, 1916, issue of the *New York Medical Journal*.

Methods of administration: 1. Tub baths, usually at a temperature ranging from 97° F. to 99° F. and with a duration ordinarily of from five to fifteen minutes. Rubbing during the bath is a customary technic unless contraindicated. Doctor Martin of Hot Springs emphasizes that a more accurate way of determining bath duration is by observing the temperature reaction with the clinical thermometer instead of prescribing a definite time. 2. Vapors: The patient sits in a small cabinet, head inside, and inhales the vapors that arise from the water that rushes by, not touching him, at a temperature of 145° F.—a true emanatorium. 3. As a drink: Drinking of the radioactive waters is encouraged and is a definite way of introducing the emanation into the system. 4. Packs: Local applications of special cloths saturated with the water and applied as hot as can be borne by the patient.

Medical conditions, with a bacterial or metabolic etiology, chiefly benefited at this spa are the rheumatic group types; gonorrheal, the subacute and acute articular conditions following infections; chronic arthritis, gout, syphilis, malaria, nephritis; chronic skin diseases, especially of the squamous variety; cardiorenal disturbances secondary to excessive arterial tension; the functional nervous disorders, and the neuritides.

Hot Springs can accommodate approximately 20,000 guests, and its bath house capacity is adequate in proportion. Because of its location on the isothermal line its climate is neither too hot nor too cold, the average seasonal temperatures being approximately: Winter, 47° F.; spring, 60° F.; summer, 78° F.; fall, 64° F. The Government Reservation is large enough for any additional hospital unit that may be planned. I am indebted to Dr. J. C. Minor of Hot Springs, Arkansas, for the accompanying drawings which illustrate concisely the proposed plan originated by Doctor Minor and Doctor Deaderick and Mr. Belding of Hot Springs (composing a committee selected by the Business Men's League of that city), for a psychiatric unit and base hospital of a capacity of 50,000 beds. This proposition has been submitted to the Surgeon General for consideration. There is no doubt that Hot Springs has natural advantages that commend it strongly. It is accessible from practically all directions.

#### FRENCH LICK SPRINGS.

The Springs are located in a beautiful valley in southern Indiana, amid charming and picturesque surroundings. The property of The Springs Company comprises 2,000 acres, including the springs, lawns, golf course, gardens, dairy farm, and surrounding hills.

The climate is that of the lower Ohio River valley. The average mean temperatures are as follows: Spring, 53.9° F.; summer, 76.6° F.; autumn, 55.9° F.; winter, 33.3° F. The elevation is 500

feet, and this determines the climate as neither too bracing nor too enervating.

The Springs hotel is a fireproof structure of six stories, and contains more than 600 rooms, each with a bath and all modern conveniences. This hotel is elaborately decorated and furnished in every department. In addition, there are two convention halls with a seating capacity of 400 and 150 persons, respectively, which can be adapted easily to the purposes of recreation and occupation.

The three springs, Pluto, Bowles, and Proserpine, are of the sulphated-sulphuretted-alkaline-saline type, and contain the same ingredients in varying concentrations. They are all radioactive. Pluto and Proserpine flow at a constant temperature of 55° F.; Bowles, at a temperature of 50° F.

The medicinal properties of the springs are derived from the mineral salts and other constituents in solution: The sulphates of sodium and magnesium, sodium chloride, the carbonates, and small quantities of iron. The chief components are the sulphates of sodium and magnesium and the chloride of sodium.

Pluto water is the strongest of the spring waters in all properties except radioactivity, and is the one most largely used. Its laxative effect is more marked than that of the others, and it is especially valuable when used for digestive disturbances, functional and inflammatory diseases of the stomach, intestines, and liver, and in the derangements of nutrition. Bowles water has the smallest mineral content, but much the greatest radioactivity, and is chiefly diuretic in effect. Proserpine may be said to be a prototype of Pluto, but less intense in action.

The drinking of the waters, when properly prescribed, is valuable in the following conditions and diseases: Diseases of the stomach, the hyperchlorhydrias, the so called gastric catarrhs, the gastric neuroses, atonic stasis and dilatation coming within the field of the waters' usefulness through the tonic and cleansing effects obtained; diseases of the intestines, constipation and disorders secondary to this dysfunction, and colitis; disorders of the liver, those incident to constipation and in the early stages of cirrhosis of the liver, and in the catarrhal jaundices; disorders of nutrition, as the so called gout and rheumatisms, and obesity of the metabolic type; functional nervous disturbances, especially those somatically expressed by complaints of indigestion, hyperacidity, or hypomobility and hypermobility.

The bath department is in harmony with the general excellence of the rest of the establishment. Rest rooms are well arranged for the use of patients. The equipment includes Aix, Vichy, Scotch, fan, rain, circular, steam and perineal douches with rooms for colon irrigations, massage and swimming pool.

The effects of the baths, in general, are classed as tonic, sedative, eliminative and local. These results are brought about by reactions through the vasomotor system and reflex stimulation of heart action, produced by the effect of temperature, mechanical stimulation of pressure and impact, friction and impact and by the chemical action of the salts and gases, hydrogen sulphide and carbon dioxide. The

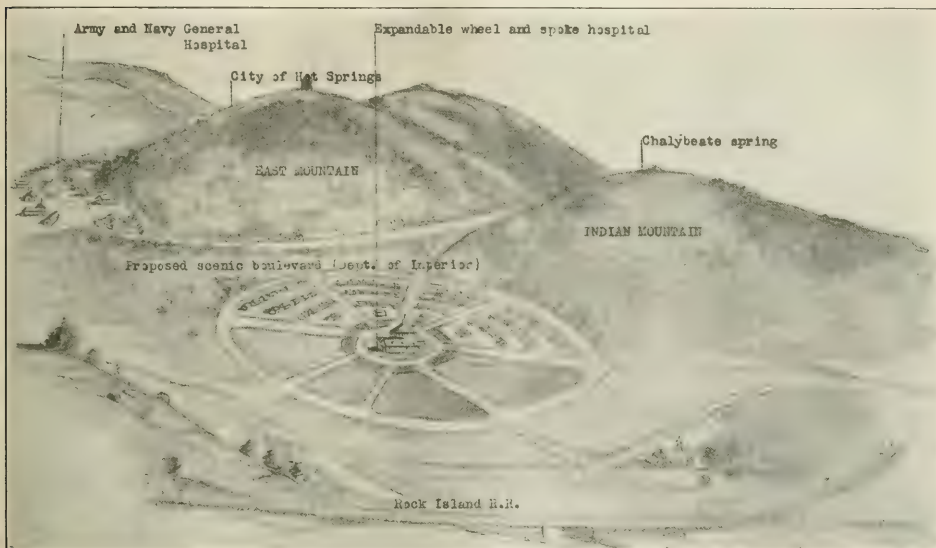
sulphur baths given in Pluto are the feature baths and, because of their soothing effect upon the skin, are valuable in certain forms of skin diseases.

The sulphur baths are used cooperatively with the drinking of the water, for the following conditions: Diseases of the stomach and intestines; diseases of the liver and bile passages; diseases of the kidneys; neurogenic blood pressures; chronic rheumatism and allied disorders; obesity and disorders of the nervous system, the functional and neuritic type. The diseases of the skin successfully treated are dry eczema, urticaria, psoriasis, pruritis and the toxic rashes.

their geographical location and their possession of the equipment necessary for eliminative, sedative and tonic measures. In addition, facilities for recreation, outdoor life, exercise and rest abound. Descriptions will be brief and will concern only the salient features.

#### THE JACKSON HEALTH RESORT, DANSVILLE, N. Y.

This institution is located in the western part of the state, overlooking the Genessee valley and is surrounded on all sides by miles of picturesque country. The elevation is 800 feet above sea level. The climate is bracing and little debilitating weather is experienced, the winter being cold but not so



Site of proposed Base Hospital near Hot Springs, Arkansas.

Accessory measures include diet and exercise on graded walks, golfing, tennis, bowling, and gymnasium work.

Summing up, we find at French Lick Springs a large institution equipped with every modern convenience for the comfort and entertainment of patients. Its hydrotherapeutic department is well established and, in conjunction with the drinking of the spring waters, one of them, Pluto, known to practically every one in this country, is particularly efficacious in the treatment of disorders of the gastrointestinal tract as well as for the relief of secondary pathology and dysfunction of the accessory organs of nutrition and elimination. Its capacity is easily 700 patients and without much trouble this could be increased by a couple of hundred. It is accessible from the Atlantic seaboard and occupies almost a central position with regard to the centre of population of the United States.

#### THE HEALTH RESORTS.

As stated in the introduction, the following institutions are classified as health resorts because of

much so as to be forbidding. Hygienic conditions are ideal and there is an abundant supply of pure, fresh drinking water.

Well built walks, the roof garden, golf course, tennis courts and the lounging platforms in the woods offer inducements for out of door life. The buildings and cottages are commodious and there is a restful environment wherever one may go.

Treatment equipment includes apparatus for hydrotherapy, mechanotherapy and electrotherapy, and is adequate in number and variety. However, Jackson has a treatment, in the Molière-thermo-electric bath, that has been featured for more than thirty years and is particularly efficacious as an eliminative measure and in equilibrating circulation in vasomotor disorders. This place finds its usefulness particularly in functional nervous disorders and allied conditions that require rest, regulated exercise, diet, tonic, sedative and eliminative treatment and a cheerful and pleasing environment. Its capacity is easily a couple of hundred or more and it is accessible from Eastern ports.



## THE SANITARIUM, CLIFTON SPRINGS, N. Y.

Clifton Springs Sanitarium is located not far from Rochester, N. Y. This institution has been in existence sixty-seven years and is noted for its thorough work. Strictly speaking, it is a sanitarium on the cooperative plan, having several departments that devote their energies to special branches of general medicine. However, it is included here as a health resort because of its location and equipment. The sanitarium atmosphere is eliminated as much as possible by encouraging general community associations and there is absence of general wards. Clifton's underlying principle has been to lead people back to a normal life, to diagnose accurately the great variety of ailments that come for treatment and to give the patient the advantage of a specialist's care, as well as the advantage of the most approved and advanced therapeutics. Solariums, walks, gymnasium, golf green, tennis courts and other attractions invite outdoor life and exercise. Hydrotherapeutic, electrotherapeutic and mechanotherapeutic equipment is most complete, and is of great usefulness in this general sanitarium. The buildings are commodious and the environment is most pleasing. The institution's usefulness for certain forms of functional nervous diseases is great; yet, because of its equipment, a variety of conditions can be treated successfully.

## THE HOTEL CHAMBERLAIN, OLD POINT COMFORT, VIRGINIA.

Mention is made of this institution because of its location. Its environs are most restful and the climate is such as will promote convalescence. There is a moderate amount of equipment for hydrotherapy, and electrotherapy. It is easily accessible, either by boat or by rail, to all ports on the Atlantic.

## ASHEVILLE, NORTH CAROLINA.

Because of its altitude, climatic conditions and hotel facilities, this resort deserves consideration as a possible aid in solving the country's new medical problem. Possibilities for the treatment of a certain type of cases may be substantially enhanced if the proper equipment for hydrotherapeutic, mechanotherapeutic and electrotherapeutic measures are installed.

## AIKEN, SOUTH CAROLINA.

This Southern mountain resort also could be utilized for the treatment of the same kind of cases. It has the same advantages offered by Asheville, North Carolina, and its needs for additional equipment and more elaborate handling of cases are the same.

## SUMMATION.

Our methods of prosecuting our part of the war have been suggested, in large measure, by the lessons learned by our allies from their blunders, successes and experiments. The English, the French and the Canadians are utilizing their spas and health resorts for the treatment of certain conditions not easily or successfully cared for in the overseas hospitals. It probably will be our own experience that great numbers of such cases will arise among our officers and soldiers, and there are already in this

country establishments particularly and especially adapted to their care. It may be said that the value of the therapeutic measures discussed in the foregoing is limited. While this may be true, it also is a fact that orthodox medicine is even more limited in its method of coping with these conditions. Because of this very fact the institutions which practise these advanced therapeutic measures are especially commended for use in connection with our war problems.

Following are roughly classified condition groups which it would be impracticable to treat in the overseas hospitals because of the nature of the illnesses: 1. Conditions of nervous exhaustion and shock, also what may be termed preshock, usually associated with neurodigestive intoxications in which the toxins are the product of microbic activity that may be flourishing in the intestines, the oral cavity, the gallbladder, the glandular system and other tissues, and which, during a crisis, somatic or psychical, correlate their energies, become kinetic and are diffused throughout the tissues, their clinical display comprising many disease pictures; 2, cardiorenal and circulatory dysfunctions (functional or organic); 3, metabolic disorders, secondary to mal-elimination, with a mobilization of toxins of either endogenous or exogenous origin, precipitating a disease entity; 4, convalescent states secondary to infections, wounds, hemorrhages, exposures, burns, and surgical operations.

Cases in Group 1 require rest, much outdoor life, exercise, eliminative and tonic measures, such as are afforded and administered at White Sulphur Springs, West Virginia, French Lick Springs, Indiana, and Hot Springs, Arkansas. These places also are especially qualified for the handling of cases of this group—which probably will be by far the most numerous of all the groups—by their large capacities.

Cases falling within Group 2 are best treated by the Nauheim method, the feature treatment given at The Glen Springs and Saratoga Springs.

Cases in Group 3 require especially the use of waters that stimulate metabolic activity and promote profuse and regular elimination through the emunctories. The waters of the hot springs of Arkansas and Virginia and of Mount Clemens, Michigan, are particularly suited to these requirements.

Conditions in Group 4 will, perhaps, be composed of those who are convalescent prior to their final disposition and need rest, outdoor life, diet, and tonic measures. The following places are well fitted for these needs: Jackson Health Resort, Clifton Springs; Aiken, South Carolina; Asheville, North Carolina; the Hotel Chamberlain, Old Point Comfort, Virginia.

Since the outbreak of the war, my energies have been devoted to the good of the country and this article was planned for several reasons—my interest in the future of the incapacitated, my interest in the spas of this country and their methods, and my belief that the government can use to advantage the knowledge which I have of the spas and these methods. With such motives in view, I have prepared this article as a brief, unbiased, and disinterested compendium of information concerning the

resources which we have to meet the medical problems of the war.

Already the merits of the spas and health resorts as national assets have been recognized by certain institutions, individuals and groups of individuals—in many cases, those to whom benefit would accrue from the adoption of such plans—who have suggested to the Medical Department of the Army various propositions for the government control of these institutions. Such plans so far suggested lack a vision of the extent and importance of the whole problem involved, and are not comprehensive in their provisions for solving that problem. Furthermore, no single institution of this sort possesses qualities and advantages varied enough to meet all the requirements of the case. And any plan which provides for the utilization of only one or a few of these hospitals will not facilitate the group-case disposition and the administration of specific therapeutic measures for definitely classified complaints.

It occurs to me that these objections would be obviated and that the nation would be given an extensive and adequately correlated system of hospitals for the treatment of these special classes of cases, by the appointment of a committee—a committee of medical men who are familiar, on the one hand, with the requirements of the nation in this respect, and, on the other hand, with the methods used by the various spas and health resorts—to make an accurate survey, first of the conditions as they develop, and, second, of the measure in which our institutions can take care of these conditions. Further use of this committee might be made after it had studied the situation and worked out a comprehensive plan for meeting conditions, in that its members could be retained to act in a supervisory capacity over the operation and maintenance of the institutions mobilized. The committee's study of the work accomplished will enable it to decide as to a given establishment's efficiency and to make recommendations on merits alone, not swayed by the interests of the civilians who otherwise might have a hand in the administration. And at the time for demobilization, a process even more complex, in some respects, than the commandeering of the spas and resorts, the advice of such a committee would be especially valuable.

Numerous plans for financing this scheme, when once it is adopted, probably will be forthcoming. But the simplest, as well as the most economic plan that suggests itself is government control of the institutions chosen, during the period of the war. This is essentially an era of government control of public utilities. There are good reasons why this control should be extended to these therapeutic institutions, if they appear to be of great enough value to the nation. Assuming that this value will become apparent as the United States is drawn more and more into the war, it will be obvious that the cheapest way of obtaining their services will be to commandeer them and to pay a fixed rate of interest upon the investments involved. The only other plan would be to construct, maintain, and operate special hospitals with special apparatus for the same use. And the needless expense, time, and experimentation necessary for this are the obvious objections.

## MEDICAL NOTES FROM THE FRONT.

By CHARLES GREENE CUMSTON, M. D.,

Private-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London, etc.

### DESTRUCTION OF MUSCLE IN GUNSHOT WOUNDS.

A man is struck by a missile with full velocity and he falls. Upon recovering from his stupor he notices a sharp pain and a feeling of increasing tension at the site of the wound, while at the same time he finds that there is absolute impotency of a muscle or a group of muscles. There is disproportion between the very marked functional phenomena and the wound, which is apt to be small and without hemorrhage.

Then following a latent phase lasting several days, the impotency persists but the pain will have subsided. No general symptoms appear and recovery is looked for without any complications. The cutaneous aperture is occluded by a hard brown scab and were it not for edema and a disagreeable feeling of tension, one might look upon the case as a mere cutaneous erosion. But soon the picture changes. This deceitful latent phase rapidly or even suddenly changes to an infectious phase, manifested by a high temperature, chills, rapid pulse, and sometimes vomiting and delirium. Locally, the feeling of painful tension increases, the brown scab lies on a bed of diffuse edema, which gives the sensation of indefinite fluctuation. The skin is bronze colored and violet or even streaked and if the cutaneous aperture is not closed some bloody fetid serous fluid exudes, but pus is not generally present.

It is at this time that the case is treated surgically. After incision of the integuments if the finger is introduced into the wound a small opening in the aponeurosis will be felt. By forcing the finger through this small opening a large pocket will be discovered filled with a dark semiliquid clotted mass. The superficial layers having been freely incised, thus thoroughly exposing the pocket, minute disinfection, cleansing and flat dressings will most usually bring about a regression in the local and general phenomena. Frank suppuration arises, the temperature drops with astonishing rapidity and the muscular pocket becomes quickly filled.

But things do not always go so fortunately and it is in just these apparently simple wounds that the frequency and intensity of infectious complications are most marked. The first of these is gas gangrene, which finds its choicest soil in necrosed muscle. Independently of gas infection, simple diffuse phlegmon is prone to arise in destroyed muscles. This infectious process starting in the focus of muscle destruction and walled in by aponeurosis, does not remain localized for any length of time. It soon extends along the cellular tissue of the muscular interstices, rapidly reaching the root of the limb. In spite of the prophylactic action of antitetanic serum in war surgery, in these cases of vast destruction of muscle with a slight external wound when not dealt with radically by freely exposing the focus, the action of the serum fails, probably on account of the peculiarly favor-



able conditions offered by this particular injury for the development of the specific bacillus.

Although vast areas of muscle destruction are frequently complicated by infections for the reasons stated, it is possible that this lesion may undergo an aseptic evolution. From this standpoint, considerable difference exists between bullets going through the soft parts and making their exit, leaving only an aseptic Seton wound behind, and wounds from grenades or exploding shells which are far more to be feared from the viewpoint of infection because bits of the missile are embedded in the tissues. Now, when improperly treated, the latter wounds almost invariably give rise to infections of various types. Seton wounds resulting from rifle or shrapnel bullets may, however, be accompanied by extensive muscle destruction, and be recovered from without infection taking place. In these fortunate circumstances, the morbid phenomena remain limited to those of the latent phase. The apertures of entrance and exit quickly close and the muscular lesions, which are the seat of a painful diffuse doughiness at the beginning, become localized, slowly diminish and become absorbed exactly as in the case of a hematoma, but a marked and prolonged functional impotency of the involved muscles will persist. A fibrous cicatrix, occasionally of very considerable extent, becomes organized and adheres to the deep layers and the exploring fingers can mobilize it only with much difficulty, bound as it is to the neighboring muscles, superficial structures and sometimes even to the bones of the limb.

Given a case of gunshot wound of the soft parts, the question should always be considered as to whether or not an extensive destruction of muscle exists, and not simply a muscular lesion limited to the bullet track in the part. A positive diagnosis can be made at the start from the track of the missile, as well as from the intensity of the functional reaction which is out of all proportion with the apparent unimportant external lesion.

A slit in the aponeurosis can be detected by palpation and by signs of a hernia of the muscle through it, although at the very beginning the collection of blood and the stupor which attacks the entire muscle reduce these signs to a strict minimum and make a correct appreciation of the situation difficult. The diagnosis will be really difficult only in differentiating the lesion under consideration from hematoma. In the latter lesion the tumefaction takes place progressively, while in extensive muscular destruction, a painful tumefaction is present right after the receipt of the injury. A hematoma is firm to the feel, the contrary being the case of destroyed muscle; and although in both lesions active and passive movements are very painful, the immediate impotency is much more marked in extensive muscle destruction.

Later on, when infection supervenes, the diagnosis is to be examined from another viewpoint, because at this phase the infectious complication must be recognized from the increasingly bad general condition of the patient, the rise in temperature and the local symptoms which become marked and extend. The propriety of surgical interference arises, and it

will only be after freely laying open the traumatic focus that the real process, namely extensive destruction of muscle, will be discovered. Muscular destruction having been found, concomitant lesions of the neighboring structures must be looked for by exploring the sensibility of the nerve areas, searching for possible vascular lesions or fractures or other lesions to the bones by careful palpation, and particularly with the x ray.

The patient's life depends upon an early and correct diagnosis of septic phenomena. It goes without saying that when the septic phenomena have attained their apogee and the symptoms of gas gangrene are manifest any surgical interference, no matter how extensive, will be useless and the golden moment for operation will have passed.

To make the subject perfectly clear I shall review the pathology of the injury under consideration. We shall assume that an early and extensive incision has been made and the following morbid changes will be detected as the surgeon proceeds layer by layer. The integuments are but slightly damaged around the aperture of entrance or exit of the missile, and the subcutaneous cellular tissue is unchanged during the latent phase of the process, but when the infection develops it becomes rapidly infiltrated with a cloudy, fetid serum. In cases of anaerobic infection fine gas bubbles can be expressed by pressure along the edges of the incision. The aponeurosis will at first only offer a small button-hole, which may be overlooked by an inexperienced operator. Later on, although the aponeurosis resists infection for some time, it in turn undergoes pathological changes, tears easily, becomes necrosed, forming ragged debris which is eliminated with the pus.

The area of muscle destruction really represents the all important lesion and this cavity must be freely exposed, if the case is to be properly conducted. These foci vary from the size of a walnut to an egg and their long axis lies usually in the long axis of the muscle. This focus of muscle attrition rarely involves the entire thickness of the muscle and some fasciculi will be found to exist intact, and later on will serve for functional regeneration. In other cases several muscles will be found involved. The focus of attrition is usually single, but several may be found quite distinct from each other, in which case they are the result of the receipt of as many missiles in the part. In the cases under consideration the vessels and nerves are usually intact, even when they pass through the focus of muscle attrition. However, their destiny is compromised, because should they escape the destructive work of the missile and that of suppuration, they may in the future become involved in the cicatrix.

The contents of the focus of muscle attrition are not liquid and coagulated blood such as found in hematomata, nor pus, but a rather fluid, blackish mass, containing clot and muscular debris. There is no trace of either organization, coagulation or cyst formation and no wall separates this mass from the normal muscle. The condition is one of necrobiosis with infection, as is made evident by the fetid odor and septic phenomena. Gas may also

be present in the focus and if not dealt with in time will rapidly extend up the muscular interstices and infiltrate the subcutaneous structures.

These cases are usually due to bits of grenade or exploding shell, rarely to shrapnel or rifle bullets, and these pieces are usually to be found in the focus of muscle destruction.

If I have been somewhat prolix in the treatment of the subject of muscular attrition in cases of apparently slight injury, it is because I felt that the question should be made known to those of our surgeons who are going to the front, as it has been but scantily discussed in the medical literature of warfare.

## MEDICAL NEWS FROM WASHINGTON.

*Delayed Appointments of High Rank for Medical Officers.  
—Health Conditions in the Navy.—Naval Hospital Projects.*

WASHINGTON, D. C., September 16, 1918.

There is much speculation in army circles, in connection with the vacancy that will occur in the Office of Surgeon General of the Army on October 3d, when Major General William C. Gorgas reaches the retiring age, whether the fact that that officer went to France with Secretary Baker gives any indication as to the prospects of his being retained at the head of the Medical Department, as Acting Surgeon General.

It is understood that General Gorgas desires to remain at the head of the Medical Department, and that he has been solicitous to be kept on active duty in that capacity after transfer to the retired list. According to those in army circles that are in a position to have knowledge of the situation, it is unlikely that General Gorgas will be retained in his present position beyond the date of his retirement. Probably he will be kept on active duty in some other capacity, possibly in connection with reconstruction work.

Officers also are wondering whether the recent appointment of Brigadier General Merritte W. Ireland, now chief surgeon on the staff of General Pershing, as Assistant Surgeon General, with the rank of major general, for service abroad during the present war affects his chances of appointment as Surgeon General of the Army.

Many rumors are current as to who will be appointed Surgeon General, among them being that it is likely that some physician of note that came from civil life since we entered the war and now is holding a temporary commission in the Medical Corps will be appointed, and other medical officers of the Regular Army, including Brigadier General William H. Arthur, head of the Army Medical School at Washington, have been mentioned in connection with the place.

The army medical people in France, backed, it is understood, by General Pershing, have been urgent in advocating the appointment of General Ireland, and there is a marked sentiment in his favor among the regular medical officers in this country.

In the meantime, considerable impatience has been expressed by medical officers over the delay in making appointments to the other places of high rank

authorized for medical officers by the last army appropriation act—two Assistant Surgeons General with the rank of brigadier general to be appointed from the Medical Corps of the Regular Army, and two major generals and four brigadier generals to be appointed from the Medical Reserve Corps. Powerful influences in the War Department opposed the authorization of these high ranking places for medical officers, and it has been intimidated by those interested in having the appointments made that these same influences now are instrumental in having the appointments delayed.

\* \* \* \* \*

With exception of an outbreak of influenza in the first naval district, the health of the navy continues to be excellent. The death rate last week for diseases of all kinds was 1.6 per thousand per annum, and admissions for all causes 681.2.

During the past two weeks 1,330 cases of influenza were reported, mostly in Boston, although an outbreak recently occurred at Newport and another at New London. About sixty of the cases have developed pneumonia.

The naval authorities were not surprised at the appearance of influenza in our Atlantic Coast cities. Indeed, such an outbreak was predicted in a bulletin issued by the Bureau of Medicine and Surgery under date of August 9th, wherein it was pointed out that the presence of influenza in Spain, Austria, Germany, Switzerland, France, Great Britain, Hawaii, and elsewhere indicated another pandemic of this disease similar in extent to others that have been reported since the sixteenth century. During the last century there were four pandemics, succeeded by epidemics, the last occurring in 1889-1892. No other communicable disease, which assumes epidemic proportions, spreads so rapidly or attacks indiscriminately so large a proportion of the population; and, while the statements that 8,000,000 persons in Spain have been attacked may be an exaggeration, it nevertheless is true that the disease is widespread.

Other diseases reported to the Bureau of Medicine and Surgery from the navy shore stations last week were as follows: Cerebrospinal fever, one; diphtheria, nine; malaria, twenty; measles, forty-five; pneumonia, twenty-five, and scarlet fever, five.

\* \* \* \* \*

Among the various projects for expanding the facilities of the naval hospitals, the addition to the hospital at Charleston, S. C., is of importance. This hospital at present has a capacity of 250 beds, with an emergency expansion to 350, and on occasion even to 432 patients. The additions to be made will increase the capacity to 1,000 beds.

The present hospital, which is only a little more than a year old, consists of a group of nineteen buildings, of wood, one story high. The new construction also will be of wood, covered with stucco, consisting of fourteen buildings, containing twenty-two additional wards. A feature of the hospital is a large recreation hall, seventy-five by 150 feet.

Other hospital projects of importance under way under the auspices of the Navy are those at Pelham Bay Park, N. Y.; Paris Island, S. C.; operating base at Hampton Roads, Va.; Great Lakes, Ill.; Ward's Island, N. Y., and Chelsea, Mass.



# Editorial Notes and Comments

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### THE EPIDEMIC OF INFLUENZA.

Influenza has become epidemic in various sections of the United States. Last month an outbreak occurred in Fort Morgan, at Mobile, Ala. A tramp steamer arrived at Newport News several weeks ago with the entire crew prostrated by the disease. It began to make its appearance in Philadelphia about five weeks ago. A number of cases were reported in Boston on September 11th, and on the 17th sixteen deaths were reported in six hours, ten of them among the men of the navy. Fourteen stations of the first naval district, Boston and vicinity, with a total personnel of 20,500, reported 2,331 cases up to September 17th. The men of the second naval district have been forbidden to visit Boston and those stationed at Newport are not permitted to go outside of the camp limits. It is reported that 2,000 soldiers are sick at Camp Devens. Some 170 cases have been reported at Camp Upton, which has been closed to visitors, and cases have also been reported at Camp Merritt and in camps in that vicinity. Several cases have been reported in Jersey City.

Colonel J. W. Kennedy, M. C., U. S. A., Surgeon of the Port of Embarkation, states that several cases of influenza have been reported among crews and passengers on the transports returning from Europe. These cases and the immediate contacts have been isolated on shipboard, not being allowed to land. Such cases as have occurred on shore in the camps and cantonments under his control have been isolated in cubicles and so far the results of such isolation and treatment have been satisfactory. He does not think it will be possible, however, to prevent the further spread of the disease by any steps which are practicable under existing conditions. At Camp Upton theatrical entertainments have been discontinued in hopes of checking the spread of the disease, which is reported now to be well in hand. Bacteriological studies of the cases reported are now being carried out in the Central Laboratory of the Port of Embarkation in the Greenhut Building, New York, by Major E. H. Schorer, M. C., Director of the Laboratory.

Examinations carried out in Alfonso XIII Institution in Spain showed the presence of Pfeiffer bacillus in many cases and of diplococci from the meningococcus and pneumococcus group. About 150,000 cases were reported in Madrid in fifteen days' time.

The Commissioner of Health of the City of New York has issued an order placing both influenza and pneumonia on the list of diseases which must be reported within twenty-four hours, in the hope that such reports will aid in the efforts to prevent the spread of the disease.

The Surgeon General of the Public Health Service has issued a bulletin on influenza and its treatment in which he says: "The disease is characterized by sudden onset. People are stricken on the street, while at work in factories, shipyards, offices, or elsewhere. First there is a chill, then fever with temperature from 101 to 103, headache, backache, reddening and running of the eyes, pains and aches all over the body, and general prostration." He advises all persons attacked to go to bed at once and call a physician. He considers every case with fever as being serious and says that the patient should be kept in bed until the temperature becomes normal. Convalescence requires careful management, as this is frequently complicated by bronchial pneumonia, many cases of which have terminated fatally.

Quarantine seems impractical and ineffective. The most effective prophylactic seems to be sunshine and fresh air. In camps these are assured by

mushrooming the tents except during rain and in the prevention of crowding, but no system of prophylaxis seems to have been effective in preventing the spread of the disease so far. The treatment usually given includes rest in bed, Dover's powders, quinine and aspirin.

### FAITH AND ITS VAGARIES IN MEDICINE.

Walter von der Vogelweide sang whimsically long ago of how he sat playing with a straw, testing which way love's favor blew. It was child's play, he tells us, and worthy of ridicule, but "This comforts me, yet it belongs to faith." And faith is the magic charm which extracts healing, or comfort at least, from many a medical straw. Therein have been and still lie a power and a tenacity which have often hindered the course of medical science, which have led to much futile custom and practice and have established a strange conservativeness of superstition and practice on the part of the sufferers themselves. Yet in this slow movement of faith, credulity rather, have lain the germs of science, and in this medium they have managed to grow.

Today this meets us, for one instance, in the land of China. Dr. K. C. Wong [An Inquiry into Some Chinese "Sexual Diseases," *National Medical Journal of China*, March, 1918] reports some very curious diagnostic beliefs prevalent in regard to certain diseases, which manifest themselves obviously enough to western science as common afflictions of various sorts, but which the Chinese attribute to sexual intemperance or carelessness. This is supposed to exist often among the newly married or among others, and involves various external agencies such as the recent presence of some disease like typhoid in one of the partners, or the partaking of cold food too soon after coitus, and so on. The faith which attributes all sorts of ordinary disease manifestations to such contracted "sexual disease" displays itself also in the remedies employed. These are of this character: The belly of a dove which has been ripped open and stuffed with musk, laid on the abdomen, the administration in water of the ashes of the clothing of the man or woman from the genital region, and other such remedies externally or internally applied.

This is from China, a land which is slowly making its way up into light after a long somnolence and stagnation, since its clocks stopped centuries ago. The centuries are fewer since our own predecessors wrote and advised and acted in similar fashion. H. Silberer [The Homuncu-

lus, *Imago*, February, 1914] has collected a large amount of material illustrative of such widespread straw faith or credulity, current even in the seventeenth and eighteenth centuries, yet full of a seriousness and spirit of investigation and experiment which cleared the way finally for a truer science. A letter of advice, fairly pathetic in its earnestness and sincerity, accompanies a gift of a mandrake or earth mannikin from one brother to another sorely afflicted by a destructive pest, which has invaded all his worldly possessions. The value and merits of this precious object are extolled, with careful directions as to its treatment and preservation. The water in which it is bathed may be sprinkled upon the cattle, but especially is it recommended "when a woman is in childbirth and cannot bring to birth, that she shall drink a spoonful of this bath water, then she will bring forth with joy and thankfulness."

Not unnaturally it is the mysteries of birth and procreation which excite the greatest credulity and inspire the widest extravagance of interpretation and experiment. Aside from the high spiritual significance which undoubtedly lay in the best alchemistic thought, and the speculations and efforts which paved the way for chemistry, there is a peculiar interest for medical practice and for the faith which so largely still underlies medical success, in these strange beliefs. In the writings of the fifteenth and sixteenth centuries, rightfully or wrongfully attributed to Paracelsus, procreation and the growth of the embryo are so conceived that they may be transferred over into unnatural and artificial localities and carried out through natural means unnaturally employed. There is in all this the saving grain of truth expanded into the phantastic formation which the child mind and the psychoneurotic mind often, unconsciously at least, give to a small amount of normal knowledge.

"Lac virginis, urina puerorum, fæces dissolutæ" are included among the substances which form the "prima materia" of the alchemists. Artificial creation can be produced through the influence of air, blood, stars, through feces, the hair of a menstruous woman, while the sperma of a man enclosed in a vessel with the magic principle of human blood will also produce the homunculus. The glance of a menstruous woman, or her breath or touch, cause a wound to become incurable.

Such is the faith and fear of human kind, not passed away yet, either in Orient or Occident. Since it still exerts its influence upon medicine



and still more, as the psychotherapist knows, upon the controlling phantasy which largely rules the lives and health of mankind, it behooves us to know more of these actual beliefs, and, above all, to realize with the poet how much "This comforts me." This is the sympathy with which the physician has to enter into the child-like desire of his patient for comfort and security, which lies at the bottom of every appeal for health and of every fatuous attempt to seek assurance through false belief.

#### IN DISPRAISE OF VAGINAL DOUCHING.

This time honored and time increasing custom is left by Doctor Fothergill no natural leg on which to stand [W. E. Fothergill: *The Bad Habit of Vaginal Douching*. *British Medical Journal*, April 20, 1918]. At the most he permits it an artificial prop under a few exceptional circumstances, when the aid of a nurse must be employed and conditions must be made fitting for its administration. This is quite remote from the easy practise of prescribing a douche in the most careless and ready manner or from the self administration at the advice of some more "experienced" relative or one's own inclination and ignorant judgment. This has been all too much winked at or even encouraged by medical advice and medical sanction.

Fothergill points out from his own experience the serious mistakes which have come to his attention and which are all too prevalent through this form of self treatment or through the ignorance and indolence of physicians. What the douching female public does not know and what the medical man fails to take into account is a number of physiological facts, ignorance and neglect of which lead therefore into physiological abuse. The vaginal secretion, so often mysteriously and fearfully regarded, is simply serum which exudes from the squamous epithelium and which normally presents a creamy appearance because it becomes mixed with leucocytes and epithelial débris. Moreover, this discharge is in itself an antiseptic protection against invading organisms. Douching washes this away, kills the acid producing bacteria which are otherwise faithfully performing their function in the vagina, kills the superficial layer of cells, and irritates the subjacent layers. In fact, the discharge which mistakenly leads to douching is abnormally increased by the procedure, as it promotes hyperemia of the parts, and menorrhagia, congestive dysmenorrhea, and intermenstrual congestive pains are encouraged.

Vaginal douching proves itself no less detrimental and contraindicated for the most part in acute and subacute conditions. The most that it can do in regard to septic infection of the uterus is to add to the sum of infectious material by introducing more germs into the cavity, or, in case of a vulvar infection, as in gonorrhea, to carry the infection through the vagina to the cervix. An infection once in the uterus is never touched by the vaginal douche, but some other way than even the dangerous intrauterine douching is needed to cleanse the uterus thoroughly. The organ then should be let alone.

There are occasions when the author would advocate douching, as, for example, in the palliative treatment of cancer of the uterus. This, however, is a far different procedure from the popularly applied douche. The douche must be given to the patient while lying flat on her back, when the fluid can properly reach the vaginal walls and be applied sufficiently thoroughly to produce the desired effect. Hot douches at a high enough temperature not to increase the hyperemia and bleeding, for the prevention of which they are usually prescribed, are so difficult of administration that they should be left for exceptional conditions, when they can be most carefully administered at an actually high enough temperature.

Doctor Fothergill calls attention to the fact that the slimy condition which leads to the use of the douche in many instances is also due to a condition physiological and but little pathological, one which is aggravated rather than helped by douching. It is caused by excess of mucus coming down from the uterine walls and this is due largely to a lack of vascular and muscular tone in these walls. It should be reached by other means than the further disturbing vaginal douche.

If we add to this a consideration of the mental habits into which individuals so easily fall, whereby they come to rely on practices hurtful in themselves, followed in ignorance both of physiological laws and in obedience to superstitious custom and disguised, unacknowledged wishes, this practical physiological discussion receives support from an even broader psychical basis. The douching habit has formed an all too ready pitfall for the fussy egoism which preoccupies itself with its own ills, the unconscious eroticism which busies itself on too slight provocation with the sensitive bodily organism, particularly the most sensitive genital region. It thus utilizes some slight or negligible condition and creates more serious ones for a manipulatory gratifica-

tion which is unconscious, but which does much to increase and make chronic symptoms which to consciousness may be very inconvenient and distressing. Psychotherapy very frequently discovers such an unconscious attitude toward the douche can, which is doing subtly even more direct injury than those of which the physiologist has spoken, and the mental side of the habit has much to its account in creating and maintaining the train of disturbances of which he speaks. If the simple facts cannot be too strongly emphasized from the physiological side, neither can they be too often insisted upon from the psychological, until physician and patient come to understand better the subtle working of cause and effect in the service of inner hidden motivation and striving, which, because of the deep and broad connection of a woman's genital organs with her emotional life, play such a large part in her genital disorders.

#### JANITOR OR SANITOR?

A janitor meant originally a doorkeeper. Many modern janitors cannot serve competently in even this primitive capacity, and few of them come up to what should be expected of them in this generation. One reason is that they are usually chosen for their unfitness, or rather janitors are often janitors because they are unfit for other positions. Neither we nor they see the dignity of the situation. It is certainly not always because of inadequacy of salary that the janitor does not fill the bill, for in many public schools he is paid more than most of the teachers and his position is a sinecure by comparison.

The janitor of the future will be a sanitor and a teacher by example and often by precept. He will be a trained man—trained in practical sanitation, chosen because he knows his business and values himself and is valued accordingly. He will not simply grow up a janitor nor fall from other jobs into that of caretaker of the working homes of men, women, and children. He will put in practice what is known about ventilation, which is much more essential just now than that we discover just what is meant by bad air. Every one knows that if our standards for good ventilation were fulfilled, we would have good ventilation—yet every one who has made any tests knows that those standards are not maintained. This is especially the case where good ventilation is most needed—in schools. Those in authority at present care little. The superintendents and teachers know, but are too busy getting through

their daily "programme," from which health conditions and health teaching are largely omitted. The janitor does not care at all, even if he knows. Ventilation should be in the hands of some one who knows, cares, and does. There will never be ventilation otherwise.

The cleanliness of the building, not forgetting furnace rooms, is of more importance to the inmates of a building than to most janitors, who clean as their unsanitary fathers cleaned, and sometimes let buildings burn down as did their careless ancestors. The condition (and often the kind) of toilets depends on the one who cares for them, and there is no better object lesson in sanitation than well kept toilets.

We need schools for janitors which will turn out sanitors; schools where janitors can have theoretical and practical training for their work. So far as public schools are concerned, there might be one set apart in a city or in a county, as a training school; and the satisfactory completion of a training course might be required. The time is coming when these things will be, but not until they are in demand.

#### BOROUGH AUTONOMY IN HEALTH MATTERS.

In the growth of a large community there comes a time when a certain amount of decentralization of authority becomes necessary for the most effective administration. In the growth of the City of New York such a stage was reached when the adjacent boroughs of Brooklyn, Queens, the Bronx and Richmond were incorporated into the Greater City of New York. The wise framers of the charter of the greater city realized this and provided for a certain degree of autonomy for the several boroughs. These provisions have never been carried out to their ultimate conclusion in the Department of Health and as a result there has been more or less conflict of authority and confusion regarding the work of the chief medical officers of each borough who bear the title of assistant sanitary superintendents. The Commissioner of Health, Doctor Copeland, has issued an order which is intended to give a certain degree of autonomy to the several boroughs. Hereafter all the employees of the department in a given borough will be under the direction, supervision, and control of the sanitary superintendent who is the chief medical officer of that particular borough, and except in cases of emergency his management of the several bureaus under him will not be interfered with except upon special orders direct from the commissioner's office. In the words of the commissioner, "The purpose of this order is not to confer power on the assistant sanitary superintendent, to give new and unusual duties to the employees now on the pay roll of the various bureaus, but it is intended to make clear the question of disciplinary authority."



## News Items.

**Hospital Information Bureaus.**—The Red Cross will build small information houses near the hospitals at each big cantonment in this country and guides will be supplied to show visitors directly to the ward they seek.

**Houses for Army Nurses.**—To give army and navy nurses a comfortable place in which to spend their hours off duty, the American Red Cross will provide special nurses' houses at all large base hospitals, to cost about \$350,000. Contracts have been let for forty, several of which are completed, and some more are under contract.

**Red Cross War Council Head in France.**—Henry P. Davison, chairman of the war council, American Red Cross, has gone to Europe to confer with those in charge of the field activities of the American Red Cross in the Allied countries, to make sure that nothing is overlooked in meeting the increasing requirements of the American forces.

**Mourning Brassards.**—The Red Cross will provide the mourning brassards to be worn by the relatives of men who have given their lives to their country. Brassards will be furnished free to the widows or parents and at cost to other members of the family. The brassard is a band of black broadcloth or other material three inches wide, on which the regulation military star is embroidered in gold thread.

**No Danger from Spanish Influenza.**—Dr. Royal S. Copeland, Commissioner of Health for New York, does not think Spanish influenza will gain a foothold in this country. Further investigation is needed before we know what the disease is, or whether the cases reported can all be ascribed to the same organism. The immunity of our troops in France is ascribed to the great resistance which healthy, well fed individuals offer.

**Red Cross at Jerusalem.**—Thousands of Armenian refugees at Port Said and many homeless families in or near Jerusalem are now being cared for by the American Red Cross. A general dispensary and hospital with a children's clinic has been established in Jerusalem, and at the request of the government of Jerusalem, the organization has taken over two orphan asylums with 400 children. Three hundred Russian refugees are also being cared for at Jerusalem.

**Military Medical Students.**—A letter to the *Army and Navy Journal* calls attention to the fact that if the government would give intensive courses of medical work at selected centres, premedical men would not be constantly dropping out of medical colleges to seek some form of service where they would not be called slackers. It suggests that the government might take over several medical colleges; place the medical students under military discipline and enable men who are now ready to enter Class A medical colleges to complete the course now requiring four years of nine months each in two years of twelve months each.

**Health Mission to Italy.**—The Italian tuberculosis unit of the American Red Cross, under the supervision of Colonel Robert Perkins, Red Cross commissioner for Italy, will conduct a campaign in Italy with the purpose of stamping out of tuberculosis as its particular object. Included in the personnel of the unit, which numbers sixty persons, are many of this country's best known tubercular specialists, as well as physicians who have been very successful in the lines of work which they will be called upon to perform. The director of the unit is Dr. William Charles White, of Pittsburgh. Others are: Dr. John H. Lowman, professor of clinical medicine at Western Reserve University, Cleveland, chief of the medical division; Dr. Louis I. Dublin, of New York, statistician of the Metropolitan Life Insurance Company, chief of the division of medical statistics; Dr. Richard A. Bolt, of Cleveland, connected with the health department of that city, chief of child welfare division; Dr. E. A. Paterson, of Cleveland, chief of division of medical inspection of public schools; Dr. Robert G. Paterson, of Columbus, Ohio, head of the tuberculosis branch of the State Health Department, chief of the division of education and organization; Miss Mary S. Gardner, head of the bureau of public health nursing of the American Red Cross, chief of division of public health nursing.

**Increased Pay for Nurses.**—A bill has been introduced in the Senate to increase the pay of chief nurses in the army, making their pay \$360 in addition to the pay of the nurse.

**Women Motorists Needed in France.**—Three hundred women motor drivers for service in France are wanted by the American Red Cross within the next six months. The recruiting of these drivers will begin immediately. It is expected the first contingent will sail about October 1st for motor messenger service, ambulance service, and, to a limited extent, for camion service.

**Medical Man Power in the English Army.**—Sir Watson Cheyne, speaking in the House of Commons, pressed the Government to consent to the publication of the Report of the Committee which last autumn investigated the question of the employment of medical men in France, and he further asked the Minister of National Service whether he had assured himself that there was not a waste of medical man power in France and he urged him to study the Report. *The Medical Press*, of London, remarks in comment that the medical profession has a right to know whether its sacrifices are necessary or have only been exacted by a muddling officialdom.

**Reconstruction of Wounded.**—Rehabilitation of the wounded will be discussed September 20th and 21st by the American Academy of Political and Social Science, which is to meet in Philadelphia. The speakers will include Dr. W. W. Keen, of Philadelphia; Lieutenant Colonel Charles W. Richardson; Lieutenant Colonel Harry E. Mock; Lieutenant Colonel James Vordy, Jr.; James P. Munroe, vice-chairman of the Federal Board for Vocational Instruction; Brigadier General Robert E. Noble; Major J. D. Todd, Board of Pension Commissioners for Canada; T. B. Kidner, vocational secretary, Invalided Soldiers' Commission of Canada; Wallace Buttrick, president of the New York General Education Board; Douglas C. McMurtrie, director of Red Cross Institute for Crippled and Disabled Men; Michael J. Dowling, President of the Olivia State Bank, Minnesota, and James C. Miller, Federal Board for Vocational Education.

**27,000 Nurses Enrolled for Army Work.**—Miss M. Adelaide Nutting, chairman of the Committee on Nursing of the Council of National Defense, announced on September 4th that the Surgeon General's requirement of 25,000 nurses, to be enrolled by January 1st, has already been exceeded by nearly 2,000, while more than 1,000 student nurses, high school and college graduates, have been enrolled in the Army School of Nursing and will be assigned for training this week in ten army camps east of the Mississippi. Camps Wheeler, Jackson, Sherman, Dodge, Shelby, Wadsworth, Devens, Grant, and Dix, and the Walter Reed Hospital in Washington. There are in the country 100,000 trained nurses and 14,000 nurses were graduated this year from the hospital training schools. Miss Nutting said that the need at the front is for highly trained nurses. According to one authority, American nurses have proved 100 per cent. efficient, largely because their strength was not diluted by untrained volunteers, the use of which on the part of our government was discouraged by the British and French military authorities when we entered the war.

**Personals.**—Captain Claude A. Martin, M. C., infantry, has been cited for the Distinguished Service Order for bravery in the field. He operated a battalion dressing station near Vaux, France, July 1, 1918, although the station was practically destroyed by shell fire.

The Distinguished Service Order has also been given to Sergeant Leroy Morningstar, Medical Department infantry, cited for bravery in the field near Vaux. Sick, gassed and stunned by shells, he remained at his post on duty under heavy fire and bravely assisted in the succoring of soldiers who had been injured.

Lieut.-Col. Philip P. S. Doane, Medical Corps, is detailed temporarily for duty with the United States Public Health Service and the United States Shipping Board.

Dr. Wolff Freudenthal has returned to the city after a vacation of two months spent mainly on the Pacific Coast. At San Diego he gave an address on asthma to the physicians of the city who gave a luncheon in his honor.

Dr. A. Sturmdorf has been appointed consulting gynecologist to the Manhattan State Hospital, New York City.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### VICIOUS CIRCLES IN RESPIRATORY DISORDERS AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOURS, B. S., M. D.,  
Philadelphia.

(Continued from page 476.)

#### PLEURISY WITH EFFUSION.

Two vicious circles have been held to occur at times in this condition. The result of either of them is a tendency toward maintenance or actual increase of the effusion.

Some of these circles are based on disturbance of the so called lymphatic pump, by which a physiological circulation of fluid in and out of the pleural cavity is supposed to occur. The pumping action is effected by the movements of respiration, these causing modifications in the pressure conditions about the superficial lymphatic channels and stomata of the pleura. An effusion may interfere with this pumping action in three different ways, and in two of these a vicious circle may become established. A fibrinous exudate may obstruct the pleural stomata and prevent resorption. The amount of the effusion may, as a result of this, increase and the blocking action on the stomata extend to surfaces previously not affected. Absorption from these newly involved surfaces is impeded by fibrinous exudate as before, and in a sense a vicious circle is thus formed which tends to perpetuate the disorder.

An effusion, if large, may hinder resorption by mechanical pressure upon the superficial pleural lymphatics, as well as the stomata. Experimental work has shown that a large quantity of fluid must be introduced in the pleura before the pressure changes from the normal negative to a positive pressure at the upper surface of the fluid. It seems clear, however, that a positive pressure will exist in the lower portion of even a relatively small effusion, owing to the pronounced weight of the superincumbent mass of liquid. The lymphatics and stomata will, therefore, be definitely pressed upon by all portions of the effusion save its topmost layer. The larger the effusion, the greater is the hydrostatic pressure in the lower portions of it and the more complete, presumably, the arrest of resorption from these portions. According to this, in a large effusion only the topmost layer will tend to undergo resorption, and all the rest of the effusion will remain unabsorbable—because of the excessive pressure at its surface,—as long as the effusion remains extensive. If any additional condition is present which prevents absorption of the topmost layer, such as the obstruction by fibrin already mentioned, or the third factor, *v. i.*, an effectual obstacle to absorption of all the remainder of the effusion will be interposed. While tending to prevent absorption of the greater part of a large effusion, this pressure factor manifestly does not in itself give rise to a vicious circle; yet it may, perhaps, be said to cooperate

with and accentuate the evil effects of other circles.

The third factor in preventing resorption of fluid is the reduction or arrest by the fluid itself of the respiratory movement, upon which, according to West, the efficiency of the lymphatic pump of the pleura depends. Here, apparently, are the attributes of a true vicious circle. The greater the reduction of respiratory movement, the less the efficiency of the lymphatic pump and the less the resorption of fluid; the less the resorption of fluid, the more the fluid is likely to rise in the pleural cavity and the greater the reduction of respiratory movement, thus completing the vicious circle. If effusion proceeds to a point at which expiration on the affected side is entirely prevented, the vicious circle will, of course, come to a stop, one of its segments having proceeded as far as it can.

In the treatment of the first factor no direct measure is available; absorption of obstructing fibrinous exudate is necessarily left to nature, unless, perchance, potassium iodide prove of service in this direction. The second factor is directly overcome by aspiration, but as this factor does not in itself initiate a vicious circle, relief is only proportionate to the amount of fluid aspirated, and there is no consecutive, progressive betterment such as often results when a vicious circle is broken. In the case of the third factor aspiration is likewise a remedy, but its complete effect in subduing the vicious circle occurs only if a favorable change in the underlying absorptive power of the pleura—possibly a change in osmotic conditions—has already had time to take place. If this absorptive power remains unchanged, aspiration will remove a certain amount of fluid but will allow the vicious circle to resume operation until the pleura has become filled again to the point of arrest of expiration on the affected side. If, on the other hand, the absorptive power has increased, tapping, it would seem, may reverse the vicious circle into a beneficial circle *viz.*, one in which, the possibility of respiratory movement, and hence of the pumping action, having been restored, absorption has begun or increased in consequence; and the greater the absorption, the greater the respiratory movement, and vice versa. The beneficial circle thus established will tend, apparently, to accelerate the rate of absorption beyond what it would otherwise have been. The fact that often the withdrawal of only a small quantity of a large effusion is followed by rapid absorption of the remainder might be accounted for in this way. The underlying absorptive power might not yet have improved sufficiently to permit of actual resorption, yet have become sufficient for resorption when aided by the respiratory movement restored through partial removal of the effusion. The improvement of absorptive power *per se* is, of course, likely to be favored by internal use of purgatives such as magnesium sulphate and diuretics such as theobromine, to deplete the blood, as well as by dry food and limitation of fluids.

(To be concluded.)



**Mycotic Intertrigo.**—R. Sabouraud (*Presse médicale*, May 30, 1918) writes concerning eczema marginatum, the frequent localization of which between the toes was pointed out by him nearly ten years ago. All the folds of the region may become involved, but the condition is most severe between the fourth and fifth toes, the skin there becoming thickened, moist, and fissured. There is increasing difficulty in walking. The disease may spread anteriorly to the tips of the toes in the form of moist or dried vesicles, or posteriorly between the toes and the ball of the foot and also on the dorsum of the foot. The affection has often been present for months when the patient is first seen, and is then frequently treated in vain with protective ointments and emollients in the belief that it is an eczema or intertrigo. The condition being actually a mycosis or tinea, due to the epidermophyton intertriginis, strong iodine or chrysophanic applications are indicated and will soon cure it. All the thickened, dead epithelium should be first carefully removed with Volkmann's curette and pumice stone. Cotton on a hemostat should then be dipped in a one in five dilution of tincture of iodine—French—in alcohol and very firmly rubbed against the diseased area. After this is dry, the following zinc cream is applied:

R	Zinci oxidi, .....	6 grams;
	Petrolati, .....	20 grams;
	Adipis lanæ hydrosi, }	.....of each, 5 grams.
	Aquæ destillatæ, }	

Fiat cremor.

This dressing is renewed daily for a week, removal of dead epithelium being likewise carried out each time. To insure against recurrence, a layer of one per cent. chrysophanic acid in hot lard should be applied after or in place of the iodine for a few days longer. Even then the condition may recur if the removal of horny epithelium has not been very thoroughly carried out. The parasite may be demonstrated by heating a thin horny scale between slides in a solution of three parts of caustic potash in seven parts by weight of water, allowing to stand an hour or two, and examining under a magnification of 300, with the diaphragm closed down. Numerous mycelial filaments are then seen.

**Calcium Therapy.**—A. G. Brown, Jr. (*Virginia Medical Monthly*, July, 1918) maintains that in gastric, bronchial, and nervous cases, calcium therapy can frequently be applied with advantage. Special stress is laid on gastric tetany, acute and latent. Calcium balance in such cases is lost through parathyroid insufficiency, and there result certain sudden or chronic symptoms. Paroxysmal tonic contractions of groups of muscles are the most spectacular of these, but paresthesia in the hands and feet, over excitability of certain nerves, and changes in the teeth, hair, nails, and bones are also observed in most chronic cases. In acute gastric cases, tetany may show itself in spasm of certain muscles; the obstetrical hand may be produced or the thumb may be turned under and held closely to the hand, with the latter bent backward. The tetany face may appear, with deepening of the nasolabial fold and forehead wrinkling. Again there may be paresthesia of the upper extremities,

numbness and tension being complained of. In the presence of these symptoms, Trousseau's and Choostek's signs should be looked for. In chronic or latent tetany, one may find fragile and ridged finger nails; short, stubby, thin hair, and rudimentary, small, irregular, furrowed teeth. Among the author's stomach cases a number were greatly improved and relieved of nervous symptoms by administration of calcium in adequate doses.

**Conservative Treatment of the Displaced Uterus.**—H. A. Wade (*American Journal of Obstetrics*, June, 1918), in intervening surgically for the relief of uterine displacements, has of late been confining his procedures as much as possible to the vaginal tract. Frequently, displacements in aged and infirm or neurasthenic women have been surgically corrected in the office without anesthesia and without confinement to bed either before or after the operation. Where the symptoms complained of are due to retroversion of the uterus, a well fitting rubber pessary introduced within the vagina will often give relief; care must be taken that the pessary does not merely convert the retroversion into a retroflexion. In subinvolved uteri, retroversion will gradually disappear if the patient persistently sleeps in a modified Sims's position. In a retroflexed uterus with a long cervix, either intact or torn, a high amputation of the cervix will convert the retroflexion into a retroversion and eliminate the dysmenorrhea. This amputation may be done in the office without an anesthetic, if the calibre of the vagina be of fair size and the uterine ligaments sufficiently elastic to permit of bringing the cervix down to the vaginal entrance. In cases of retroflexion causing sterility, Wade cuts through the angle of flexion between the body and its cervix by introducing a knife into the cervical canal, and, after application of fifty per cent. tincture of iodine to the endometrium of the uterine body and cervix, a stem is introduced, to be worn for several months to prevent recurrence. In cases of retroflexion requiring abdominal section, as little intraabdominal surgery as is compatible with replacement is done. The ante flexed infantile uterus in young unmarried women is treated merely with animal extracts, in some cases with apparent benefit. In marked ante flexion in a woman desirous of bearing children, however, the angle of flexion between body and cervix is obliterated by incision, followed by iodination and insertion of a selfretaining stem. Prolapse in slight degrees causes no subjective symptoms and requires no treatment. Moderate degrees of prolapse are often relieved by removing the lower portion of the hypertrophied cervix and replacing the remaining portion of the cervix in the hollow of the sacrum by the use of a pessary. This can likewise often be done in the office without anesthesia or confinement to bed.

**Occupational Training of Men Subjected to Amputation or Other Mutilations.**—J. Gourdon (*Bulletin de l'Académie de médecine*, June 25, 1918) reports on 5,014 cases treated in special institutions in Bordeaux. Of this aggregate, seventy-three per cent. were able to resume their former occupations with or without prosthetic de-

vices, and without special training; twenty-seven per cent. required education or occupational readaptation. In only thirty per cent. of the series were the upper extremities involved. As compared with a normal subject the war cripple is characterized physically by a markedly reduced resistance to fatigue, and mentally, by diminished will power in beginning and continuing work. Of the series discussed, sixty-two per cent. were agricultural workers; these, of all the patients, returned the most readily to their former work. Those with an amputated hand or forearm showed practically a normal labor yield; those with an arm amputation, seventy-five to eighty-five per cent. of the normal, and those with disarticulation at the shoulder, forty to fifty per cent. Among the men with amputated lower extremities, only those with thigh amputations showed greatly reduced efficiency, yielding only fifty per cent. of the normal. Manual, industrial work can be performed by all amputation cases and in many other instances of limb mutilation, with a reduction of yield not exceeding ten per cent. The reduction in yield at the close of the training period of a mutilated subject is due principally to slowness of execution; when he is placed in a producing workshop, execution becomes more rapid. Commercial and administrative knowledge is absorbed by the mutilated, owing to their greater earnestness and maturity, much more rapidly than by the normal pupils in occupational schools. Occupational education and readaptation should be instituted as soon as the wounds have healed and before the subject is discharged from service. From the standpoint of yield it is very desirable that the mutilated should be restored to their former occupations. It would be advisable to grant special bonuses according to the degree of occupational capacity attained in comparison with the severity of the mutilation.

**Discontinuous General Anesthesia.**—Chaput (*Presse médicale*, June 20, 1918) recommends administration of the anesthetic—ether, chloroform, or ethyl chloride—in an amount just sufficient to overcome sensibility and movements on the part of the patient. The anesthetic is then stopped and the surgeon operates until the patient moves enough to interfere with his work. The inhalations are then resumed until the condition is such as to permit of correct operative work, the anesthetic then stopped, and the surgeon's work resumed, etc. Advantages of this type of anesthesia are as follows: The corneal reflex persists throughout, the face remains well colored, the pupils but little changed, and the pulse strong. Vomiting during the operation never occurs, and the heart and respiration never give way. At the conclusion of the anesthesia, the patient wakes up almost at once, with the face of good color and features placid. There is no post operative vomiting, no malaise nor shock, no icterus; and in the case of operations above the level of the umbilicus the patient may get up the same day and go home. The procedure may be combined with local and spinal anesthesia; only an infinitesimal amount of chloroform is then used. Discontinuous anesthesia was employed by the author in 100 cases without the least untoward result.

**Autogenous Vaccine Therapy in Typhoid Fever.**—Tribondeau (*Presse médicale*, June 20, 1918), having recently pointed out the advantages of making a bacteriological diagnosis of typhoid and paratyphoid fevers by a blood culture in bile with peptone and glucose, now reports encouraging results from therapeutic use of an autogenous vaccine consisting of the culture previously made in diagnosis. As auxiliary measures he uses "cold wet packs, administered whenever the rectal temperature, taken every three hours, exceeds 39° C., and enemas to which Labarraque's solution has been added.

#### Large versus Small Doses of Medicinal Agents.

—C. FIESSINGER (*Bulletin de l'Académie de médecine*, July 2, 1919) divides drugs into three groups. —the specifics and those acting mechanically, of which large doses are appropriate, and the symptomatic or functional remedies, the dosage of which, as customarily applied, is often too large. Digitalis, in its relation to myocardial contraction is a symptomatic and not a specific remedy, for the cause of the impairment of contraction continues in spite of it. Small and subcontinuous doses will gradually restore contractile power to the muscle, while large doses excite the muscle temporarily but then leave it insensitive. Risk of the latter effect begins above one-tenth milligram of French crystallized digitalin or one-tenth gram of powdered digitalis. Atropine sulphate will produce its effects in a dosage of only one to two tenths of a milligram. Opium in large doses prolongs bronchitis when it arrests cough, and weakens the myocardium in heart cases. Hypnotics combat insomnia among the nervous while increasing their restlessness by day. Chloral hydrate, 0.5 gram, will procure sleep as well as two grams. The task should be undertaken of determining for each drug not only the maximum dose of the formularies, which is the last guidepost before the lethal dose, but the smallest dose and also the zone of beginning risk.

**Fractures of the Shafts of Bones Caused by Bullets.**—J. Delmas (*Presse médicale*, June 20, 1918) points out that the finding of only a punctiform wound of entrance of the bullet is by no means a guarantee that serious damage may not have been produced within the limb and that non-operative treatment is indicated. The wound of exit may be more or less extensive and irregular, with or without hernia of muscle. Radical treatment is necessary whether the fracture be comminuted fracture or not. In one of the author's cases, with a clear line of fracture of the humerus, bits of clothing were found in the tissues in spite of an absolutely punctiform wound of entrance. Where the wounds of entrance and exit are both punctiform but the x rays show a comminuted fracture, complete operative treatment is likewise indicated, as one cannot be certain of the asepsis of the tissues, and because the many loose bone fragments, projecting into the muscular masses and always more numerous than the screen shows, play the rôle of foreign bodies favoring delayed outburst of a latent infection and, mechanically, callus formation. In such cases reduction and maintenance in good position are less easy than in a clear linear



fracture. Where both orifices are punctiform and the fracture is linear, abstention from operation is permissible, with careful watching. Possible infection must always be feared, the narrowness of the orifice by no means implying that bits of clothing have not been forced in. The absence of bone fragments, however, with the ease of reduction and maintenance of position, reduces the dangers of secondary infection, if it later appears, to a minimum.

**Quinine in the Treatment and Prevention of Malaria.**—Sir Donald Ross (*Journal of Tropical Medicine and Hygiene*, April 15, 1918) reports on the results of treatment in about 2,500 cases of malaria, returned to England, and nearly all of long duration. The infections were, for the most part, benign tertian. The treatments tried out were classified as antirelapse quinine prophylaxis, short sterilizing treatment, long sterilizing treatment, and mixed treatments. The treatment in each class comprised different salts and preparations of quinine, given by mouth and by subcutaneous, intramuscular, and intravenous injection. The aggregate result was twenty-seven per cent. of ascertained relapsing cases. A control was afforded by 192 men who were watched without any quinine treatment at all: of these, eighty-six per cent. remained ill and forty-six and five-tenths per cent. relapsed within twenty-seven days. Short intensive treatment by large doses of quinine—up to 180 grains of sulphate or hydrochloride in three days—can be very well borne by patients, and, with rest, stimulants, and good after treatment, effect a substantial proportion of cures. The same applied to the third group, in which some cases received over 1,000 grains of quinine in four weeks, with large intramuscular doses at the beginning of this period. Relapse in these two classes was not any less frequent, however, than in cases treated less heroically with relatively small doses—about sixty grains a week. The latter dose gave the best results both as regards prevention of relapse and the well being of the patient. The amount must not, however, be less than a daily dose of about ten grains. As a whole, no conspicuous advantage was found in either the intramuscular, intravenous, or oral methods of administration. Urine examinations pointed to a tendency for the excretion of quinine, in whatever doses given, to reach a concentration of seven to eleven grains per litre of urine, and did not favor the view that the drug is eliminated with a different degree of readiness when given by mouth than when given by other routes.

**The Interposition Operation for Prolapse of Uterus and Bladder.**—I. S. Stone (*American Journal of Obstetrics*, May, 1918) asserts that this operation is one of the most useful and satisfactory of gynecological procedures. Its indications are to overcome the bladder prolapse, which generally precedes that of the uterus, and also to relieve the urinary incontinence often present; to restore and maintain the uterus within the pelvis; to narrow and maintain the vaginal walls in nearly their former normal position, and to readjust the pelvic floor and possibly overcorrect its muscular and fascial relaxation, and bring the perineum forward nearer the pubic arch. It is of prime importance

that the bladder mucosa be in good condition. The uterus is always to be scarified on its anterior and fundal surfaces. Both the uterosacral and cardinal ligaments, i. e., the lower portions of the broad ligaments, can be utilized in retracting the cervix. The stout woman with prolapse is especially benefited by the interposition operation when not readily treated by any other. The perineorrhaphy is scarcely less important than the fixation of the uterus. Bringing the muscles and fascia together results in a new and better support and also brings the vulva and introitus vaginæ forward under the pubic arch. A much wider separation of the base of the bladder than is usually practised is advised. The catheter is generally required for some days after the operation. To prevent catheter cystitis, irrigations with two per cent. protargol solution are practised.

**Saline Solutions for Gastrointestinal Atony.**—G. Hayem (*Bulletin de l'Académie de médecine*, June 11, 1918) has for about twenty-five years been studying the effects of various saline combinations in gastric disorders. The most effectual have proven to be those imitating more or less closely certain natural mineral waters with an already established reputation in the treatment of such disorders. Five formulas which had given particularly good results were published in 1904. Each was based on tests made in hundreds of cases. The author now presents two new combinations modeled after the waters of Châtelguyon, France, and thoroughly tested clinically:

- I.  
R. Aque destillata, ..... 1 litre;  
Sodii chloridi, ..... } of each, 2.5 grams;  
Magnesii chloridi (cryst.), ..... }  
Sodii bicarbonatis, ..... 2 grams.

Fiat solutio.

- II.  
R. Aque destillata, ..... 1 litre;  
Sodii chloridi, ..... } of each, 2.5 grams;  
Magnesii chloridi (cryst.), ..... }  
Sodii sulphatis, ..... 3 to 5 grams.

Fiat solutio.

These combinations are particularly adapted for the treatment of gastric dilatation due to myasthenia with or without marked muscular atrophy, and in the absence of a mechanical impediment to evacuation. Generally these cases are of the hypopeptic type, with more or less advanced glandular atrophy. Most of the patients suffer also from intestinal atony, which is improved, as a rule, by the first solution, or if not, by the second. Magnesium chloride appears to act very effectually upon the smooth muscle of the digestive tract, exciting its contractions and regularizing its functional activity.

**Nascent Iodine Vapor for Sluggish Wounds.**—Quinsac (*Presse médicale*, May 13, 1918) combines a thermocautery bulb apparatus with Jarret's urethral cannula and uses a small quantity of iodoform and a few particles of pure iodine. The wound is first carefully treated with moist, aseptic dressings, and nascent iodine vapor is then brought in contact with it. A dry superficial layer forms under which healing rapidly progresses.

**The Modern Conception of Diabetes.**—According to the *Lancet*, diabetes has always been characterized by the excretion of sugar in the urine. Previously the generally accepted treatment has been to exclude carbohydrate from the diet, but, at that, the patient still excreted sugar. The source of this sugar has been traced to protein. Protein consists of some eighteen aminoacids. Some of these are converted, in diabetic patients and in experimental animals (depancreatised, phloridzinised) into glucose. Another origin of carbohydrates in diabetics in fat; but this is not of outstanding importance.

The acetone, acetoacetic acid, and oxybutyric acid which are characteristic of severe cases of diabetes have been proved to be derived from the fat of the food, but they may also arise from protein. Acetoacetic acid is the primary product, oxybutyric acid being a reduction product of acetoacetic acid. The production of acid was formerly thought to be the cause of diabetic coma, but the coma is really due to the toxic action of acetoacetic acid. Since acetoacetic acid is a ketonic acid, the term ketosis might be used in preference to acidosis. Though acetoacetic acid may, theoretically, be derived from carbohydrate this source may be excluded, according to the latest work done by Hurlley.

Glycosuria is then derived from the carbohydrate and protein of the diet; the acidosis, from the fat and to a small extent from the protein. The diabetic uses the carbohydrate of the food too slowly; some of his carbohydrate he derives from the protein and fat leading to more decomposition of these than normal and the production of more acetoacetic acid, which is reduced to oxybutyric acid, and excreted, instead of being oxidized as normally.

The modern treatment of diabetes as described by Dr. E. P. Poulton in his Goulstonian lectures is to reduce the amount of all kinds of food stuffs to the lowest possible limit, thus reducing the quantity of the excretory products. The mortality in Guy's Hospital has been reduced from twenty-three per cent. in the ten years previous to 1916, to seven and seven tenths per cent. since 1916, owing to the adoption of this method of treatment. The carbohydrate disappears from the urine and there is less acetoacetic acid. By careful addition of carbohydrate to the diet the patient's tolerance for carbohydrate is determined; similarly the protein and fat amounts are adjusted. By this method of treatment the patient may attain a diet of 1,500 to 2,000 calorie value, the lowest possible limit for the normal individual.

**Contraindications to Radiotherapy in Skin Cancer.**—J. Darier (*Bulletin de l'Académie de médecine*, June 4, 1918) points out that in some cases of skin cancer the x rays, or radium, fail, or may even aggravate the disease. This he accounts for on the ground that skin cancer includes several different species of neoplasms which differ in their clinical course, structure, and therapeutic indications. The species cured by radiotherapy is the tubular or basocellular epithelioma, the common face cancer of the aged, which may last ten or twenty years or more but never engorges the ganglia nor causes visceral metastases. In such cases the x

rays fail only in advanced instances in which ulceration has invaded the cavities of the face. On the other hand, the lobular or spinocellular epithelioma, the usual form of cancer of the tongue or lips, smokers' cancer, cancer of the external genitals and anus, cancer of scar tissues and of lupus, should never be subjected to radiotherapy. It rapidly infects the ganglia and kills usually in less than two years. X rays or radium in these cases cause apparent amelioration for two or three weeks. Then proliferation is more active, and often the condition, operable at first, is no longer so after radiotherapy. This form is amenable only to surgical excision, which should be extensive and prompt. In nevocarcinoma or melanosarcoma, starting in imprudently irritated nevi or beauty spots, dangerous through lymphatic and visceral metastases, and met with even in young subjects, radiotherapy is likewise useless and should be replaced by surgery or electrolysis—the latter seemingly the method of choice. Finally, small skin tumors secondary to cancer, e. g., of the breast, whether or not subjected to operation, are treated by radiotherapy with only apparent advantage; although they frequently disappear under the rays, the prognosis of the underlying disease is not in the least improved thereby. In all skin cancers an early diagnosis of the type present should be made, by histological examination if necessary, and the treatment at once adjusted accordingly.

**Bronchial Fistula Following Lung Resection.**

—Howard Lilienthal (*Annals of Surgery*, May, 1918) summarizes as to this condition, thus: 1. After lobe resection for chronic inflammation a temporary bronchial fistula may be expected. 2. The fistula will probably close spontaneously. 3. It appears that as a general principle we may assume that, other things being equal, a bronchial fistula is apt to close in direct proportion to its distance from the body surface.

**Wounds of the Ampulla of the Carotid.**—H. Lefèvre (*Presse médicale*, June 6, 1918) notes that triple ligation of the common carotid and both its branches for extensive injury of the carotid ampulla is attended with the same degree of risk as regards the brain as ligation of the internal carotid alone. In ligation of the common carotid alone, the condition may be spontaneously improved by reflux of blood through the external carotid into the internal carotid. Theoretically, anastomosis of the internal and external carotids seemed to Lefèvre advisable, as in injury of the carotid ampulla necessitating the triple ligature or in ligation of the internal carotid alone, the risk as regards the brain would thus be reduced to that attending simple ligation of the common carotid. This procedure was actually carried out in a case of stellate wound of the ampulla, suture being impossible. The two carotids were joined in end to end suture by one layer of silk thread sterilized in vaseline. Ischemic paralytic manifestations were noted on the day after the operation, possibly because of kinking at the point of suture or a dressing too tight around the neck. These were transitory, however, and when the patient left the hospital six weeks later, there remained only some diminution of power on the opposite side of the body.



# Miscellany from Home and Foreign Journals

**Blood Analysis in Eclampsia.**—J. M. Slemmons (*American Journal of Obstetrics*, May, 1918) notes that methods are now available for accurate estimation of most of the nitrogenous constituents of the blood, including the nonprotein nitrogen, aminoacids, urea, uric acid, creatinine, and creatine. There is also an excellent method for determination of the blood sugar, and other methods, though less exact, yield satisfactory results for the fats and the lipoids. The question of the chemical reaction of the blood may be attacked from new angles by determining the hydrogen ion concentration and the carbon dioxide combining power of the plasma. Analyses conducted by the author and his assistants in a series of twenty-three cases of eclampsia and allied intoxications revealed a normal quantity of aminoacids and a slight retention of nitrogenous waste products, such as urea and uric acid. After convulsions there was an increase in the blood sugar. The total fat was approximately the same in cases of toxemia and of normal pregnancy. Usually the cholesterol was increased and the lecithin diminished in eclampsia. The carbon dioxide combining power of the plasma was reduced during normal pregnancy, indicating a mild acidosis, and the variations met with in the presence of autointoxications were insignificant. The results of these blood analyses are held not to support the acidosis hypothesis nor, the derangement of protein metabolism hypothesis of eclampsia and to indicate that the cause of the disease must be sought elsewhere.

**Lumbar Puncture.**—J. H. Barach (*Archives of Diagnosis*, July, 1918) believes a horizontal lateral posture during the puncture to be safest for the patient, and has uniformly obtained fluid with this posture in over 1,000 consecutive punctures. The lumbar region should be made prominent. The skin locally should be thoroughly cleansed with soap and water, alcohol and mercury bichloride or hydrogen peroxide; it may then be painted with tincture of iodine, as may also the operator's fingers. For anesthetizing the skin Barach sometimes uses a fresh sterile one fourth to one half per cent. cocaine solution by infiltration, but also often employs the sharp point of a piece of ice, placed on the exact spot of puncture and kept there with considerable pressure. A needle of eighteen gauge does the least damage to the tissues and is least liable to cause bleeding. For cell counts the second five mls of fluid obtained in a separate test tube is to be preferred. Lumbar puncture should seldom or never be performed in the dispensary or office. The average patient usually has several uncomfortable days after the procedure. Patients with various nervous symptoms are apt to show the more severe after-effects. A delayed reaction may come on after forty-eight to seventy-two hours. Most of the symptoms are relieved by the horizontal position. It is well to have the patient in bed for at least forty-eight hours. The foot of the bed may be raised, and the patient should get along without or with but one small pillow. In some cases the author has had good results from fluid extract of ergot, one

dram three times daily, beginning promptly after the puncture. Acetphenetidin, caffeine, bromides, etc., were without effect. Pituitrin and dried thyroids were used in severe cases, the former as general vasomotor stimulant and the latter to stimulate secretion of spinal fluid. When the symptoms persist longer than usual and the patient is up and about he has seen benefit from a tight abdominal band. The author has seen no fatality immediately following lumbar puncture. Accumulated records indicate that the procedure may prove fatal in cases of brain tumor or brain cyst, where the lowered pressure might alter the relationship of the parts, a tumor, e. g., shutting off the foramen of Magendie. Lumbar puncture might induce rupture of a cyst or aneurysm. Deaths have been recorded in cases with edema of the brain such as occurs in alcoholism or uremia.

**Poisoning by Alcohol in the Manufacture of Calcium Cyanamide.**—J. P. Langlois (*Bulletin de l'Académie de médecine*, July 2, 1918) states that the recent marked increase in the manufacture of calcium cyanamide has brought into prominence certain ill effects that may result among workers who make or manipulate it. The ingestion of alcoholic beverages, even in small amounts, during or just after work induces special symptoms, illustrated in the following typical case: An emphysematous worker, aged fifty-five, who was occupied in breaking up cyanamide, took 0.3 litre of red wine at 11.25 a. m. In three minutes the pulse rate rose from 69 to 104, the blood pressure fell from 160 to 110, and the rate of breathing rose from sixteen to twenty-two. Already in the second minute there was excessive vasodilatation of the face and conjunctivæ, marked pulsation of the temporals, then nausea; the man was compelled to stay recumbent, becoming faint as soon as he attempted to rise. The pressure remained 110 for an hour, then rose slowly. The signs of vasodilatation passed off in about an hour. The sensitiveness to alcohol from working with cyanamide lasts over eighteen hours after cessation of work, though diminishing during this period; it then disappears completely, even in individuals who have long been working in the factory. In dogs subjected to inhalation of dust containing traces of cyanamide, intravenous injection of but four mls of alcohol per kilogram proved sufficient to arrest the heart—an effect requiring eight to ten mls in normal animals. In rabbits cyanamide seemed to increase the sensitiveness of Cyon's depressor nerve to stimulation.

**Muscular Autolysis and Its Bearing on Shock.**—Pierre Delbet and Karajonopoulos (*Bulletin de l'Académie de médecine*, July 2, 1918) note that manifestations of shock among the wounded generally appear in two or three hours, i. e., before bacteria have had time to become adapted and copiously pullulate. Their researches were undertaken to ascertain whether contused, crushed tissues, such as those injured by shell fragments, may rapidly acquire, without the agency of bacteria, a toxicity capable of inducing effects such as those

of shock. Tissues were taken from animals immediately after sacrifice, finely divided in normal saline solution, placed in the incubator, and after varying intervals, filtered through fine meshed gauze and injected intraperitoneally in animals of the same species. Aseptic autolysates were thus obtained in both rats and guineapigs. Autolysates of the muscles of gray rats, especially those feeding mainly on meats—as are the troops—proved highly toxic. A few seconds after the injection the animal becomes comatose and shows marked polypnea, doubtless due to poisoning of the medulla. The animal remains inert and insensitive to noise, the respiration gradually descends from 110 to forty or thirty, and death follows. The more finely divided the tissues before autolysis, the greater their toxicity. Of twenty-two rats, all became comatose and twenty succumbed,—fourteen within five to forty-five minutes and six within four to twenty hours. The prompt deaths, perhaps analogous to certain clinical observations, seem due to intoxication of the nervous system. In the animals dying later, pathological changes in the liver were found. An autolysate of the muscles of a single thigh caused grave shock, often fatal, in another animal of the same weight. These experiments appear to demonstrate the occurrence of an autotoxic form of shock, and lead to the practical conclusion that to the symptomatic treatment of shock must be added a pathogenetic treatment which consists in eliminating the toxic focus by amputation if the limb is in a hopeless condition, or, if it is not, by resection of the contused tissues. The operation is thus an urgent one; instead of waiting to operate until the patient has rallied from shock, one should operate from the start to eliminate autotoxic shock.

**Gastritis and Dyspepsia.**—F. Ramond (*Bulletin de l'Académie de médecine*, July 9, 1918) looks upon gastritis as the cause of the majority of dyspeptic states, and believes that this conception will render the study of diseases of the stomach more attractive as well as more scientific. In the first stage of inflammation there is merely a prolongation of the normal temporary congestion of the submucosa. In more advanced stages there are both congestion and diapedesis in the submucosa and an inflammatory reaction or cell degeneration in the mucosa. The author divides the stomach into three portions, the upper stomach, supplying the peptic and hydrochloric secretions; the middle portion, with part of its mucosa supplying pepsin and acid and the remainder mucus, and the lower stomach or pyloric region, secreting chiefly mucus. Experiments showed that a mutual reflex relationship exists between the upper and lower stomach, so that when either is stimulated, the other is reflexly excited to secretion. In the case of a gastritis confined to the upper stomach—as is true in most toxic gastritides—and merely superficial and irritative, hyperchlorhydria occurs; if it is of long standing and degenerative, acid secretion is, on the contrary, diminished. Besides, by reflex action, the lower stomach is excited to the production of mucus. After a meal, the fluids taken, mixed with the gastric juice, rest upon the solids and irritate an inflamed upper stomach, causing early pain, often with regurgita-

tion, nausea, and even vomiting. Palpation of the upper stomach causes pain at its accessible points, viz., the xiphoid point and the left infracostal point. The complete symptom-complex thus described for the upper stomach permits of locating the gastritis, predicting the chemical findings, making a correct prognosis, and instituting rational treatment. By analogous reasoning, the cardinal symptoms of middle, lower, and total gastritis can be worked out.

**Abdominal Pain in Chronic Amebic Enteritis.**—E. Deglos (*Paris médical*, July 13, 1918) states that in the chronic enteritis of amebic cases there may occur, apart from functional disturbances of the colon, and even when colonic involvement is not manifested by localized pain and contracture, symptoms due to dragging on the abdominal sympathetic, in particular the filaments from the solar and celiac plexuses, through the mesentery. These symptoms consist of sensation of discomfort, weight, dragging, and squeezing, referred chiefly to the lower epigastric and paraumbilical regions. At times the discomfort amounts to actual pain, accompanied by a profound malaise which reacts heavily upon the mental equilibrium of the patients, generally deeply affected when the disturbance is of long standing and marked loss of weight has occurred. While aerophagia and the resulting dyspeptic disturbances are rather frequent, the stomach should not be held to account for the symptoms just referred to. In many instances, as radiology indicated, enteropostosis, and especially transverse colopostosis, play an important rôle, assisted, furthermore, by the accompanying more or less complete loss of abdominal fat. The treatment comprises, in the first place, a proper diet, with emetine and neosalvarsan. Measures should be taken to promote a gain in weight. Pain or discomfort are allayed by small doses of belladonna. To strengthen the abdominal muscles, often very weak, abdominal gymnastics, very gradually increased under the guidance of a convalescent, are indicated, e. g., raising the body or the lower limbs slowly from recumbency. These exercises should be carried out morning and evening, on an empty stomach, and followed by half an hour of complete rest. When the patient begins to get up, walk about, or work, a tight, broad belt of flannel or an elastic belt will greatly attenuate the discomfort resulting from the enteropostosis.

**Renal Function in Acute Infections.**—Channing Frothingham (*Archives of Internal Medicine*, July, 1918) reports studies with the phenolsulphonaphthalein test, the estimation of blood urea, and the determination of McLean's index of urea excretion, in cases of typhoid fever, pneumonia, acute rheumatism, diphtheria, etc. In many cases there was an abnormally high index of urea excretion during fever, but as it was not associated with an increase in phenolsulphonaphthalein excretion or an abnormally low blood urea, it probably depended on some unknown factors peculiar to fever rather than to a hyperactivity of the kidneys during fever. In general, the tests failed to show consistent evidence of impaired renal function during or after the acute infections, when the clinical picture or urine examination by the older methods did not suggest acute nephritis.



**Rickets in Its Relationship to Housing.**—Leonard Findlay (*Glasgow Medical Journal*, May, 1918) thinks rickets may be said to affect at least fifty per cent. of the children of industrial populations. The disease, while not directly fatal, increases susceptibility to the respiratory complications of measles and whoopingcough and is indirectly responsible for a rather high death rate. Experimentally the author found that normally fed young dogs could be made rachitic simply by confinement and lack of exercise, while dogs fed on a diet poor in fat but allowed to exercise developed diarrhea and marasmus, not rickets. Later he conducted a statistical study of the dietetic and home conditions of 500 rachitic children, and now reports still another study of the same kind. The main etiological factors, in the order of their significance, proved to be improper housing, absence of facilities for open air life, and imperfect parental care. Poverty *per se* did not seem a factor of any importance. Most of the rachitic children were as suitably fed as the nonrachitic, and in not a few cases even better, both as to quality and quantity; the amount spent on rent, however, was distinctly greater in the nonrachitic than in the rachitic family. Where rachitic and nonrachitic occupied the same houses, neither the number of stairs up, the exposure, nor the question of through and through ventilation seemed to affect the frequency of the disease. Quite otherwise was it, however, when the number of persons to an apartment and the general cleanliness and care of the home were considered. With the markedly rachitic children, 3.93 persons inhabited each apartment; 3.0 was the average for nonrachitic families. The average air space for markedly rachitic families was 422 cubic feet per person, for the mildly rachitic, 483 cubic feet, and for the nonrachitic families, 625 cubic feet. Nearly fifty per cent. of the rachitic children were admittedly not taken out for exercise, and only thirty per cent. seemed to be sufficiently exercised in the open air. Of the healthy nonrachitic children, 86.5 per cent. were properly exercised in the open, and only four per cent. did not receive the necessary airings. The seasonal incidence of the disease—spring rather than late summer or autumn—is undoubtedly due to this open air factor. The incidence of rickets would seem to be a question of economics. Until proper housing and reasonable facilities for outdoor life are provided it is vain to expect that more than a limited number of poor parents in towns will succeed in rearing nonrachitic children.

**The Lymphocyte in Natural and Induced Resistance to Transplanted Cancer.**—James B. Murphy and Herbert D. Taylor (*Journal of Experimental Medicine*, July, 1918) immunized mice by an injection of homologous defibrinated blood beneath the skin of the back. After ten days a piece of tumor (adenocarcinoma) was inoculated into the left groin of each animal and at the same time nonimmunized mice were inoculated with the tumor to control the virulence. After three weeks the immune animals were divided, one group being subjected to repeated small doses of x rays, and the other used as a control. A week later both groups were reinoculated in the right groin with the same

tumor strain, its virulence being determined by simultaneous inoculation into normal mice. The x ray dose used was sufficient to destroy the major part of the lymphoid tissue without apparently impairing the animals' general health. The experiments showed that the mice which had been artificially immunized, inoculated, and proved immune, could be again rendered susceptible to the same tumor by exposure to the x rays, while the immune animals which were not subjected to the x rays preserved their resistance to a reinoculation of the tumor to a large extent. In discussing their results the authors say that this work bears out the theory that the lymphocytes are an important factor in the immunity to cancer studied in mice.

**The Dietary Qualities of Barley.**—H. Steenbock, Hazel E. Kent, and E. G. Gross (*Journal of Biological Chemistry*, July, 1918) remarked that while their work may not present any striking peculiarities, yet it may serve to allay the fears of those dietitians who are concerned over the use of barley as a wheat substitute. The barley kernel does not differ essentially from those of maize, oats, and wheat. Alone it is not capable of supplying the needs of the growing animal, or even of permitting a noteworthy amount of growth. The protein content of barley is 13.6 per cent., which is too low for continued growth at a normal rate. The primary growth determinant in barley is inorganic salts. Second in importance, but also necessary, are protein and fat soluble vitamins. Barley contains an abundance of the water soluble vitamins, but not of the fat soluble vitamins. There are a number of charts which illustrate the rate of growth of rats fed on barley alone, and upon barley supplemented with other mixtures, such as the addition of a fat soluble vitamin, in the form of butter fat, salts, casein, etc. The value of the mineral elements in nutrition is again brought out by this work, as only where salts formed one of the additions was substantial growth noted. When salts, protein, and fat soluble vitamins were all added, normal growth, reproduction, and the rearing of the young were possible.

**The Choice between Adequate and Inadequate Diets, as Made by Rats.**—Thomas B. Osborne and Lafayette B. Mendel (*Journal of Biological Chemistry*, July, 1918) present the results of their observations on rats who were given a freedom of choice between mixtures of similar foods, except that one was inferior to the other for nutrition in growth. Curves illustrate the rate of growth of the rats and their food intake. The two foods were exactly alike except for such variations as the single protein incorporated in each mixture, or a difference in the content of the water soluble vitamins derived from milk. It is curious that in most instances the rats chose the food superior from the standpoint of growth, and that even when this was not the first choice in some cases they later relinquished the inferior food for the superior. Naturally no definite conclusions can be drawn from such a study, but the desire of a young animal for food means more than the satisfaction of its caloric needs, the demand of the growth impulse must also be met by food of proper chemical constitution.

# Proceedings of National and Local Societies

## THE AMERICAN PEDIATRIC SOCIETY.

*Thirtieth Annual Meeting, Held at the Curtis Hotel, Lenox, Mass., May 27, 28, and 29, 1918.*

**The Neglected Period of Childhood.**—The president, Dr. L. E. LA FETRA, of New York, stated that the rejection by medical examining boards throughout the country of from twenty-five to thirty per cent. of the men called as recruits for the army had focused attention as never before on the physical condition of our people. The experience of European nations that under war conditions not only did the birth rate fall and the infant mortality tend to rise, but even older children suffered because of inadequate food and lowered hygienic conditions, had impressed on us the danger of war to the nation's children, even though they were at a distance from the battle front. Already, in this country, the effect of insufficient food was being felt. The Children's Bureau, in prompt recognition of the situation, had designated this second year of the war as "The Children's Year," and had inaugurated a campaign for the saving of 100,000 children's lives. This campaign laid upon pediatricists and upon the members of the American Pediatric Society a special obligation. The whole chain of child welfare work should be surveyed to see what links were weak and thought and effort should be given to strengthening these. The period of infancy, from one and one half to two years, and the period of school life, from six to twelve or fourteen years of age were the only two periods of life that were at all adequately supervised. When it came to the preschool age, the period from two to six years, very little had been done. During this period, if the child was ill he was treated for the acute condition, but he was not examined afterward at regular intervals as when he was a baby. For four years he might get into all sorts of troubles, digestive, nutritional, dentional, glandular, or infectious, without any preventive measures on the part of the authorities; when he first went to school the medical inspector would examine him and tell of all the terrible things he had acquired since he left the milk station in excellent condition. A consideration of this period as regards growth and susceptibility showed that the impulse to growth is only a little less strong during this period than during the first and second years. This was evidenced by the size of the child's skull, which by the age of six years had attained practically adult size. It was important for the whole of the child's life that his food at this time should contain just the right sort of building material for the highly organized protoplasm of the growing nerve cells. Another important organ that showed great changes at this period was the heart. The resistance of the child to some diseases at this period was even less than that of young babies, since the infant was protected by certain immune bodies, some inherited and some derived from the mother's milk. Doctor La Fetra considered somewhat more in detail certain diseases and conditions found in children at this age, such as general malnutrition,

hereditary syphilis, tuberculosis, rickets, backwardness of various sorts, including cretinism and mongolism, which could be recognized at this age and should have their appropriate treatment long before the school age was reached. Nervous children, those with adenoid growths, malformed jaws, carious teeth, and enlarged tonsils, should have treatment at this time. The removal of adenoids and tonsils was the more important because their presence encouraged serious complications if the patient should later contract measles, diphtheria, influenza, or pneumonia. Whooping cough was most prevalent during the preschool age; seventy-five per cent. of the cases were reported in children under five years of age. This disease was often complicated by gastrointestinal disease or bronchopneumonia and predisposed to asthmatic bronchitis and tuberculosis. Systemic vaccination against whooping cough had seemed in some instances to be of great value and Doctor La Fetra was in favor of employing this vaccine.

The first step necessary toward bridging this gap in our medical supervision was to make a survey of the actual situation. In New York it was proposed to make a house to house canvass and to examine all children with special reference to the presence of malnutrition, enlarged tonsils and adenoids, carious teeth, cardiac diseases, rickets, and tuberculosis. Appropriate treatment would be advised and an effort would be made to educate the lay public, which was at the present time in a very receptive frame of mind as to the necessity of periodic examinations and care of their children before they enter school. The importance of protecting children from all sorts of contagious diseases, including the infectious cold, would be emphasized. Consultations for preschool children would be established by the various outpatient hospitals and the Department of Health, where mothers could be taught about proper nutritious food and about clothing and hygiene. There was the need of fresh air and safe playgrounds, and roof playgrounds on tenements, as proposed by Doctor Northrup, would be an admirable solution of the difficulty. The children could be kept under constant supervision by each mother taking her turn during a part of the day. There was great need of supervised playgrounds and kindergartens for the somewhat older children. To cope with street accidents something more was necessary than mere regulation of the speed of vehicles. Certain blocks should be set aside as play streets, where during definitely fixed hours no through vehicular traffic should be allowed; children should not be allowed to play on streets where through traffic was allowed. From the time a child could walk he should be taught the dangers of the street and he should be instructed in the technic of the street; he should be cautioned always to walk and not to run across the street, and to look each way, particularly to the left, before stepping from the sidewalk. The best method of supervising children of preschool age would be to have the children of each district examined at reg-



ular intervals, preferably twice a year, at the nearest school, in some room set apart for the purpose.

**Hemoptysis Following Exploratory Puncture of the Chest.**—Dr. AUGUSTUS CAILLÉ, of New York, related the history of an infant, six weeks old, admitted to his service in a moribund and markedly cyanotic condition, with a previous diagnosis of lobar pneumonia. Percussion revealed flatness over both lungs posteriorly and absence of pectoral fremitus below the scapula on both sides. To make sure as to the presence or absence of serum or pus, an aspirating needle of moderate calibre was pushed into the seventh interspace about three quarters of an inch. This procedure was followed by a feeble coughing effort and by brisk hemorrhage from the mouth, and in less than a minute life was extinct. At autopsy the foramen ovale was found patent, and beneath the leaflet of the mitral valve there was an opening into the interventricular septum. The cardiac musculature was of the same thickness on the right as on the left side. There was distinct consolidation of both lungs and extensive hemorrhage into the right pleural cavity. No puncture of a large vessel could be made out. There was no laceration of the lung tissue, as the specimen presented showed. Doctor Caillé also reported another fatal sequence to an exploratory puncture that came under his notice fifteen years ago. This occurred in a poorly nourished, cyanotic child, two years of age, with signs and symptoms of right sided pulmonic consolidation and urgent pulmonary embarrassment. Upon withdrawal of the needle in this instance hemorrhage took place from the mouth, and the child died within a few minutes. Fatalities from exploratory puncture were exceedingly rare. In the writer's experience of forty years, during which he had performed many thousands of exploratory punctures, the two cases just reported stood out prominently. In both of the cases there was extreme congestion of the lungs. In neither case was the hemorrhage due to faulty technic. The practical lesson for the guidance of the clinician to bear in mind was that in acute cases in which puncture seemed to be indicated, the introduction of the exploratory needle into a thorax containing a highly congested lung was attended with some risk when cyanosis and other signs of cardiac and circulatory failure were present. Extreme collapse and sudden death without visible hemorrhage following exploratory puncture of the chest had also been observed and must be attributed to shock when the autopsy revealed nothing to account for the fatal outcome.

**Breath Holding Attacks.**—Dr. ISAAC ABT, of Chicago, said that these attacks might lead one to believe at first glance that they were manifestations of spasmophilia or tetany with the associated laryngismus stridulus, but closer investigations would show that such assumptions were wrong. The breath holding attack manifested no true laryngeal spasm. The breathing was restive or stopped suddenly in the midst of a crying attack, but there was no inspiratory spasm. The child usually worked himself into a rage, cried for a time, and then suddenly stopped, finding it impossible to make any

further sound. The inspiratory muscles remained in a tonic state. The child threw himself about and became cyanotic or pale, the body became rigid, and the eyes turned or became set and for a moment it seemed that the child was asphyxiated. The attack usually lasted a few seconds and then disappeared. In severe cases it was sometimes followed by convulsions. These attacks were differentiated from minor epilepsy in that they followed immediately upon severe crying, excitement, or anger, while epileptic attacks occurred suddenly in the midst of quiet play or during sleep. Biting of the tongue occurred in epilepsy, but not in breath holding. Involuntary evacuation of the bladder or rectum might occur in either, and the long sleep that usually followed an epileptic attack might also occur after breath holding. These breath holding attacks were brought on in neuropathic children by fear, anger, fright, or some other psychic trauma. The children subject to such seizures were as a rule irritable and ill tempered and the condition was very often aggravated by neuropathic parents. Children who fell ill of acute infectious diseases or who, by reason of accident or injury, required surgical treatment might be seized with a severe breath holding attack accompanied by general convulsions. Under such circumstances the attack might be so severe as to terminate fatally. Treatment should be directed toward the general management of the nervous child. Stimulation of every kind should be avoided, the child should be ignored as much as possible by parents and friends, and when the attack occurred there should be no hysterical manifestation on the part of mother or nurse. Cold water dashed in the face had been suggested as a direct remedy. The patient should be shown in no uncertain manner that any repetition of the attack would meet with harsh, if not painful, measures.

Dr. ROWLAND G. FREEMAN, of New York, reported a case of breath holding that had come under his observation. This case occurred in a child whose parents were healthy, robust people. The attacks were sometimes prolonged until the child became unconscious. Two years ago, while suffering from a cold, the child had one of these attacks, became unconscious, and died without regaining consciousness. He thought that in this case there might possibly be some connection between the thymus gland and the general condition.

Dr. PERCIVAL J. EATON, of Pittsburgh, stated that some years ago he had had a family of four boys under his observation, three of whom were subject to the rage spasms. The eldest of the four boys was quite a serious case. He had found that by forcing the mouth open and drawing the tongue out and then pushing the cheeks in, some reflex was excited which relieved the spasm of the glottis.

Dr. HENRY HEIMAN, of New York, said that some of these cases were simply instances of breath holding, as Doctor Abt had said, but there were borderline cases which presented a condition very much like spasmophilia, or Erb's phenomena. Doctor Abt had described the proper treatment for these cases.

Doctor Abt replied that none of these cases of breath holding occurred until about the second year, while spasmophilia manifested itself earlier. It was

of course possible to have spasmophilia without the classical symptoms, but the children he had considered were first of all ill tempered, would have short crying spells, and then would develop the attack. There was not sufficient ground for saying that they were cases of spasmophilia.

Dr. L. E. LA FETRA, of New York, said that the important point was that they had assumed that they could assure the family that these children would not die as the result of such an attack. They had now heard of an instance in which a child did die as the result of such an attack. However, he thought we were fairly certain in making the statement that these children were not going to die. It seemed to him that these children were just as Doctor Abt had described them: they were ill tempered, lacked self control, and they had a nervous inheritance. They were comparable to the children who vomited at will. Such children, if they were given food that they did not like, revenged themselves on the parents by vomiting, while in the breath holding the child showed its displeasure by turning blue. Neglect and punishment constituted the proper method of treatment.

#### Death from Cardiac Failure in Children, Unexplained by Post Mortem Examination.—Dr.

JOHN HOWLAND, of Baltimore, stated that a form of cardiac disturbance in adult patients had been recognized, which resulted in death with marked evidence of circulatory failure, but with no other changes other than extreme cardiac hypertrophy and more or less dilatation. The hypertrophy was the striking feature. The musculature was intact. There was no thorough discussion of the condition in adult medicine and none in pediatric literature. Doctor Howland's interest in this condition was first awakened by a patient, who came under his care when three months old, weighing little more than four pounds and suffering from extreme malnutrition, largely due to the fact that she regurgitated her food. It was practically impossible for her to retain fluid food. She was given semisolid food with a spoon and thereafter gained rapidly, and was discharged in fair condition at the age of eleven months. She continued to gain until the age of fifteen and a half months, when she began to lose appetite and to have marked respiratory distress with an expiratory grunt. The temperature was normal, but respirations and heart action were rapid. Nothing definite was ever made out in the lungs, but the rapid respirations continued and even became increased. Physical examination and the x ray ascertained that the heart was greatly increased in size. Nothing could be done to improve her condition, and she eventually died with the symptoms of circulatory failure without edema, one month after the onset of her symptoms. At post mortem nothing was found beyond a very much enlarged heart, which weighed 100 grams; the average weight given for this age was forty-six grams. All the other organs were normal. Three other cases were cited in which the hypertrophy had been very great, as shown by a considerable increase in the weight of the heart, in each instance more than 100 per cent. over normal weight of the heart for the corresponding age. An explanation

for the cardiac hypertrophy had been sought elsewhere in the body, but none of the conditions with which cardiac hypertrophy occurred was present in any of these cases. The myocardium in all of these cases reported was normal. There might have been some disturbance on the part of the nervous regulation of the heart similar to that present in the hypertrophy of Graves's disease. As the result of some nervous or muscular disturbance, in-coordinated action of the heart resulted, and loud murmurs might be heard, not as the result of valvular disease, as shown by post mortem examination, and apparently not due to extensive dilatation of the valvular orifices. Doctor Howland believed that in its milder form this cardiac condition was much more frequent than was suspected, for he said he distinctly remembered patients from two to four years of age with enlarged hearts and with symptoms of acquired cardiac disease, as opposed to congenital disease, in whom it was impossible to demonstrate any etiological cause.

Dr. CHARLES HUNTER DUNN, of Boston, cited a case similar to those described by Doctor Howland. This baby was admitted to the hospital with marked cyanosis, cardiac insufficiency, and a diagnosis of double pleurisy or hydrothorax was made. The x ray showed an abnormal cardiac condition. The outline of the heart was much larger in proportion to the size of the child than those shown in Doctor Howland's plates. As in Doctor Howland's cases, the heart muscle in this case was normal and there was nothing to explain the hypertrophy.

#### Infantilism: Brissaud and Fröhlich Types.—

Dr. J. P. CROZER GRIFFITH, of Philadelphia, said that the term infantilism should be applied not only to adults and adolescents who possessed in some degree the bodily and often the psychic characters of infancy, but to children of any age in whom there was a persistence of characters, especially sexual, which belonged to a period of life decidedly earlier than the actual age of the patient. Further, a sharp distinction should be drawn between infantilism and nanism. The classification proposed by Hastings Gilford (*Lancet*, 1914, 1,587) was worthy of serious consideration. He divided the cases into the essential forms, including ateliosis and progeria, and the symptomatic forms, including the Lorain and the Brissaud types. Other forms of infantilism had been described, among them, the intestinal, pancreatic, pituitary, renal, cardiac, and lymphatic. The pituitary and Brissaud types were especially considered, both because of their intrinsic interest and because the author had studied them with considerable care.

The first case was that of a child, seven and one half years of age, who at the age of one one half years suffered from an attack of whooping cough, and since that time was said not to have grown any physically, although the parents thought she was normal mentally. Physical examination showed the extremities short in comparison to the size of the thorax and the legs slightly bowed, the abdomen prominent, a moderate deposit of fat over the scapulæ, moderate harshness of the skin, and features suggestive of the in-



fantilism of the Brissaud type. The child was in the hospital under thyroid treatment for several months, and while she showed some slight increase in weight and measurement at the end of this time, her condition showed no very material change.

The second case occurred in a male, eleven years of age, who was brought to the Hospital of the University of Pennsylvania because of excessive obesity. The tendency to undue deposit of fat had been noticed by the parents since the boy was eleven months old. This had been gradually progressive and did not seem to be influenced by diet. The boy was five feet in height, the normal for his age being four feet. His weight was 251 pounds, the normal for his age being seventy pounds. His abdomen was very fat and the penis was buried in fat, but seemed very small for his age and for the rest of his development. The testes were descended, but very small. The x ray examination of the head showed a sella turcica definitely smaller than normal, indicating a small pituitary body. There was a lowered sugar tolerance. After the administration of pituitary extract for two months there was a decided increase in the sugar tolerance. While under treatment, a period of a little less than three months, the boy lost seventeen pounds. This patient was an excellent illustration of pituitarism of the Frölich type, except in certain particulars; patients showing this syndrome often exhibited a retarded skeletal development, while in this instance there was a decided overgrowth. This might depend, as Cushing suggested, upon activation of the anterior lobe of the pituitary body combined with insufficiency of the posterior lobe. The excessive action of the anterior lobe was the condition which, developed in later life, would result in acromegaly, but appearing earlier, as Brissaud suggested, produced gigantism.

Dr. CHARLES HERRMAN, of New York, expressed regret that the term infantilism had been used so loosely. The intestinal infantilism of Herter was not infantilism at all. The term infantilism had been used for all forms of dwarfism. It might be better to use the term dwarfism for retarded growth and infantilism for those cases in which there was an absence of secondary sex characteristics. It was a good idea to examine the metacarpal bones in cases of suspected infantilism; some of these cases showed marked improvement under thyroid treatment. The tendency was to give pluriglandular extracts.

Doctor Griffith said that he thought the term infantilism was rather thoroughly defined and that we had accepted it as designating a slowness of development and not of growth.

**Head Shaking with Nystagmus in Infants.—A Study of Sixty-four Cases.**—Dr. CHARLES HERRMAN, of New York, stated that this condition was more common in some countries than in others and more frequent in large cities. The figures in New York City indicated that the condition was met with in about one out of every 700 infants coming under treatment. The affection was relatively more frequent among negro than among white children, probably because of the poorer hygienic conditions under which the former lived and

the greater prevalence of rickets. The disease showed a very distinct seasonal incidence, and females were affected slightly more frequently than males; in the writer's series there were twenty-nine males and thirty-five females. The disease was most common between the ages of four and twelve months, seventy-five per cent. of all cases occurring at that time. In very few of the cases was there a distinct neuropathic history. The character of the feeding seemed to have no direct relation to the disease, though as one would expect, the rachitic manifestations when present were more marked in artificially fed infants, so that, to a certain extent, such infants were somewhat more predisposed to head shaking. Illness, by lowering the vitality, apparently was an etiological factor in those infants already predisposed. In a small percentage of cases trauma was an exciting cause in a predisposed child. Hygienic conditions, social position, and the location of play rooms, played an important rôle in the etiology. In large cities head shaking was more common among those who lived in the poorer tenements and among families living on the basement and first floor. Not only were these families the poorest, but their rooms were dark and ill ventilated, and the intelligence of the mother was lower than that of the average woman. In fifty-five of the cases in the writer's series the character of the rooms could be accurately ascertained, and in forty of these the infant was more or less in the dark. It must be remembered that in certain sections of the city a large number of people lived in dark rooms and only a very small proportion living in such rooms contracted the disease, so that here again one must assume an individual predisposition. The same predisposition had been noticed in miner's nystagmus. During the past eleven years the writer had studied the same class of patients at the Lebon Hospital in the Bronx and in the Good Samaritan Hospital on the lower East Side of the city; the disease was more common in the latter section, due principally, in his opinion, to the fact that in the Bronx the majority of families lived in sunnier and better ventilated rooms than did those on the lower East Side. Head shaking apparently had some relation to rickets, it being about twice as frequent among rachitic children as among others. Cases of head shaking were rarely associated with laryngismus stridulus, facial irritability, tetany, or convulsions. The pathogenesis of this condition was still something of a puzzle. In considering the pathology of this condition, the writer accepted as a fact the obvious relation of the head and eye movements and believed that the progress of the medullary development of the nerves which was going on very rapidly at this age was interfered with by disturbance of nerve nutrition, or rendered functionally imperfect through early acquired opacity of the refracting media, or by congenital absence of a place in the retina that had more acute and perfect vision than elsewhere, or by a defect on the receptive cortex.

In this series of cases the movements of the head were primarily horizontal in forty-four, vertical in twelve, and rotary in four, and horizontal or vertical at different times in four. The movements were

more distinct when the child was angry or fatigued. In thirty-five of the writer's cases the nystagmus was bilateral, in twenty-three unilateral. The movements of the eyes in these cases were much more rapid than those of the head, the ratio being about 200 to 300 per minute. Among the associated conditions in these patients were anemia, enlarged spleen, tuberculous lesion, papular urticaria, eczema, and geographical tongue. The condition seldom lasted more than from two to twelve months. In the treatment the aim should be to improve hygienic conditions and provide light. Any source of peripheral irritation should be removed, the diet should be regulated, and digestive disturbances corrected.

Dr. AUGUSTUS CAILLÉ, of New York, called attention to the fact that he had demonstrated many years ago that if the child's eyes were tied up the head nodding would stop. The reason for this had never been explained.

Doctor Herrman stated that he had given Doctor Caillé credit for having shown that tying up the eyes stopped the head shaking. He had found that this was true in every instance in which he had been able to employ this device.

**Variations in the Lipoid (Fat) Content of the Blood.**—Dr. MCKIM MARRIOTT, of Baltimore, and Dr. WARREN SISSON, of Baltimore, presented this paper, which was read by Doctor Marriott. He said that even though an infant were fed considerable amounts of fat, if he was unable to utilize the fat he was virtually in a state of fat starvation. Information with reference to the efficiency with which the fat of the food was digested and absorbed was obtained by analyses of the stools for fat or its derivatives. Still further information as to the behavior of fat in the body could be obtained from a study of the fat of the circulating blood under various states of nutrition and varying conditions of feeding. Since the fat of the blood was derived from the tissues as well as from the food, the percentage might be as high during complete starvation as when moderate amounts of fat were being fed. One should know the diet of the patient in order to interpret the analyses of the blood for fat. There was difficulty in fat absorption if the food taken was what would ordinarily be adequate and the blood fat still remained low. A high fat content of the blood meant a deposition of fat somewhere in the body. In this paper they reported the results of fifty-two determinations of fat on the blood of forty-eight infants in the wards of the Boston Floating Hospital. In making these estimates they had used Bloor's nephelometric method. They had found that the average blood fat for the series was 0.68 per cent. The time after feeding at which the samples were taken apparently made no difference in the blood fat percentages. Other factors being equal, well nourished and poorly nourished infants had essentially the same amounts of fat in the blood. Infants fed on milk mixtures containing no fat showed low blood fat percentages, much lower than those being completely starved. Some of the infants being starved were suffering from intoxication and a few developed acidosis. The blood fat percentage was essentially the same in the infants with acidosis as in other infants. The results of this study showed that an

infant who was gaining in weight, no matter what his state of nutrition, would have a higher blood fat percentage than one who was not gaining. It has been found that certain groups of infants showed amounts of blood fats that differed distinctly from the general average of other groups; this suggested the need of further study on special types of nutritional disorders. A group which would be of special interest for further study was that in which failure to thrive had been attributed to difficulties in the digestion and absorption of fats.

Dr. CHARLES HUNTER DUNN, of Boston, asked Doctor Marriott what his findings were in reference to the blood fat in infants gaining in weight on a fat free diet.

Dr. F. B. TALBOT, of Boston, asked if an attempt had been made to find if there was any connection between high carbohydrate feeding and blood fat.

Dr. HENRY F. HELMHOLZ, of Evanston, asked if, in children with large fat deposits where acidosis occurred, these fat deposits were drawn upon and if it was only those children with large fat deposits in the organs that showed a high blood fat.

Doctor Marriott, in reply to Doctor Dunn's question, said that he had no infants in this series that were gaining weight on low fat feeding. In one or two instances a gain in weight was found to be due to edema and that eliminated them from this series. There were no infants in the series on high carbohydrates, but Doctor Marriott said he thought the blood fat would be low under those circumstances. Infants with acidosis fell into two classes, the under nourished and the well nourished; he had not separated them in this study, but thought the findings were about the same in both groups.

**Mercurial Preparations in the Treatment of Congenital Syphilis.**—Dr. WALTER REEVE RAMSEY and MILDRED ZIEGLER, M. S., of Minneapolis, presented this communication, which was read by Doctor Ramsey. He stated that this series of experiments was undertaken to determine, if possible, the extent of absorption of mercury into the circulation as indicated by the elimination in the urine, when the ordinary methods and doses were employed, and the time during which mercury continued to be eliminated in the urine after the administration of mercury had been discontinued. The idea was to determine the frequency and the size of the dose necessary to maintain mercury circulating in the body. The effect of the various forms of mercury upon the kidneys as determined by the appearance of protein, casts, or blood in the urine, was also estimated when possible. The series of experiments shown in charts warranted the following conclusions:

In infants and children, mercury when given by the mouth, by inunction, or subcutaneously, was excreted at least partly by the urine. In new born infants and older children, mercurial ointment when placed in contact with the skin, without any friction being used (protected, sealed by wax paper from being volatilized and inhaled), was taken up by the skin and eliminated in the urine and continued to be eliminated for some time after all treatment had been discontinued. By inunction mercury was readily taken up by the skin and eliminated in



the urine, and continued to be eliminated for a considerable time. When one inunction was given, the maximum daily amount of mercury was usually eliminated during the following twenty-four hours, smaller amounts being eliminated for a variable time. Where continuous inunctions were given there was an accumulation in the system and considerable amounts were eliminated at intervals with only traces between. It was therefore probable that it was unnecessary to have mercury in contact with the skin, with or without rubbing, as often or as long as had been generally thought necessary. This, however, must be determined by further clinical investigation. Mercury salicylate suspended in oil and given subcutaneously continued to be eliminated in the urine in appreciable amounts for as long as eight days; the daily amounts eliminated varied widely. It was therefore probable that a repetition of the treatment at intervals of eight days would be sufficient. Mercuric chloride by the subcutaneous method continued to be eliminated for eight days. Calomel,  $\frac{1}{4}$  gram every two hours, for four doses, and gray powder,  $\frac{1}{2}$  gram, continued to be eliminated in appreciable amounts in the urine for as long as nine days, the maximum amount being eliminated during the twenty-four hours following administration. It was therefore probable that the daily use of any of the mercurial salts in the amounts usually prescribed was unnecessary and presumably harmful.

## Collectanea

**Reduction in Industrial Fatigue.**—Great Britain, after having wasted her industrial forces during the first year of the war, through needless and avoidable fatigue, is now foremost among the Allies in realizing her mistake and rectifying it. In our country the Division on Industrial Fatigue, composed of scientists organized under the committee of labor of the Council of National Defense is now engaged in examining munition factories and other industrial establishments manufacturing war supplies. Some of the main phases of the subject as considered by these authorities are given in a recent issue of the *Public Health Bulletin* as follows:

With adequate equipment, administration, and a proper spirit among the employees, fatigue is the greatest obstacle to a maximum output. Fatigue among employees may be detected by a falling off in the output; by a fall in the amount of electrical or other power consumed in the factory; by the amount of spoiled work turned out by the workers; by the number of accidents to the workers, the number of absences from work, and by records of sickness. Fatigue may be avoided or reduced by introducing recess periods during the work; by introducing variety into the work; or by adjusting the speed capacities of group workers about a medium rate. Where a single motor operates a number of machines, the speed of the motor must be adjusted to the average pace. It may even be advantageous to transfer to another position an especially slow or fast person. The position of the worker with regard to his machine should be so adjusted that all unnecessary motions are avoided. The seats should

not be of uniform height but should be adjusted to the individual worker, and should be the shape to fit and support the worker's back. Ventilation of the workrooms is also an important aid to efficiency: Excessive heat and humidity should be avoided and the air kept in motion. Movement of the air will not cool the air, but it will cool the skin and therefore keep down the bodily temperature to the healthful level. Where the heat of the workrooms rises above  $68^{\circ}$  in spite of open windows, electric fans should be used to keep the air in motion. Satisfactory sanitary conditions within the factories include adequate lighting; an exhaust system to remove deleterious fumes and dust; abundant drinking water, cool but not ice cold; attractive rest rooms; lunch rooms or canteens; clean, well ventilated modern toilets; and washing facilities, with abundant soap and clean towels, and shower baths.

The British Health of Munition Workers' Committee from a careful study of the output has found that in plants where night and day shifts are employed, the output is less where the same night shift continues to be employed, than where there is an alternation of night and day work in the shifts. Too frequent changes of night and day time shifts, may however, also be detrimental to health; periods at one schedule should be not less than one month in duration. Proper adjustment of the daily hours of labor constitutes a very obvious way of avoiding fatigue. Women and boys, even when engaged in very moderate and light types of work are unable to stand as long hours as men. Whenever, as at the present time, the greatest output is desired, there is a tendency to increase hours and introduce overtime work. But whenever the work is of such duration that fatigue begins to be pronounced, it has been shown again and again that shortening the working period actually increases the amount of work done. In an English munition factory when the average weekly hours of men sizing fuse bodies were reduced from 58.2 to 51.2, the total output was increased twenty-one per cent. In the English factories the absences of employees from their work have increased enormously since the war began. In one munition factory employing 70,000 hands the employers gave their hands a whole holiday instead of a half holiday on Saturday. The absences were diminished by fifty per cent. These same arguments apply to the question of overtime work. This should be resorted to only in times of exceptional emergency, and even then not for many days in succession. It is also advised that all workers have one day's rest in seven. The British committee reports as follows: "Statements are made by many employers that seven days' labor produces only six days' output, and that reductions in Sunday work have not involved any appreciable loss in output. . . . If the maximum output is to be secured and maintained for any length of time, a weekly period of rest must be allowed. Continuous work is a mistake and does not pay." Finally, anything which the employer can do outside the plant to promote bodily health and vigor and mental contentment is, in the long run, profitable. Modern housing, attractive home surroundings, club facilities—whatever will keep workers away from places deleterious to health—are all safeguards against industrial fatigue.

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## Original Communications

### CIVILIZATION AND THE LIBERTY LOAN.

BY GEORGE DAVID STEWART, M. D.,  
New York.

It is difficult for Americans to speak of themselves or their country except in fervid and glowing terms, and this often makes them appear boastful. For the most part this is not a spirit of vanity, but has been brought about by the largeness of everything American, that is, the physical largeness, conditions which operated on our forefathers even to the point of changing their vocabulary. An English writer who visited us a few years after the establishment of our independence complained of the quality of our language, not recognizing the fact that a new environment demands a new vocabulary. He even found fault with the severity of the dress of our women—a matter upon which, could he revisit us now, there could surely be no criticism, considering the generous revelations of the present modes.

Not only do others misunderstand us, however, but we often misunderstand ourselves, partly because we compute in decades, or at most in the span of our own lives and experience, forgetting a dictum centuries old which announces that "in the sight of God a thousand years are but as a day." How often we exclaim over the great improvements of our time, when their benefits even for us may be doubtful and for the generations to follow they may be obviously faults. The truth is that human beings have a marked capacity for blundering, of which an amusing example is found in *Tono Bungay*, where the author tells of miles of houses erected for single family occupancy; regarded by their builders as wonderful improvements, but soon turned over to apartments the most inconvenient possible.

The present social system in Europe is a remarkably haphazard affair. Like Topsy, it would seem to have "just grown." We in America too have many faults to confess; we had hardly founded a democracy when we began to shirk our responsibilities and left the government to a ruling class in the State of Boston, left it to exploit our wonderful resources, each for himself. We forgot our democracy in what Croly calls Our land of promise and Our place of destiny—"land of promise" because there was a virgin wilderness to exploit where each could become rich beyond the dreams of avarice, with no tithes to pay to foreign prince or potentate, from whom we were protected by the Monroe Doctrine. Why designated as "place of

destiny" it is difficult to say, but the cry of the Leech's daughters is always for more, and we were so successful that we allowed ourselves to dream that better things were still to come. Therein lay our vulnerability, for we had about reached the limit of our occupancy of this fool's paradise. The virgin wilderness had been exploited to the vast advantage of a few, and the Monroe Doctrine had been broached by submarines. Suddenly we came to realize the wisdom of an ancient and forgotten saying, that "man cannot live unto himself alone," and in order to win the war we began to take thought of the morrow, to function collectively as democrats, suffering wheatless days and gasolineless Sundays; we handed over our railroads, our telephones and telegraph, our express companies, our pocketbooks, our boys, and are ready ourselves to add, "Master, here am I." Will there ever come a time when all the socialistic doctrines now extant will be worth that one patriotic ideal under the impulse of which men front the great darkness and set out on that crowded but silent road that leads through the Valley of the Shadow, a road more populous than any thronged thoroughfare in London, more crowded than any gate of Peking, silent as the grave? Over that road has come no returning traveler.

The medical profession has always been altruistic in its principles, and to give service is the doctrine on which the profession of medicine is founded. Patriotism and service are so closely allied that the former comes easily to doctors. When the war broke out it was not long until the 430 members of the medical department of the Army had been augmented to 20,000 or more by the most active and honorable of our profession. Now we are to raise an army of five million men and will need thirty-five to forty thousand doctors, and there is no question that we shall find them without compulsion or conscription.

There are two basic ideas of progress and civilization. One regards progress only as a corollary to strife. The philosopher-historian who accepts this theory points out that all civilizations have their Spring and attain their Summer only in strife, their Autumn beginning when strife has ceased and contentment has been attained. This is the philosophy of von Bernhardt and Trietschke and it is essentially harsh and cruel. Another and more encouraging doctrine is that enunciated by Kropotkin, of "mutual aid and support," in which



the countless aids and little acts of kindness and helpfulness offered by one member of the race to another and extending over the ages have had more to do with the development of civilization than all the wars of history. These acts are not spread on the records as are exploits in arms, nor can their influence make itself greatly felt in the span of time that makes one human allotment—how fleeting that span may be appreciated by reflecting that some of the trees that still greet Spring's return have held their leafy foliage and the songs of birds for hundreds of seasons before the Star of Bethlehem appeared in the eastern skies.

Recently, a magazine writer has pointed out that Gibbon, the historian of the civilization of Rome, thought it improbable that civilization should ever again be menaced by barbarians. In hazarding this prediction, Gibbon, who associated books and learning with civilization, forgot that other essential, kindness, that is to say, charity—the greatest of all the virtues—and thus did not foresee what has actually come to pass, that the barbarian might come from inside.

Which of these doctrines shall we accept, strife and be a Hun, or mutual aid and support and be a Human? For the medical profession it is not hard to decide. Kindliness is the very essence of their practice, and medicine began when sympathy excited one individual to try to help a suffering fellow mortal.

The new Liberty Loan about to be launched will afford another opportunity for medical men to exercise their patriotism. It will be doubly welcomed by those who have been denied the privilege of sacrificing their practice and their families to enter the Government service. The doctor who has money should invest it in this best security in the world today, but more than that he should interest every one of his patients in the loan, pointing out strongly and forcefully its advantages. If all the medical men would do this, the influence would be so tremendous that the overworked Secretary of the Treasury would not need to plan bonuses in the shape of tax exemptions. Now is the time to put forth our best efforts; now while the iron is glowing to white is the time to strike and forge the fetters of brutality so strongly that the thing shall, like Enceladus, lie forever prostrate beneath the ashes of its own dreadful fires. May humanity never again be compelled to listen even to its distant groans!

60 WEST FIFTIETH STREET.

**Navy Medical and Dental Students.**—The Office of the Surgeon General of the Navy reports that the men who enlisted in the N. R. F. Hospital Corps and last year were furloughed to pursue their medical or dental studies, are now to receive the privileges of members of the Student Army Training Corps. The War Department makes contracts directly with the colleges for the education of the army students, but the navy will provide uniforms for, and give pay, and allowances to the students sufficient for them to make their own individual contracts with the colleges or technical schools.

## A MECCA OF MEDICINE FOR THE FUTURE.\*

By FREDERICK TILNEY, M. D.,

New York,

Professor of Neurology, Columbia University.

I will be asked, no doubt, where and what this Mecca of Medicine of the future is to be. These questions are important to all of us, and also to many others who have their chief interest in the medical profession. They are questions which touch our lives profoundly; they search out the kind of men and women we are, or hope to be, and their answer formulates a motive of impelling force.

Where is this centre for the future ideals and development of medicine likely to be? Its location may be open to some question. It would be difficult to find a more favorable place than in this nation which has contributed so freely that the aspirations and ideals of men might live, in fact, which has given so abundantly to secure the blessings of liberty, which has fought on many battlefields in the just causes of humanity, and which is today marching in such spirit as never crusaders marched before, not as standard bearers of a single faith, not with thought of selfish gain, but for all faiths, for all peoples, and, God grant it, for the last time to reassert the will of freedom against the greed of tyranny.

It is not fatuous optimism to believe that this country is the most fitting place for such a centre of medicine. Nor is this belief one of vainglory. However much the idea may seem to be the product of overardent patriotism, when looked at earnestly, it appears nothing of the kind. It constitutes one of the many demands upon us to prepare ourselves now for the even greater struggle after the war. To us it comes as a summons to a duty we should not neglect.

The reasons for this are many and easy to discern. During the past four years war has swept the world with a destructive power more complete than ever before in history. If it has revealed a ruthless plan which menaced the race, at the same time it has exposed a nation which had lost its mental bearings for many years. The Germans have been laboring under a delusion of grandeur. They have been obsessed by the conviction of their own racial superiority. This eventually led to the paranoid idea of world dominion. It has been part of their unfortunate heritage as a people to believe in the righteousness of might. They were even more unfortunate because they have long been under the influence of rulers who, by cultivating this belief, exploited a national weakness. Their most serious misfortune is their present ruler. Prepared for the coming of a war lord by their successful aggression in the Franco-Prussian War, the German people were quickly infected by the expansive ideas of the new ruler. He, on his part, at once began to weld the old fetters of feudalism and soon had so controlled public opinion that the German standards of judgment in morals, religion, science, art, and politics were no longer matters of independent decision.

\*Address delivered at the Opening Exercises, College of Physicians and Surgeons, September 25, 1918.

Our former Ambassador to Berlin, Dr. David Jayne Hill, epitomizes the tendencies in Germany when he says that: "Like money put out at usury, power in government grows with astonishing rapidity. When it is both concentrated and undisputed, as in the case of imperial absolutism, it soon becomes irresistible. No better example of this rapid centralization of power can be found in history than the growth of Kaiser William II's personal control not only of German action, but of German thought." In his instructive reference to the *Verdun Prize* this celebrated student of Germany gives a striking illustration of the method by which the Kaiser gained control over the universities. The prize referred to was annually awarded for the most meritorious historical work of the year. In 1894 the Academy of Berlin unanimously awarded it to the famous historian, Von Sybel, for his work on the Foundation of the New German Empire. To the amazement of all, the young Kaiser drew his pen through the name of Von Sybel, awarding the prize to a Heidelberg writer for an inferior work on the Great Elector, one of the Kaiser's ancestors. Gradually under such influence the faculties of the universities and schools came to wear the King's Coat, for in this way only was advancement possible. But it did not stop with the subordination of learning. Soon it extended to the press and church. In time, baited by the avaricious expectations of German world dominion, commerce and finance came into the net, until at length allegiance to the Kaiser on the farm and in the factory, in the banking house and on the sea, meant power to the arm that was to strike the swift overwhelming blow for alluring plunder. In this attitude we see them poised to strike for the predestined day, infector and infected alike charged with the same venom, filled with Prussian lust for power.

The blow they struck was neither swift nor powerful enough. It did, however, strip off the mask and finally arrayed against the transgressors the outraged humanity of most of the world. In this way two great forces have, for more than four years, been engaged in a process of irreparable destruction. Nearly every line of human activity has been turning its product into the vortex until the waste in all materials and intellect has become stupendous. In the end, Germany, vaunted the most efficient of nations, has shown herself to be the most destructive organization in history. Through forty years, while establishing German supremacy in the pursuits of peace, the government built parallel to this, and deliberately planned to use, the destroying engine of its military power. This power has swept German commerce from the seas, decimated her manhood, filled her cities with the maimed and blind, prostrated her science and industries, and brought her to spiritual as well as financial bankruptcy. Nor is this all! Had the ruin been confined to Germany alone, the evil record might have been borne. But the destruction which Germany begot has drawn all of the other productive nations into the fire. Their wealth and man power, their intellectual efforts and enterprises which go to make up civilization, have been diverted into the conflagration. Years of readjustment and recuperation lie ahead, years of few know

not what extreme tests upon our faith, our courage, and our tenacity to adhere firmly to the right. These are the times for which we must now begin to prepare ourselves.

There can be no doubt that the struggle through this period in Europe will be severe. The entire effort of every European state must be concentrated upon the rehabilitation of the essentials of life. The higher pursuits of civilization must for the time at least stand aside, or bend their energy to the simpler purposes. The security and plenty upon which German medical science grew to be the commanding figure in the world of medicine have gone. Not for a long time can the Germanic capitals be the centres of medical learning as they have been in the past. This distinction must pass into other keeping. France, henceforth the symbol of heroic sacrifice and salvation, has given nearly all she had, and being impoverished by the noble gift, needs time to replenish her resources. England, the bulwark of civilization throughout the struggle, has stripped her empire, and for years to come will be handicapped in maintaining and advancing science. This is particularly true in medical science, for England early in the war encouraged the mobilization of the entire medical profession and permitted medical students to serve with the colors, in this way depriving herself of a large annual increment to the medical ranks. Whatever handicaps we may labor under, due to our present or future sacrifices, we shall inevitably occupy the point of vantage in this regard as well as a position of chief responsibility. We can understand how it must be our duty here in America to carry on the constructive, advance work in medicine while the nations of Europe struggle through their period of reconstruction.

But there is a still more cogent reason why we should accept this responsibility, namely, because we are now ready and able to take the place we should hold in medicine. The war has brought about far reaching changes in the country. It has, as Lord French says, made a nation of us. Under the great leadership of President Wilson, the whole essence of our destiny has been crystallized, and we move forward unified, no longer North or South, or East or West, but one people irresistible in the resolve to accomplish our purpose. The war has brought about far reaching changes in medicine. We have also gained a national consciousness. The country no longer regards medicine merely as a learned profession, but is coming to consider it one of the essential industries. Sound public health is a necessary element in the will to victory. A civil population unduly enfeebled by disease or discouraged by neglect, could not be expected to support a winning army. All signs give us confidence that the Government in its wisdom will provide adequate medical attention for the people, prevent relaxation in the safeguards against epidemics, and restrict the spread of disease to the limits normal in times of peace. In another critical relation the efforts of the medical profession have become indispensable to final success. The vast detail of the health of an army is in the hands of its medical corps. Failure here is almost as serious as defeat by the enemy. The selection of the fit and rejection of the unfit, the su-



pervision of sanitation, the prevention of disease, the stamping out of epidemics, the early detection of the physically and mentally unstable, to say nothing of adequate care and reconstruction of the sick and wounded, are matters of vital importance to troops in the field. The war has shown us the possibilities of medicine carried out intensively in all its branches. From these lessons we have gained more cohesion as a profession. We understand now more fully our obligation to civil communities, we recognize our opportunities for greater public service, and see the value in a more complete system whose development will better safeguard the public health. In attributing these changes to the war, it is but just to indicate that they are in large part due to Surgeon General Gorgas. He has given us a demonstration of the efficacy of national organization in medicine. The organization of his own department is one of the real achievements of the war. It is widely admitted that the Medical Corps of the United States Army is without peer. The public knows too little of its development and management to appreciate the efficiency of one of the most potent forces fighting for civilization today. Over twenty-five thousand physicians have been called in from all branches of private practice and given special training for some particular work in the army. Provision has been made for the psychological testing and grading of troops in training; specialists have been developed for testing the flight capacities of aviators. Every department and subdepartment in medicine is manned by physicians who have had special courses of intensive training. Each of the larger groups of diseases is provided with its special base hospital, while plans are already perfected for the rehabilitation of the maimed and blind who unfortunately will return in increasing numbers to our shores. In a word, every contingency that a farseeing intelligence might anticipate has been provided for in a scientific manner. With an organization in all branches of the War Department such as General Gorgas has built up, the United States Army must certainly be invincible.

Alive to the significance of our position, we recognize that American medicine can no longer be an overseas province on the medical map. Our tradition leads us to feel that we shall succeed. Our practical instinct compels us, however, to take stock of our qualifications. As to one of our assets there can be no dispute. American medicine is supreme in surgery. In this most direct practical handicraft of the healing art, it is probable we have no equals. American surgery has won its repute not alone for its ingenuity and sound adherence to fundamental principles, but quite as much through the brilliancy of its technic and enterprise. It has produced a surprisingly large number of surgeons noted for their exceptional skill in general and highly special regional procedure. The number of these is still growing. In fact no other country possesses so many thoroughly trained surgeons who may be considered competent to assume the responsibilities of major operative work. The dominant position of America in surgery is witnessed by the steadily growing influx of foreign surgeons in the past few years to the famous operating amphitheatres of this coun-

try. Our own surgeons understand that they have become the instructors in their branch of medicine.

Another valuable factor ready to our hand is the diagnostic clinic or group idea in diagnosis and practice. This is essentially an American conception, and its successful application as a scientific method for the practice of medicine is an accomplishment in which we have a just national pride. Not only is it the most efficient way of bringing the ailments of each individual patient under complete medical review through examinations by experts in each particular department, but it confers a further benefit upon the patient by furnishing the best medical advice in the most economical way. To the physicians engaged in the work it serves as a mutual inspiration and a constant incentive.

In the matter of equipment we are rapidly increasing the number of modern hospitals throughout the country. These institutions have the advantages of modern management, which conceives of the hospital as an educational factor as well as a place to care for the sick. The idea is becoming more generally accepted, especially in large centres, that a hospital that has no teaching facilities does not discharge its full duty to the public. The personnel of the profession is fortunate in its admixture of nationalities and races. This cannot fail to be ultimately advantageous, as it tends to catholicity of viewpoint and furnishes a variety in methods of approach.

The American system of medical education is conspicuous among our assets. It has an efficient organization which, under the guidance of state boards and certain large national associations, has effected a standardization of medical instruction. This gives a well rounded training in all branches of medicine. The fifth hospital year, already instituted, is designed to furnish a finishing course in practical work. During this period the student will live in the hospital, gaining clinical experience under the direction of resident instructors. The establishment of separate faculties to increase the opportunities and requirements of post graduate instruction in medicine is receiving serious consideration. Full time clinical professorships, as proposed, will materially advance the interests of research in the clinical branches and provide more time for teaching. Medical research has had an unprecedented growth in recent times, as evidenced by the development of special institutions for the intensive study of the human body and its diseases. Notable among these are institutes for the investigation of cancer, tuberculosis, mental disorders, the development of the body, the anatomy of the brain, and general experimental medicine. In connection with these institutes the opportunities for post graduate teaching have been much enhanced.

We must not, however, neglect the other side of the question. We have our defects. The most obvious of these, perhaps, is that we have permitted our vision to become nearsighted and locally introspective. Because of this limited view we have gained no sense of the possibilities and proportion of our mission; it would even seem that we had no realization of a mission at all. A complacent isolation of the larger medical centres has cultivated an exclusiveness which does not promote mutual understanding or inspire the confidence which engenders

the spirit of progress. There has been, in consequence, a lack of broad conception and comprehensive organization. Our national impetuosity, our desire for quick results have made us intolerant of delay and often hasty where patience is more needed as a commodity than as a virtue. We have had too little confidence in our own achievement and an overweening regard for foreign work, especially of German stamp. This is all the more discomfiting since the quality of German production has fallen off in the past fifteen or twenty years. It may now be seen how much of the mass of German medical literature was part of the ambitious scheme of exploitation which has sapped so many good things of their worth and sincerity.

These defects, although serious, should not retard us. Such is not the American character—as we know from recent examples. When the call for men came from France we did not dwell on the difficulty of the draft, equipment, and transportation, but putting all obstacles aside we sent an army which is well on its way to final victory. Let us be convinced that there is something which must be done and its accomplishment is practically assured. When the conviction is established that we owe this duty to medicine, America will indeed become a new medical centre.

It may be that the first step to secure this end will be a national federation of American medical colleges and institutes. A council representative of these institutions would cooperate in the interests of medical education and medical science. If the satisfactory diagnosis of the individual patient requires a group of diagnosticians, how much more do the profound and baffling problems of medicine demand large groups of special workers for their solution? Coordination of investigation might be carried to a high level of efficiency by this intensive cooperation in medical research. The distinctive advantages of each medical centre would not then be matters of local reputation, but part of the national endowment in medicine. The large cities and the other noted medical localities, making their contributions to a common cause, would attract to this country a vast number of the seekers for medical knowledge who formerly would have been found in the capitals of Europe.

The impetus which such a combination would impart to the newer, important trends in medicine would be difficult to estimate. The influences of civic interest are becoming continually stronger because medical supervision is proving itself indispensable in many fields of community life. The well trained physician of the future must be versed in the requirements of public service.

Preventive medicine particularly is destined to undergo much expansion. To its many present activities others equally necessary will be added. Among these might be mentioned the need of medical registration for the detection of disease in its incipience. Those connected with draft exemption boards have been astonished at the inroads into possible military effectives made by preventable diseases or disorders that might have been cured in early life.

Industrial medicine will soon have a field of its own. The health of operatives is calculated as an essential of efficiency and medical departments have already been installed in a number of large corporations.

Public mental hygiene is an urgent national problem which must engage medical attention more seriously in the future. The significance of insanity as an economic loss will be realized by the fact that one third of the entire budget of New York State is annually appropriated for the care of the insane. Under the guidance of the National Committee for Mental Hygiene nation wide investigation is being conducted in order to determine the prevalence and causes of insanity. The committee has already done much to improve the care of the insane and has stimulated a real interest in the effort to reduce the prevalence of mental disorders. Feeble-mindedness as a burden to the community has assumed such proportions as to necessitate the appointment of a special commission for its management in this state. The government attaches such importance to this problem that it has called one of the most distinguished physicians of this country to the chairmanship of the committee.

The necessity of medical cooperation in court and prison matters has become apparent. To distinguish between the feeble-minded, a psychopathic delinquent on the one hand, and the criminal on the other, to differentiate between the necessity of therapeutic and punitive measures in each case and to study the pathological factors in the development of the criminal are necessary functions of the state.

If the country is to avail itself of the obvious advantages of universal military training after the war, military medicine must be still further developed in the college. It seems advisable that permanent courses in military medicine be introduced into the curriculum of medical schools.

These higher requirements of medicine make unusual demands upon those of us who are working in this field today. Yet only as we devote ourselves with intelligence and redoubled energy to our duties will it be possible for us to reach the object to which we seem destined by circumstance. In so large an undertaking the work is not ours alone. The nation already begins to understand our purposes. When it appreciates the full importance of our relation to its welfare we shall, as a recognized economic necessity, have its liberal support. It is especially necessary in all parts of the country that those who have the interests of medical development in their keeping shall make their efforts decisively constructive. In the future, no doubt, a reliable index to the intelligence of a community will be the degree to which it has mobilized its medical resources.

If our eyes seem fixed on the future it is because we understand that, although civilization must be defended against the ravages of war, it owes its continuance and growth to the security of peace. We remember at what cost we delayed in preparing for war. We are loath to make the same mistake again and would prepare in time for the severe burdens after the conflict is over. Education, the



surest guarantee of social stability, should be the subject of our most earnest attention. How much the events of the war have converted public opinion in England to the belief that the future of that nation depends upon the better education of the coming generation, has been shown by the reception accorded the Fisher Education Bill in the House of Commons and in the country. The cardinal features of this bill are the continuation of elementary education for all children and the establishment of secondary education for girls and boys on a national basis. It also provides increased emolument and pensions for teachers, in this way aiming to bring into the teaching profession and retain there the brains of the country.

We should cooperate with the government to prevent any unnecessary interruptions in the work of our schools and universities, and urge that all institutions of science and advanced learning shall be stimulated rather than curtailed in their efforts. "Win the war first," says Lloyd George, "but when peace comes I don't want the nation to be taken unawares. There must be healthier conditions in the work shops and more attention to the schools. There are disturbing symptoms all over Europe which those at home will be wise to note and provide against. . . . Let us take heed in time," he continues, "and if we do we shall enjoy settled weather for the great harvest which is coming when the fierce heat of summer now beating upon us in this great war is over and past. Let us also take heed of the demands for national health, both economic and intellectual, and being sure that the lamps of learning are the lights of the future let us keep them bright."

We are not unmindful of the supreme task in hand. A few days ago we made a new consecration of our strength and we realize the pledge that we and our Allies by all means in our power shall destroy the German fabric of ruthless force. It is still a considerable distance to the Rhine and inner Germany. That nevertheless is our destination. Neither military resistance nor the wily dealings of a treacherous enemy shall hold us back. By force of arms we must crush out vandal militarism, for in this way only is Germany capable of understanding that the judgement of the world is upon her; in this way only is it possible to reestablish peace with liberty and justice. We already know the cost. Even while we glory in the achievements of our troops and colleagues abroad, we cannot shut out from our eyes the sight of those who have fallen. As this number increases courageous sorrow will fill many homes. Little that might be said would bring consolation. In silence we may pay our tribute of veneration and take solace in the fact that those who die go forward to join the invisible army of Washington and Lincoln whose living spirit in the cause of liberty is the vanguard we follow.

It is not in medicine alone that America looks to the future. An era of expansion in all our activities and in our sphere of influence is in sight. But the day to which we look has none of the German taints of avarice, for the motives which raised our nation to a high place of esteem, the sacrifices which have ennobled the republic, will increase our capacity for

service to mankind. Again, as in our past, after the wounds of another great war, that day for us is to be one of justice and without malice. Every calling has its allotted task. The obligation of the medical profession is clear and some portion of it rests on each one of us. The materials are ready and only await assembling for the creation of a new Mecca of medicine. May we have the vision to see the opportunity, the courage to accept the responsibility, in this vital hour of medical history, when American medicine steps forward to fulfill its duty to the world.

## THE GENERAL DIAGNOSTIC STUDY BY THE INTERNIST.\*

### *Cooperating with Groups of Medical and Surgical Specialists.*

BY LEWELLYS F. BARKER, M. D.,  
Baltimore.

(Continued from page 493.)

5. *Requests for examinations by experts in special domains.*—The rapid advances that have been made in diagnosis and therapy in the last fifty years are in no small measure the result of the division of labor that we know as the rise of specialism in medicine. The field of clinical knowledge is so vast, the instrumental methods that have been introduced for the investigation of special domains are so numerous, and the technic of their skillful application in many instances so difficult, that no single person can hope to be equally conversant with facts and methods of the several provinces or to attain to mastery in the practical technical procedures of more than one or two of them. The result is that besides general internists and general surgeons, we now have pediatricians, ophthalmologists, otologists, laryngologists, tuberculosis experts, heart specialists, hematologists, dentists (subdivided), gastroenterologists, proctologists, gynecologists, urologists, urogenital surgeons, orthopedists and postural specialists, neurologists, psychiatrists, dermatologists, endocrinologists, specialists in disorders of metabolism, clinical pathologists, clinical chemists, and röntgenologists. I dare say others might legitimately be added to the list.

It is true that in the medical schools, it is desirable that the students should learn the main facts and principles of all the medical and surgical specialties and that they should have enough first hand experience with special instruments, such as the ophthalmoscope, the nasopharyngoscope, the bronchoscope, the cystoscope, the urethral catheter, and the electrocardiograph, to permit them to understand their uses and to convince them of the importance of their application as aids to diagnosis in certain cases. But in actual practice, specialists to do their best work, and general internists to do their best work, must submit evermore to that distribution of different parts of the diagnostic task among members of a group that has been found necessary for securing most quickly and accurately the data upon which a diagnosis should be based. An internist

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who works alone without the cooperation of groups of specialists, is sure to miss facts that may be of the highest importance for a thorough understanding of his patient's condition. A specialist who works alone should not forget that no matter how expert he may be in his specialty, he is studying only one part of the body, and that though abnormalities may be found in his special domain, they may be far less important for the patient's whole condition than are abnormalities that, unknown to him, exist in other domains. How are patients to gain the advantages of specialization in medicine and at the same time escape the dangers of a one sided study? This is a question that must be faced squarely in order that the right answer may be found. The solution of the problem seems to me to lie in group work, each member of the group possessing special skill in some particular kind of work, and one member, acting as integrator, combining the single parts into a properly proportioned whole. The integrator should preferably be a person who, though perhaps especially skilled in some one branch, is rather encyclopedic in training and comprehension, sympathetic and tolerably familiar with work in all the divisions of modern medicine and surgery, free from prejudices, disciplined by sufficient experience in hospital wards, in clinical laboratories, and in the autopsy room, and blessed with that common sense which is in the last analysis largely a sense of proportion. Specialism, thus resulting in the orderly cooperation of the members of a group, instead of acting as a disintegrating force, may be made to contribute to a higher unity, most helpful both to the public and to the profession. With organization in groups of the kind mentioned, it would matter but little to whom the patient applied for diagnosis; if the integrator be applied to first, he will secure the reports from other members of the group before undertaking the integration; if a specialist in some single anatomical domain be applied to first, he may make his own examination, refer the patient to the integrator for the conduct of the rest of the study, and receive from the latter the full and proportionate diagnostic report upon which a rational therapy can be planned. Obviously, mutual confidence and good will must prevail among the members of such a group. Such groups already exist and the number of them is, I believe, destined rapidly to increase. The older competitive methods must give way to the newer cooperative methods in medicine as in all other walks of life. Nothing could be more unfortunate, however, than the formation of cliques when arranging for group work in diagnosis, and I would warn emphatically against this danger. It is obvious, I think, that such a system as I am referring to does not restrict any specialist or any integrator to activity in a single group; there is no reason why either should not participate in the activities of several different or overlapping cooperating groups, the important points being that the group at work on any single case shall be so constituted as to ensure, first, expert study in each of the several bodily domains in which there is an indication of the need of such study, and, secondly, a combination of the parts of the study into a well balanced whole, the systematic

analysis being followed by an adequate synthesis.

Now, in most cases there is, of course, no necessity of examination by every member of a large group of specialists. In addition to the anamnesis, the general physical and psychical examination, the routine laboratory tests and x ray tests already mentioned, there may be required special examinations in only one or two anatomical domains. In obscure cases, however, and especially in instances of chronic infections necessitating the search for hidden foci, we may feel the need of calling upon a number of experts for aid. How many cases of chronic infectious arthritis, for example, progress for months because the diagnostic studies have been limited to too few domains, when more complete studies might have located the primary foci that were responsible? No one can lay down hard and fast rules as to how extensive a study should be. The judgment and experience of the one who has the general conduct of the study in charge must decide after the anamnesis has been recorded and the general physical and psychical examination has been made. The main thing is that he who conducts the study shall be sensitive to the problems that confront him and know how to apply the best skill in attacking and solving them. The greater the talents and experience of the integrator, the better his insight and discernment, the more likely he will be to have a proper sense of the indicative importance of the various features of a puzzling case. The greater his familiarity with the making of general diagnostic surveys, the more he will avoid requesting examinations that are wholly superfluous, the less likely he will be to neglect a test that is essential in any single case. The taking of too much pains in one case may be foolish; the taking of too little in another may be disastrous.

The choice of experts among those that may be available is of no inconsiderable significance. In asking the aid of an expert, one must make sure that a real expert, not a pseudoexpert, is chosen. Again, among real experts, one will choose those that can give the information that is relevant. Thus, for an opinion on the existence of a proliferative periodontitis and its importance, one will select among several expert dentists, neither an orthodontia specialist, nor a bridgework specialist, unless in addition to his knowledge of his branch of dentistry he knows also the marks and the significance of periapical granulomata. Or, for an opinion on the importance of a pathological idea, or mood, one will select among neurologists and psychiatrists, neither one who is interested solely in organic lesions of the nervous system, nor one whose whole outlook on mental phenomena is colored by some dogma, but rather one who is broadly trained in psychiatry, both descriptive and genetic.

In referring a patient to an expert in a special domain, it is well to send with him a note clearly explaining the nature of the reference, say as follows:

DEAR DOCTOR:

We are making a general diagnostic study of Mr. \_\_\_\_\_. Would you be kind enough to examine him in your domain and to send me a report of your findings. Will you mention especially in your report as to \_\_\_\_\_?

There should be a general understanding among members of a cooperating group that the patient is



to be told nothing about the findings in the single domains until the whole study has been completed and its parts integrated. If this plan be adhered to, much confusion and, often, embarrassment, will be avoided.

As soon as reports have been received from whatever specialists have cooperated in the study, the preliminary collection of data is at hand and the materials are available for the next step of the diagnostic procedure, namely, the summarizing and arranging of the facts and the consideration of the inferences that may be drawn from them. In collecting the data, we make use chiefly of the methods of observation and in order that observation can be extended and precisely controlled, we resort to a large number of small experiments—our several clinical tests. After collecting the data, we stop observing temporarily and undertake the next step of the diagnostic procedure; we begin to use the intellect in arranging the facts and in scrutinizing them; we allow the things observed to bring into our minds things that are not observed, that is, suggestions, ideas, conjectures, or hypotheses of what the things observed may mean.

#### SUMMARIZING AND ARRANGING FACTS AND RECORDING DIAGNOSTIC SUGGESTIONS TO WHICH A CONSIDERATION OF THEM GIVES RISE.

After the data above referred to have been collected, it has been found helpful, 1, to summarize the positive points (abnormal phenomena) in the order of their collection, and, 2, to rearrange the more important findings, both positive and negative, in a systematic way, before allowing oneself to think too much of their significance for the diagnosis that is actually to be made. Thus, the positive findings are first epitomized for the purpose of a quick general survey under the following headings:

##### SUMMARY OF ABNORMAL FINDINGS.

- i. Anamnesis.
- ii. General physical and psychological examination.
- iii. Laboratory tests.
- iv. Röntgenological examinations.
- v. Specialists' reports.

In this summary from the large mass of data collected, only those points are selected that are definite deviations from normal conditions. Gathered in the small space given to the summary, the eye can view them as a whole, and the mind grasps more easily the nature and extent of the diagnostic problem that the case presents. This first summary really consists, 1, in passing judgment upon the normality or abnormality of the phenomena recorded, and 2, in jotting down the several abnormalities detected, in the briefest form possible, for preliminary general survey. The main value of this summary is as a control of the collection of data; one may see at a glance whether in the study as thus far carried out the application of any important method of examination, indicated by the anamnesis or the general physical examination, has been omitted. One may note gaps in the anamnesis itself or in the report of the physical findings that should be filled in.

For rearranging the more important findings (both positive and negative) in a systematic way, one may make use of the following form printed on a single sheet:

#### MORE IMPORTANT DATA REARRANGED SYSTEMATICALLY.

Name.	Age.	Body temperature.
Chief complaint.		
Habits.		
Infections.		
Operations.		
Respiratory system.		
Circulatory system.		
Blood and hematopoietic system.		
Digestive system.		
Urine and urogenital system.		
Locomotor system.		
Nervous system and sense organs.		
Metabolism and endocrine system.		
Remarks.		

Here, again, the important points are jotted down in as brief form as is compatible with quick apprehension, use being made of various symbols for purposes of abbreviation. Under the heading *Circulatory System*, for example, will be placed symptoms such as palpitation and precordial pains, if they are present, physical signs referable to the heart and vessels (e. g., pulse rate, blood pressure, displaced apex beat, abnormal pulsations, heart murmurs, thickened radials or arcus senilis), tele-röntgenographic measurements, and electrocardiographic abnormalities. Under the heading *Metabolism and Endocrine System* will be placed deviations from normal weight in pounds or kilos, struma, eye signs of hyperthyroidism, hypertrichosis or hypotrichosis, glycosuria, uricemia, etc. There may be some overlapping, for one may place a symptom like dyspnea under the respiratory system, under the circulatory system, and under metabolism, unless the preliminary survey has already made it clear to which division the symptom predominantly belongs. Important negative points are included in this summary as well as the positive findings of abnormality.

This systematic rearrangement implies a series of particular judgments on the part of the integrator, for his assignment of a given symptom or sign to a definite system must be based upon his knowledge or prior experience as to the meanings of symptoms and signs. Diagnosis consists, on the whole, of a search for clues and for the meanings of the clues discovered. The arrangement of the clues in groups according to anatomical physiological systems makes the facts less isolated. It makes it easier for us to perceive the relations among the facts and prepares the way for the consideration of each of the several groups as a whole.

Thus far in our own study of a patient, observation has been our main task; the drawing of inferences has played only a small and a subsidiary rôle. But we have now reached a stage of the inquiry where permitting the entrance of suggestions into the mind, forming hypotheses, or drawing inferences must occupy our attention exclusively. Observation stops for the time being; thinking begins. We let our minds play among the facts. We allow the things observed to carry us over to ideas of other things that cannot be observed. From the contents of our present experience, which we must try to assimilate to our own past experience and that of others, are to issue suggestions that we are tentatively to entertain concerning things that the present experience itself does not hold. The situation calls up in our minds something that is be-

yond what our sense organs can contribute; we leap from facts to ideas. But our leaping, to be profitable, should be most carefully directed. If we have cultivated both courage and caution as habits of mind, and if we have taken due care in the selection and in the arrangement of the facts from the consideration of which suggestions are to emerge, we may feel that we have done all that is possible directly and indirectly to control it. This regulation of the conditions under which the function of suggestion is allowed to take place is in itself very important, though, as will soon be seen, it is transcended in importance by the regulation of conditions under which credence is yielded to conjectures that occur (*vide infra*).

When considering a group of symptoms and signs arranged under a certain system, say the circulatory, suggestions of meaning will begin to occur to the trained medical mind. A thickened radial or an arcus senilis will suggest the existence of an atherosclerotic process, a thrill palpable over the apex will suggest the existence of a mitral stenosis due to an earlier thromboendocarditis, or a delirium cordis may suggest the existence of an atrial fibrillation; a tachycardia without marked signs in the heart may suggest a hyperthyroidism, or a pronounced bradycardia may make one think of a conduction disturbance in the atrioventricular bundle due to an increased intracranial pressure, to a gumma in the heart, or to a reflex from an irritated intestine though the vagus. In thinking over the various symptoms and signs, one should cudgel his memory for varieties of possible meaning; it is desirable to harbor a sufficient number of possible suggestions and to record them as rivals to be pitted against one another in a contest for supremacy.

Everyone must work out his own method for accumulating plausible suggestions from the data collected. He must be on the alert to recognize quickly well known uniformities of sequence or of coexistence. For myself, as an aid in arousing suggestions, I have found it helpful to think, first, of the possible immediate pathological physiological significance; secondly, of the possible pathological, anatomical basis, and, thirdly, of the possible etiological and pathogenetic relationship, of a given datum, or of a group of data.

Individuals will vary as regards the suggestions that occur to them, even when they have had similar training and equality of opportunity for acquiring experience. To some minds, suggestions of meaning come easily and promptly; to others they come slowly and with difficulty. The number and range of the ideas that occur also vary enormously with different individuals; I have often been struck by this diversity in discussing diagnostic problems with students, with hospital internes and with practitioners. Whereas, some minds seem barren, almost incapable of giving birth to an idea of meaning when exposed to the fertilizing influence of a fact, other minds respond with too prolific a progeny, with offspring too numerous and too varied. What we want is neither paucity nor superfluity of suggestions, but rather a number and a range of ideas that will suffice for our purpose and for the requirements of the case. The quality of the sug-

gestions that are aroused is even more important than the speed with which they come or the abundance of supply. A mind that responds quickly and prolifically with suggestions may be far inferior to one in which response is slower but deeper and more significant. Celerity is good in itself, but it will not atone for either redundancy or superficiality. The ideal response of the mind—quick, balanced and deep—supplies the substantial ideas that are worthy of being tested systematically for their validity.

This process of soliciting suggestions of meaning, though first applied to the group of facts pertaining to each of the bodily systems (respiratory, circulatory, digestive, etc.), should not stop when the data pertaining to the several systems have been examined, but the whole series of suggestions that have thus arisen must next be surveyed in order that their relative importance for the understanding of the condition of the patient as a whole may be estimated and in order that a final unified conclusion with appropriate ordination of all the data in the case may be approached. We must arrange the suggestions and combine them with reference to one another and with reference to the data upon which their validity depends. Through the whole study we must remember that a human being in difficulty has applied to us for help, that the object of our inquiry is to determine what is wrong with him in order that we may direct him how best to act when the totality of circumstances is known and has been carefully considered. This realization of the purpose or end of the diagnostic study will enforce orderliness of procedure and will give steadiness and continuity to our thinking as it moves toward its goal.

#### DEVELOPMENT OF THE IMPLICATIONS OF EACH DIAGNOSTIC SUGGESTION OR INFERENCE BY REASONING.

No matter how plausible the suggestions that issue when the facts are arranged and considered, final judgment should be deferred until the suggested ideas have been traced to their full consequences and their validity carefully tested. Only an uncritical thinker will allow himself to accept an idea as valid before elaborating it in order that its full bearings may be clearly seen and compared with the facts as they are. The critical diagnostician will insist on reasoning the thing out, which implies developing all the implications of each tentative suggestion that he deems worthy of it and comparing these with the facts that have been, or are subsequently, collected. Very often the deductive process by which the general notion is elaborated will call to mind particular data not included in our original collection, and will lead us to a supplementary extension of the facts by observation or experiment. Methods not yet applied may have to be used in the search for new materials to support or to invalidate the tentative idea that has arisen.

Let us suppose for a moment that in our collection of facts regarding a patient we have found that the temperature of his body is 103° F., that his tongue is coated, that he has headache, loss of appetite, and disinclination for exertion. He has a few râles in his lungs, an acceleration of the pulse rate, a palpable spleen, and a leucopenia. Suggest-



tions of infections associated with enlargement of the spleen and leucopenia at once occur to us and we recall that two common infections of this sort are typhoid and malaria. We then elaborate the idea of typhoid fever (insidious onset, characteristic temperature curve, relative bradycardia, initial bronchitis, headache, anorexia, palpable spleen, rose spots, leucopenia, early bacillema, time of positive Widal reaction, epidemiology, absence of coriza and of herpes, etc.). We also elaborate the idea of malarial fever (intermittent fever in some forms; continuous fever in others, chills, sweats, headache, palpable spleen, herpes labialis, neuralgias, leucopenia, anemia, exposure to bite of *Anopheles* mosquito, reaction to quinine, parasites in the blood, pigment-containing leucocytes in the blood, etc.). We cudgel our memories or refer to our books and find that paratyphoid fever, measles, mumps, glanders and dengue are also febrile diseases that are usually associated with leucopenia; further, that leucopenia may sometimes occur in very severe forms of certain infections that are usually associated with leucocytosis (e. g., pneumonia; septicemia). We then elaborate the ideas of these infections also. These several ideas thus elaborated are so many intellectual keys with which we may successively try to fit the lock. If none of them fit, we must either try some modification of one of them or seek for still other keys for trial. The original suggestions that occur to us are always inchoate. By deduction from principles that have already been established in medicine we develop the fullness and completeness of their meaning. We next have to determine whether the facts we have collected regarding our patient can be identified with the suggestions of meaning as we have elaborated them. Firmly to establish identity with some of them, further observation and experimentation may be required. Thus through a consideration of the implications of our tentative general diagnostic notions we may be led materially to increase our store of particulars.

*(To be continued.)*

## SEX HYGIENE.\*

By GEORGE W. FRANKLIN,

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There was a backwoods farmer who had a muck swamp on his land which the board of health had directed him to drain. He had always known that it was a breeding spot for mosquitoes, but he also knew the stench would be awful were it stirred. His logic gave him standing with those upon whom rest responsibilities relative to the clogged cesspools of homosexuality. Reformatories and prisons may be designated as sinks of abnormality, yet if we accept the survey of the psychiatrist or prosecuting attorney, deviation is sounding a general alarm, and we must confess that it is not confined alone to

penal or other institutions. Moreover, to forestall at once any accusatory utterance as to assumption by a layman, this article simply appeals to the medical profession for help in a big corrective problem which confronts the Prison Department of New York State and every other commonwealth.

That leaders in medicine and the laity may have been somewhat dilatory inferentially hints that, like the man with the hoe, we all preferred a dormant menace rather than tackle the swamp. There are those of the medical profession who insist that the day is fast approaching when homosexuality in its symptomatic manifestations, and not restricted to either sex, will of necessity call for a distinct and determined branch of psychiatry. According to the increase affirmed by experts, it would seem that with proper coordination, medical and official, some observatory step might locate definite retarding ground. As a beacon for future guidance, however, segregation and observation are surely arc lamps to light the way. "We have started"; "We have been working for years," and other defensive replies may quickly be voiced. If so, in rebuttal will come this inquiry: "Well, what have you done?" The response in Latin derivatives will not be sufficient to arouse the people and a successful project needs the mass behind it to push it to completion.

Within the past twelve months the death chamber at Sing Sing held a "patient" who was executed. College bred and intellectually the peer of any inmate ever incarcerated in the condemned cells, he tenaciously opposed the endeavor of relatives for a new trial and requested that the order of the court be impelled rather than impeded.

This question was put to him one day shortly before the end: "You are well educated, had you never thought it wise to take a personal inventory to check up your moral possessions?" "No," was the reply, "all I can make out is that I am bad all through and have been bad since I arrived at the age of puberty. I saw the revolting glances directed at me, but as days wore on all semblance of humiliation departed. Then even casual remorse was absent. I was born a degenerate, and with all the schooling I had I could not subdue abnormal desires. I tried, despising myself, yet this was fruitless, and education for me did only this: It convinced me that something congenital caused the delivery into this world of a pervert. That was me. If it were consistent to have a grievance, it would be against my forbears, for they are as much to blame as I am if any credence is to be given heredity."

This is but one of a hundred incidents which come within the grasp of the prison official who sees more in his job than his salary. Enough data is at hand to accentuate the cry for action, not alone for the direct benefit to reformatories, penitentiaries and prisons, but for the enlightenment of the family doctor who is progressive enough to read the periodicals of recognized authority which are issued in his interest. In itself this would be worth a valiant struggle.

The number of deviates in institutions is estimated conservatively at anywhere from five to ten per cent.; speculation naturally must enter into the

\*The author is indebted to John R. Ross, M. D., Superintendent of the State Hospital for Insane, Convicts at Dannemora, N. Y., whose technical knowledge made him actually a collaborator. Without his encouragement the article perhaps would not have been written.

premise. Yet, to diminish the percentage looms in the distance as a necessity. The salutary effect of segregation would be more far reaching, decidedly so, than the noninformed would imagine. Every inmate, it is safe to say, would abhor assignment to a degenerate ward, and the aversion—that of the acquired pervert at least—would regulate deportment immeasurably more than the agencies that are now employed and which are without facilities to segregate scientifically to observe.

One of the potent words in the vocabulary of those treating defectives or criminals is segregation. The definition, unlike "psychiatry," "orientation" or "constitutional psychopath," is within the understanding of the ordinary mortal. People know that to segregate means to separate, to disunite from the general mass, so that those segregated may be placed where they will have personal observation. This, regrettably, is just what has not been done for those commonly referred to in prison, reformatories, and penitentiaries as moral perverts. In medicine as well as in criminology, results are much more convincing than pledges.

Should the foregoing be entertained, it might be well to ask why there should be delay awaiting further psychiatric deductions and the construction of clinical buildings. If segregation is that which is claimed for it, then it is the opponent of lethargy. The method applied to save potatoes or apples is to separate the bad from the good as soon as the sprouts or the specks show. In every prison in this state—and in every other state—are defectives to whom may be traced the major portion of disturbances, cuttings and assaults of more or less violence. To govern this grade of convict individually and collectively is the hardest task which confronts the warden. It is only with the utmost diligence that they can be detected. Some of them, wrecked mentally by sexual desires, will frequently commit offenses openly, not being deterred by the deprivation of privileges, which is the only form of punishment that can be inflicted.

Recently two inmates of Clinton Prison, guilty of pederasty, resented interference and never moved until parted by officers. Again, two other convicts, caught in the act of irrumation, were deterred from unnatural gratification by the approach of a guard. These are the more common practices in institutions which are housing offenders, accepting as accurate disclosures made at sessions of the American Prison Congress from year to year. Inasmuch as these conferences are attended by representatives from all over the United States, it is obvious that the subject requires nation wide attention. Names of favorite movie stars and actresses are selected and addressed to each other by the type of convict on which the text of this article is based. To reproduce some of their "love letters" and obscene drawings would shock even those of more intimate acquaintance with shadowed side of human nature. The accumulation which should impel action is almost unlimited. One prisoner dangerously injured another some time since for "stealing his girl." These "alienations" engender hatred which is harbored until the outbreak occurs, contributing some significance as to the professional and moral

demand for intense study of that which can be termed sex hygiene.

In prison, and out of prison, there is what is known as the congenital and the acquired pervert. Of the two, the former seems to be proud of his homosexuality and is therefore easier to restrict because he can be isolated. The latter for a while avoids detection, but during this period he plays havoc in an institution. Wardens hesitate to render decisions until they are sure, not wanting to mark an inmate who may be effeminate but not afflicted with the disease. Acquired perverts, in contrast with the congenital, cringe from shame and are therefore "patients" for whom a cure might be effected were they eliminated from the prison population and segregated for medical examination by alienists rather than penologists.

At Clinton Prison, in New York State, to which the incorrigibles of other institutions are transferred, one section of a cell block is for segregable use. The degenerate class, those who are actually known, are incarcerated in these cells which have sheet iron aprons on the doors so that there can be no physical communication by a man inside to another walking along the corridor. This extreme precaution is imperative, but with it the practice is only regulated to a scant degree, too many opportunities being offered the pervert and too few guards being employed to keep every suspect under constant supervision. The shops, the yard, the halls, or any spot wherever the eye of an officer cannot travel for the time being, offer room for unnatural gratification.

To mention any particular prison as being any better or any worse than another would be foolish, allowing that some of the wardens would rather not be forced to bow to the accuracy of this statement. Nevertheless it is so, and the contrast would not be wide enough to uphold any attempt at differentiation. The conclusion that conditions are practically identical in all penal institutions comes from experienced officers who have been attached to many of them and who rigidly maintain that they are substantially alike.

To check the disease legislation may be essential, but legislatures are not composed of alienists and neurologists. Thus there will have to be a well thought out crusade and one in which the intention of those interested will not be confusing or any element left in doubt. It may be that the whole sordid story will have to be told, yet if stirring it creates a stench, attacking it will eventuate that for which all would plead. It would be a campaign of education for some and a post graduate course for others. In the end, with a vigorous drive, professional, legal and personal, some intelligent advance would be made and the effort would not become anemic through too much science. On the bridge to steer the course there must be a psychiatrist, one who knows his business and who is not timid in a rough sea, for surely the responsibility is on the desk of the alienist rather than that of a detective or plain clothes man.

That anything mandatory can be done without statutory provision is incontrovertible, but given enough energy, consistently shaped, corrective



laws would be passed. Every plain clothes man, every blue coat and every detective who knows the underworld could give a revelation on the subject of commercialized degeneracy, almost defining the scale of prices and paralleling in depravity the Biblical history of Sodom and Gomorrah. They all know the degenerate man and woman, and, worse yet, the boy and girl. They also know the suspects of more or less social prominence, but what can be done? To accost them in a manner to acquire corroborative evidence is not to be thought of save in rare cases. Arrests are made, but an overwhelming percentage are sent to jail or the penitentiary simply as vagrants. Now and then the police lodge a grand larceny complaint which puts them in State prison. This is a means to an end, but they are only gotten out of the way, the commitment not disclosing the actual truth. As to changes in legal procedure, when bills are presented to a legislature they are usually referred to committees, where they die, legislators apparently not wanting to stir the muck.

The convict in Joliet today is in Sing Sing tomorrow, San Quentin the next morning and, figuratively, twenty-four hours later in Atlanta, proof of which is in any State bureau of identification. Obviously, the problem becomes nationwide, wanderlust being a common trait in all classes of offenders. In correlation to the release of the tubercular inmate or the active syphilitic, society is intermittently endangered. This without appending another word or syllable, should be a resounding appeal to all states for the segregation of the pervert who is within reach, and for clinical, not criminal, observation.

The layman with the temerity to rush into the field of psychiatry would as quickly enter an automobile race with dynamite in his car for ballast on the turns. As to treatment, he would remain silent, but as to segregation and observation, combining the opinions of the medical superintendents and chief physicians of the eight prisons of New York State, there seems to be no room for dispute. The medical staff of the Prison Department is a unit for a laboratory for what are commonly known as degenerates, not only for its value to the prisons, but for its contributory worth to the science of medicine.

More than two years ago James M. Carter, Superintendent of Prisons of New York State, urged that the Farm for Women at Valatie, to which only female misdemeanants are committed, be made the one prison for women in the Empire State. This would permit transferring the inmates of the Women's Prison at Auburn to Valatie, thereby providing housing accommodations for two hundred defectives at Auburn, if there are that many, in the building which would be made vacant. Here they would be under medical observation, and some illumination would surely ensue as to diagnosis and treatment. How luminous it would be, he does not know, being a layman, but that it would be an extension of the big idea which is pregnant at Sing Sing is certain. As a constructive policy he averred that further development should supplement the clinic at the new Sing Sing prison, where the dominant note is to be psychiatry. To examine men

there, just to send them to other prisons with only a card index to explain why, would be taking no stride forward. In his judgment segregable measures should be broad enough in scope to rid all correctional institutions of sexual perverts, particularly when it is denied that their association with other convicts is destructive mentally, morally and physically.

## SYPHILIS OF THE STOMACH.\*

*With Report of a Case.*

BY ALBERT F. R. ANDRESEN, M. D.,  
Brooklyn, New York.

Until very recent years, syphilis of the stomach was considered a medical curiosity, references to it in the literature being rare, and the diagnosis in the few cases reported being based either upon autopsy findings or upon a disappearance of certain gastric symptoms under antisiphilitic treatment. The use of the Röntgen ray and the Wassermann reaction have made possible a more certain diagnosis, so that in the past few years a better understanding of the frequency of the disease has been obtained. Writers on this subject are still, however, very much confused as to which cases should or should not be reported as gastric syphilis. On the one hand some writers claim that only cases demonstrated by microscopic examination of the suspected tissue should be so reported, whereas at the other extreme are writers who base their diagnoses entirely on the clinical cures of gastric symptoms after antiluetic treatment. Several writers have reported series of cases with various gastric symptoms or lesions, associated with positive Wassermann reactions, as gastric syphilis, without stating whether a therapeutic test or a microscopic section have corroborated their diagnoses. Autopsies on one thousand three hundred and eighty-four known cases of syphilis, compiled from the literature, revealed but five cases, or less than four tenths of one per cent., in which histological diagnoses of gastric syphilis were made. Among seven hundred and forty-one of these cases, although fourteen had gastrointestinal symptoms, only one was demonstrated to have a luetic lesion in the stomach. It is to be expected, however, that the presence of gastric luetic lesions will be more frequently discovered since the prevalence of spirochetes in even the slightly affected tissues of old syphilitics has been demonstrated by Warthin. The percentage of patients with gastrointestinal symptoms or lesions of various kinds who have been found to have syphilis has been reported in the literature as being from three tenths to two per cent. In the gastrointestinal department of the Brooklyn Hospital Dispensary the writer found that out of a total of one thousand patients suffering from all kinds of gastrointestinal symptoms, seventy, or seven per cent., had strongly positive Wassermann reactions. A routine serological examination was done on nearly the whole one thousand cases. Of the seventy syphilitic cases, twenty-

\*Read before the Medical Association of the Greater City of New York, April 25, 1918.

six, or thirty-nine per cent., had demonstrable lesions of the gastrointestinal tract, nine having been diagnosed as gastric ulcer, three as duodenal ulcer, six having cecal or appendiceal deformities, and the

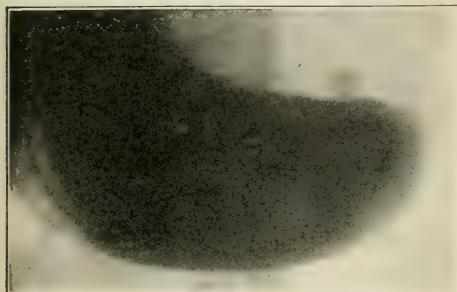


FIG. 1.—Complete pyloric stenosis, with finger marks appearance of gastric carcinoma.

others various other lesions, such as hepatic, pancreatic, and others. The nine gastric ulcer cases with positive Wassermann reactions represented fifteen per cent. of the total number of gastric ulcer cases in the clinic, the three duodenal ulcers, three per cent. of all duodenal ulcers, and the six cecal and appendiceal cases, five per cent. of all cases with these lesions. Five of the seventy cases had *tabes dorsalis*. The others apparently had merely reflex gastrointestinal symptoms. Of the total of seventy cases the writer feels justified in reporting but one as a definite, demonstrable case of syphilis of the stomach.

It must be realized that a syphilitic may just as easily develop an ulcer or a carcinoma or any other nonluetetic lesion as any other individual, and also that there is nothing to prevent an ulcer patient from acquiring syphilis. It is therefore unwise to class all gastric ulcer cases with positive Wasser-

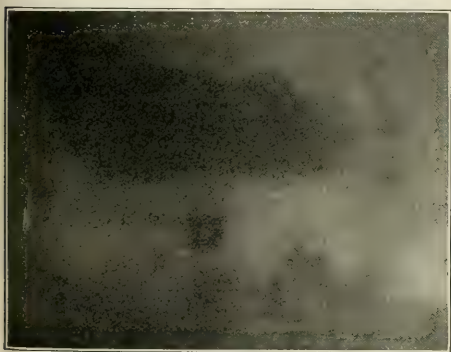


FIG. 2.—Mass still present at pylorus, gastroenterostomy patent and functioning.

mann reactions as cases of gastric syphilis, which has been done in some case reports in the literature.

**Pathology.**—Syphilis may affect the stomach in a number of ways. While it has not been histologically demonstrated to be a fact, it must be

conceded that the frequent and annoying gastric symptoms of secondary syphilis may be due to some luetetic infection or irritation of the gastric mucosa. It is perfectly logical to suppose that mucous patches, or possibly only a hyperemia of the mucosa, resembling that in the skin, may occur in these cases. But it is with the congenital or tertiary manifestations that the diagnostician has most to contend. It is very important to realize that, as Warthin has demonstrated, the "common pathology of syphilis is not the gumma, but is a mild chronic interstitial inflammation, leading to parenchymatous atrophy, degeneration, and fibrosis." While the gumma is rare, the above lesions are exceedingly common in old syphilitics, occurring not in isolated parts of the body, but generally throughout all the tissues. Warthin's demonstration of the spirochetes in these lesions of latent and supposedly cured cases of syphilis has been a surprise to syphilographers. He considers the following

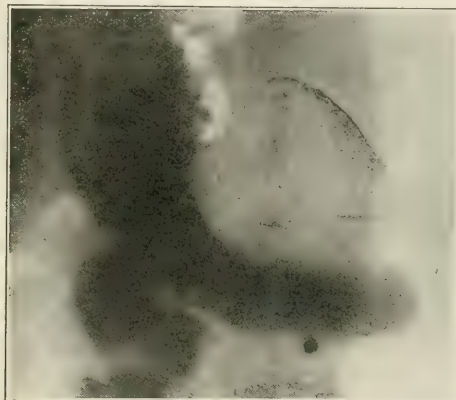


FIG. 3.—Gastroenterostomy still functioning, pylorus closed, defect on upper surface of pylorus.

changes, which may occur in any or all the tissues of syphilitics, as characteristic: 1, areas of lymphocyte and plasma cell infiltration; 2, fibroplastic proliferation, frequently of the myxomatous type; 3, vascular proliferations and obliterations. In the stomach these changes result in localized or diffuse infiltrations of the stomach wall. The local areas may break down, producing ulcers which show a marked tendency to perforate, may contract, causing hour glass deformities or pyloric stenosis, or may involve the peritoneal coat, with resultant perigastric adhesions. The diffuse infiltration produces a cirrhosis of the stomach, with marked reduction in its size, resembling linitis plastica. Gummata, single or multiple, occasionally occur, and may, by their size, or as a result of cicatricial contraction on healing, produce pyloric or hourglass constriction. They may also ulcerate, with the subsequent complications of cicatrization or perigastritis.

**Symptoms.**—Those of gastric syphilis are not characteristic. In general they depend upon the character and the location of the lesion. The small localized areas or small gummata, especially, though not necessarily, if ulcerating, may produce all the



symptoms typical of gastric or duodenal ulcer, namely, epigastric pain, in definite relation to food intake, sour regurgitation, constipation, and, more rarely, hematemesis or melena. Perforation, acute or chronic, will give the same, though possibly not quite as severe, symptoms as with ordinary ulcer. Pyloric stenosis usually results in hypersecretion of a hyperacid gastric juice, just as in pyloric stenosis due to simple ulcer, and is associated with the same symptoms of pain and delayed vomiting. More extensive infiltrations of the stomach wall result in a reduction of gastric acidity, even to the extent of a total achylia, with its attendant dyspeptic, diarrheal, and hemolytic manifestations. Hourglass contractions, occurring usually in cases with somewhat more extensive involvement of the stomach wall, are usually also attended by the symptoms of sub-acidity or achylia, as well as the usual vomiting of this type of stenosis. Perigastric adhesions may produce symptoms of hyperacidity or hypoaclidity, depending on the extent of involvement of the gastric mucosa, and the usual symptoms occur when stenosis develops. Loss of weight is a constant symptom in all types of cases, together with a more or less severe anemia. Other symptoms of syphilis occur coincidently. While the gastric symptoms may be very severe, a fatal termination always seems a long way off.

*Diagnosis.*—The diagnosis of syphilis of the stomach is difficult, and is often overlooked. The lesions most apt to be confused with gastric syphilis are gastric ulcer and carcinoma. A routine Wassermann test on all gastrointestinal cases, especially those showing evidence of gastric lesions, will help to detect many cases. A strongly positive Wassermann reaction does not, of course, establish a diagnosis of a syphilitic lesion of the stomach, but it indicates that syphilis is present in the body, and invites further study of the gastric lesion. On the other hand, a negative Wassermann reaction does not definitely rule out syphilis, as latent cases, with negative Wassermann reactions, have been shown to have spirochetes present in their tissues. The presence of luetic lesions elsewhere is suggestive; and, in congenital cases, the family and previous history and the general appearance of the patients, should be taken into consideration. The fact that apparently simple symptoms have not been relieved by ordinary treatment should occasion a suspicion of their specific origin. An absolute diagnosis can only be made on microscopic examination of tissue obtained at operation or necropsy, but even here syphilitic lesions cannot always be differentiated from tuberculous.

Gastric analysis does not aid materially in the diagnosis, the findings being dependent, as mentioned above, upon the character and site of the lesion. Because diffuse infiltration of the gastric wall is probably the most usual lesion, achylia is the most common finding, but hyperacidity has been shown to occur in many cases, especially in pyloric stenosis due to infiltration or gumma localized at the pylorus. Where there is an extensive infiltration, finally resulting in pyloric stenosis or hourglass constriction, the achylia is often associated with the presence of lactic acid, lactic acid bacilli, and a posi-

tive Wolff-Junghans test. Extensive infiltration, resulting in a leather bottle type of stomach, produces achylia, reduction of the capacity of the stomach, and rapid emptying of its contents. In the ulcerating cases, blood is of course found in the gastric contents and feces.

The Röntgen ray examination is a great help in diagnosis, although it only indicates the size, location, and general character of the lesion. In a general way it may be said that the lesions as shown in this way look much larger and more extensive than is to be expected from the patient's symptoms. A patient with a history of recurring ulcer symptoms finally resulting in obstruction, but with not much cachexia and no mass, will have the typical findings of a large carcinoma at the pylorus, with dilatation. The infiltrations and cicatrices of the syphilitic involvement may occur in any part of the stomach wall and may cause marked deformities and distortions, resembling by x ray large tumors, although almost no mass may be actually present, and the patient's symptoms may not be nearly as severe as the findings would lead one to expect. In extensive general infiltrations of the stomach wall, the stomach is shown to be diminished in size, with stiffening of its walls, with greatly diminished or absent peristaltic waves, and there is a rapid evacuation of the barium meal. In hourglass constrictions, Le Wald has called attention to the dumbbell shaped deformity, caused by a stenosis over a wide area and a secondary dilatation of the esophagus.

The therapeutic test will often be the deciding factor in making the diagnosis. Some authorities urge that every case of supposed carcinoma of the stomach be given the benefit of a brief course of antiluetic treatment to exclude the possibility of syphilis. It must be remembered, however, that many a case of carcinoma may be temporarily benefited by specific treatment. Also, it must be borne in mind that a syphilitic case with carcinoma of the stomach may show improvement for some time, even though the malignant gastric lesion is steadily progressing. However, if a patient with a definite gastric lesion, demonstrated by x ray or operation, and previously resistant to the usual treatment, is found to have a strongly positive Wassermann reaction and perhaps other evidences of syphilis, and, on being put on vigorous antiluetic treatment shows marked improvement of his symptoms with disappearance of the previously demonstrated lesion, perhaps with resulting deformity from cicatricial contraction, the diagnosis of syphilis of the stomach can be accepted.

*Treatment.*—The treatment of gastric lues is primarily the treatment of the lues itself, that is, the employment of salvarsan, mercury, and the iodides in a routine way. The iodides may be given in full doses, even where ulcer symptoms are present, these symptoms being promptly relieved, instead of being aggravated, as would be the case if there were a simple ulcer present. On the institution of the antiluetic treatment, especially on giving salvarsan, there may be temporarily an irritation of the gastric lesion, causing an increased swelling, which may result in increased obstructive symptoms for a time. As a rule, however, there is

an immediate marked amelioration of all symptoms, with the maximum improvement attained within from four to six weeks. Pyloric or hourglass lesions may be cleared up completely, but more frequently a cicatricial stenosis will develop in these cases. Patients with perigastric adhesions will be improved under treatment, but, of course, not cured, while the cirrhotic type of stomach will necessarily remain small.

The ulcer or gumma cases are probably the most favorable for treatment, but in these cases the treatment of the ulcer symptoms should not be neglected. The diet should be soft, soothing, and concentrated, with frequent feedings. Demulcents and alkalies may be indicated, and lavage may be necessary. Rest is important. Foci of infection in other parts of the body should be eradicated. Operative procedures are indicated only in the presence of complications, and should not aim at the radical removal of the gastric lesion, but should be purely palliative. Deformities or stenoses, whether caused by the lesions themselves, by cicatrices, or by perigastric adhesions, interfering seriously with the emptying of the stomach, require suitable operations, gastroenterostomy being the usual procedure. More rarely, pyloroplasty may be attempted. Severe hemorrhages, which threaten the life of the patient, may be an indication for operative interference. Perforation is an absolute indication for immediate operation when acute, for later operation, when chronic. As a rule, complete and permanent relief from symptoms does not occur in more than forty per cent. of the cases, even where the best treatment is carried out.

The following is the report of the case observed by the writer:

J. A., male, single, aged forty, a shipping clerk, born in this country, first applied at the Brooklyn Hospital for treatment on February 19, 1917. His family history was negative. He had had no serious illnesses since scarlet fever in childhood but had been neglectful of his health, drinking excessively up to six weeks before his admission to the hospital, and leading a generally dissolute life. He denied venereal infection. For two years he had been having nycturia and some edema of the feet. He had always led a sedentary life, had been habitually constipated, and had eaten meat excessively. One year before, he had had an attack like the one present on admission, except that it had been milder and had lasted but one week. After that attack he had been troubled with indigestion, consisting of epigastric distention and belching, relieved by sodium bicarbonate. About one month before admission he began to have epigastric burning pain, beginning one hour after meals, lasting for two hours, and finally relieved by vomiting of a sour, brownish, slimy material, day and night, although only light food was being eaten. He could not sleep on account of the pain, and was very constipated. He had lost seven pounds in weight in two weeks.

Examination disclosed a fairly well nourished man of alcoholic facies. His head was bald, his teeth rotten, his palate high arched, and his thyroid moderately enlarged. His heart was slightly hypertrophied, his lungs normal. His liver extended to two inches below the rib margin, but was not tender. No masses were palpable in the abdomen, and there was no tenderness. All his lymphatic glands were shotty. The reflexes were normal. He had a varicocele and a right inguinal hernia, and varicose veins of both legs. A fractional examination of his gastric contents disclosed a rising curve representing the gastric acidity, the free hydrochloric acid being thirty and the total acidity fifty at the two hour point. Blood was present in all the specimens removed, but no bile occurred. There was a large residue at the end of two hours. Single

specimens of stomach contents, removed at different intervals after test meals, showed complete retention, with free hydrochloric acid as high as eighty and total acidity as high as 105. Microscopic examination of the gastric residue showed the presence of blood, pus, mucus, and sarcinae.

Radiographs (see Fig. 1) showed a large, dilated stomach, with complete pyloric stenosis and the finger marks appearance supposed to be characteristic of gastric carcinoma. Barium was obtained on lavage two days after the radiographic examination. The urine showed evidences of a chronic interstitial nephritis, with thirty-nine per cent. phenolsulphonphthalein excretion in two hours. The stools contained occult blood. The blood Wassermann reaction was four plus.

A dose of 0.6 gram of salvarsan was given on February 23d. The patient grew steadily worse, rectal feedings were not retained, and with a threatening acidosis, it was deemed advisable to relieve the pyloric stenosis, which might possibly be malignant, by operation. On February 27th, the abdomen was opened by Dr. H. H. Janeway at the Memorial Hospital, New York city, and a hard, indurated mass the size of a lemon and typically malignant was found at the pylorus, adherent behind, causing a complete stenosis. A posterior suture gastrojejunostomy was done, with the intention of doing a resection later at a secondary operation. Two weeks later, radiographs (see Fig. 2) showed the stomach much smaller and the gastroenterostomy working nicely, but the mass was apparently still present at the pylorus. So on March 22d, about three weeks after the first operation and one month after the dose of salvarsan, the abdomen was again opened, but no sign of the mass was found, the pylorus being apparently free. Since that time the patient has been kept steadily under vigorous antisyphilitic treatment, and has had no more gastrointestinal symptoms. His weight has gone from 139 pounds on discharge from the hospital after his second operation to 156 pounds at the present time. His Wassermann reaction at the present time is four plus. Radiographs (see Fig. 3) show the gastroenterostomy still functioning, and the pylorus apparently closed. There is a defect on the upper surface of the pylorus, probably due to cicatricial contraction.

219 BERKELEY PLACE.

## INTESTINAL STASIS.\*

### *A New Method of Treatment.*

BY JULIUS W. WEINSTEIN, M. D.,  
New York,

Attending Physician, Department of Digestive Diseases, Vanderbilt Clinic; Consulting Gastroenterologist, Zion Hospital, Brooklyn.

The treatment of intestinal stasis has ever been a stumbling block in the path of the general practitioner and the gastrointestinal specialist. The remedies used to combat intestinal stasis had excellent results in only a few patients; they did not relieve the condition in the vast majority. Among the different remedies to combat intestinal stasis we have time honored dietetic rules; a large armamentarium of laxative and purgative drugs and mineral waters; massage; water and olive oil enemata; vibration with special instruments; faradic, galvanic, and sinusoidal electricity. Claims were made a few years ago by Zuelzter that he had found a special hormone that cured constipation. The results of this treatment were also negative in the majority of cases, and disastrous to a good many patients in whom the hormone was injected. Sir Arbuthnot Lane and many of his disciples claim that the colon, in part, or, *in toto*, must be resected in order to get rid of this disease which gives rise to so many symptoms and which leads, according to the claims of Lane and others, to numerous affections. Various

\*Read before the Eastern Medical Society, June 14, 1918.



schemes of short circuiting the colon: such as ileo-sigmoidostomy, cecostigmoidostomy have been resorted to for the relief of intestinal stasis.

This condition in many of my difficult and long standing cases began to yield in a most gratifying manner to a simple dietetic plan of treatment. It is evident that the method of treatment is applicable to the so called idiopathic, primary form of intestinal stasis, whether it belongs to the spastic or the atonic variety, the hyperkinetic type, as designated by Schwartz, or the dyschezic form of Hertz.

It is inapplicable in constipation of the obstructive variety, nor would I recommend it in case of secondary constipation, i. e., constipation secondary to cancer of the stomach, ulcer of the stomach and duodenum, gall stones, etc., though I have seen it work out in secondary cases just as readily as in primary cases. Fortunately the primary cases of constipation give a very distinctive history which differentiates them from the types that are secondary to other diseases. The history is as follows: 1. For mild cases: Bowels do not move without artificial aid, otherwise the patient feels well. No symptoms. 2. Cases of moderate severity: Bowels do not move without artificial aid; headaches; heart burn; heaviness and bloating after meals; some feeling of drowsiness after meals. Cathartics or enemata relieve these symptoms. 3. Severe type of case: Severe headaches, dizziness, ringing and noises in the ears, eye ache, expectoration of mucus, the patient complains that food goes to the head and he feels as if drunk after eating; fullness and choking sensation in throat and chest; marked bloating and heaviness after meals; heart burn; belching; bad taste in the mouth; very tired feeling; very drowsy after meals; pains in the legs; patient feels as if food lay on his chest and did not go down. Bowels do not move without artificial means. Bowel movements do not relieve these symptoms. At times they aggravate them.

#### METHOD OF TREATMENT.

The rationale of the treatment is based on the premise that the main cause of the failure on the part of the bowel to evacuate, in the types of constipation under discussion, lies in the fact that there is too big a load gravitating on the colon to be discharged, and that when the burden is lightened the colon regains its ability to carry on its work. The over bulk of contents in the colon may be due to the ingestion of too much food by the patient, while the intestines are able to absorb only a small fraction of the food ingested for utilization by the body and the residue, therefore, must be carried off and expelled by the colon. On the other hand the residue in the colon may also be due to the failure on the part of the digestive organs, the salivary glands, the stomach, the liver, the pancreas, and the small intestines, to carry out their share of the work efficiently and hence, again, a bulky residue is left for the colon to discharge. I speak of the colon as the main organ that fails as scavenger in intestinal stasis, for from my observations on large numbers of patients with intestinal stasis both fluoroscopically and radiographically, the slowing of the current is chiefly noticeable in the colon.

With this premise as a guide the logical treatment consists in a reduction in the quantity of the food ingested. There are several adjuvants, however, employed in this treatment, namely, the ingestion of about four glasses of water between meals; the ingestion of well known bowel stimulants, such as wholewheat bread, fruits, and vegetables. These substances act as mechanical stimulants to the bowel, but I consider their main effect a chemical one. Very thorough mastication of the food is another adjuvant. The treatment therefore consists in following this diet list, which is given to the patient:

Eat slowly. Chew your food well. Drink about four glasses of water between meals.

#### BREAKFAST.

One glass of hot water.....	
One orange .....	80 calories
One slice of toasted or plain wholewheat bread and butter.....	171 "
One soft boiled or poached egg.....	80 "
Six stewed prunes.....	150 "

#### LUNCH.

Two slices of wholewheat bread.....	142 "
Butter .....	100 "
Small piece of fish, boiled or broiled.....	180 "
Butter .....	50 "
Vegetables, such as carrots, string beans, etc.....	160 "
Spinach (including butter).....	150 "

#### SUPPER.

Fruit only, such as apples, pears, figs, oranges, dates, peaches, prunes. The patient makes the selection from about three different fruits. Thus he may eat:

Five or six figs.....	317 calories
Eight or nine dates.....	240 "
Two apples .....	80 "

The lunch and supper are interchangeable. By a slice of bread is understood one about one half inch thick. This weighs about one ounce. The patient does not eat between meals; no lunches, no sandwiches, no sodas, nothing except water between meals. No seasoning is used except salt and lemon juice. An apple is allowed perhaps later in the evening. In eating fruit the patient is advised to eat skin and all. In eating an orange, not only the juice, but pulp also is to be eaten. As soon as the bowels begin to move spontaneously, which is almost invariably at the end of a week, the diet is slightly increased and the fruit meal is substituted by a regular one. Thus to the breakfast one egg and one slice of bread and butter are added. The fruit meal is replaced by one consisting of: Two slices of wholewheat bread and butter; one glass of milk raw or boiled or instead of milk vegetables or eggs; some fruit. The diet is to be strictly followed. It will be noted that I have eliminated meat, chicken and soups from the diet. This is not essential in all cases. In patients that are suffering with symptoms of intense autointoxication, the elimination of meat, chicken, and soup is essential. In the milder type of cases and those of moderate severity, some meat, chicken, and soup are allowed instead of fish. The soup is preferably vegetable. The meat may be boiled, broiled or roasted, but not fried, and only a small portion is to be used at a time. The vegetables should be prepared as follows:

Lettuce and celery are to be eaten raw or cooked. Spinach: Wash the spinach thoroughly in water so as to get rid of all the sand. May chop it, or without chopping

put it in a pot with just the least bit of water. Cook thoroughly from twenty to thirty minutes, until tender. Add nothing to it while cooking. Before serving add some butter and salt. String beans, carrots, cauliflower, asparagus: Prepare these vegetables by merely cooking in water. Before serving add some butter and salt. A good plan is to put the vegetables in just enough water to cover them and then cook slowly until there is a little sauce left. Eat the vegetables and sauce. Combinations of the vegetables may be made. A good combination is carrots, green peas, and string beans; cauliflower may be added to the three; prepared by putting the vegetables in just enough water to cover them and then cooking slowly until there is a little sauce left. Stewed tomatoes: Fresh tomatoes (not canned) are sliced and cooked as above. Cabbage, cucumbers, and radishes should not be used.

Thorough mastication of the food is of great importance. The acidity of the stomach stops the action of the saliva on the starches. By masticating thoroughly the food is finely divided and the prolonged action of the salivary ferment in the mouth carries the hydrolysis of the starches to a considerable degree. Telling a patient however to chew the food well avails but very little. Fast eating is a very pernicious habit and patients find it extremely difficult to rid themselves of the habit. I, therefore, tell the patients that they are not to swallow their food, but to keep on chewing it, as long as there is any food in the mouth. They are to chew the food and not swallow it, but bring it to a point of involuntary deglutition.

I instruct the patients to move their bowels in the squatting position and not on the regular toilet seats. In this way the pressure of the thighs on the abdomen assists in expulsion of the feces. The nature of the evacuations under this regimen of treatment is quite out of the ordinary. It is a small stool; a dry one in the form of small scybalæ. There is no odor to it at all which testifies to the fact that indol, skatol and other similar products are not normal, but abnormal byproducts of metabolism. The stool leaves the anus perfectly dry. The patient is instructed to go and move his bowels when he feels the inclination. If no desire is felt the patient is instructed to walk around a little with the legs separated and an impulse to defecate is thus brought about. Should he fail to get a movement the first day, the same procedure is repeated the next day. If after three or four days no movement has been obtained, a suppository is inserted. This method has seldom to be used. The patient is not given any medication and the bowels begin moving spontaneously either on the next day or sometimes on the third or fourth day. Since under this diet and with the thorough mastication the food is perfectly digested and absorbed, so that only a small residue is left, there is no absolute need of daily evacuations, and patients who on an ordinary diet had distressing symptoms, if the bowels had not moved daily, went without any bowel movement for several days without discomfort under this regimen.

The total caloric value of the diet, as seen from the table, amounts to about 1,820 calories. This figure is below the accepted standard, and most of the patients do lose a little weight until the body adapts itself to the new diet, and a condition of equilibrium is established. The increase in the diet at the end of the second week increases the caloric value of the diet by 200 calories. It should be

remembered that in the regular diet of people with a total aggregate of about 3,000 calories there is a copious bowel movement which reduces the available food considerably. In the diet prescribed by me the stools are very small which raises the quantity of assimilated food considerably. In persons of weight above seventy kilos we may increase the diet very slightly along the same lines. After a few weeks of treatment the diet may be changed to suit the tastes and desires of the patients.

The results are excellent. The patients invariably report, a week later, that their bowels move well daily. Sometimes I give a prescription for glycerine suppositories with instructions that if the bowels do not move after a few days the patient is to insert one in the rectum. The patients however seldom have to resort to the use of suppositories. I treated a large number of patients by this method and it has been successful in almost every case. Heartburn yielded very promptly to this plan of treatment. I do not refer to that form of heartburn which is only one of a long train of symptoms met with in ulcer of the stomach and duodenum, chronic appendicitis, etc. I am referring to a class of patients who complain only of heartburn of a severe degree. I had a number of such cases and the condition yielded most readily to the plan of treatment outlined. Gaseous distention of the stomach and tenderness over the appendicular area, disappeared under the plan of treatment outlined here, very readily. As regards the effect on the patient's condition in general I found the following: The mild type without symptoms except for constipation, yield most readily to treatment. In the type of moderate severity, one week after the administration of the treatment, the symptoms, including the constipation, disappeared and the patients reported themselves as feeling well.

The following histories illustrate typical cases.

CASE I.—N. U., male, seventeen years old. Shipping clerk. Habits normal. In good health up to two years ago, when he began working. He then became rather constipated, but soon recovered. He has been sick for four and a half months. Bowels ceased moving without artificial means. Used paraffin and all other physics. Suffers with headaches; bloating and heaviness after meals; belching; pyrosis; drowsiness; anorexia; eye ache. Physical examination is entirely negative. One week after the patient is put on treatment he reports he feels well and that bowels move well.

CASE II.—J. K., male twenty-five years old. Machinist. Habits normal, except that he eats fast. Has had some minor ailments. Has been constipated since age of sixteen or seventeen. Bowels would move once in a couple of days. Took a lot of medicine. During the last year his bowels ceased moving unless medicine was used. Patient suffered from headaches; dizziness; at times tinnitus; bloating and heaviness after meals; drowsiness; constant cold; anorexia. Physical examination showed the following: Pulse 100. Lungs and heart negative. Stomach very tympanitic and distended with gas. Tenderness over pyloric area. Rectum full of feces. Eight days after institution of treatment patient reports that bowels move daily. Pulse 88. Tenderness over pyloric area and tympany of stomach have disappeared.

CASE III.—Mrs. E. L., Four children. Habits normal. Typhoid fever at fifteen years of age. Some miscarriages. Has had stomach trouble ever since she remembers. Always took medicine. Suffered from headaches. The condition has grown worse in the last two years. In the last two years she suffered with headaches; dizziness bloating after meals; hiccup; a sensation of fullness and clogging



up in her throat and chest; heartburn; sour eructations. When she eats she feels a little better, but right after the meal she gets all the above symptoms. Bowels do not move without medicine, and when she uses medicines diarrhea occurs. Physical examination showed a thin, emaciated woman of gastrotropic type. Gastric secretion normal. Under x ray examination stomach is both ptosed and dilated. Considerable stasis of food. Loops are seen in big bowel. Iliac stasis. Rest in bed with milk diet accomplished little for the condition, while the treatment described in this paper made the bowels move daily without any artificial means and all the symptoms disappeared.

I shall appreciate criticisms from my fellow practitioners who give this method of treatment a trial.

16 EAST NINETY-SIXTH STREET.

## CONGENITAL DISLOCATION OF THE HIP IN THREE GENERATIONS.

By SAMUEL A. JAHSS, M. D.,

New York,

Orthopedic Assistant, Hospital for Deformities and Joint Diseases.

In reviewing the literature in reference to the etiology of congenital dislocation of the hip, some mention is made of the hereditary factor. Lovett in his book states "The disease is in some cases hereditary" and quotes Dupuytren, Bouvier, Stad-

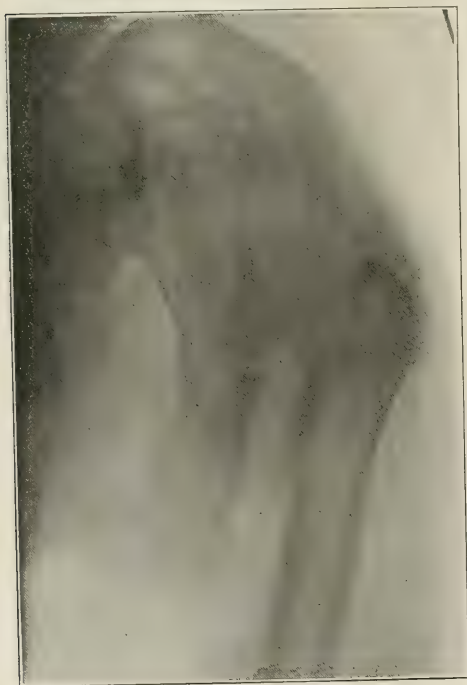


FIG. 1. -X ray showing congenital dislocation of hip in the mother.

feldt, Verneuil and Volkmann. Whitman and Tubby declare "Hereditary influence can be established in a few instances" and both quote Vogel who reports that in thirty per cent. of his cases a similar condition was found in the mother or father of

these children. No mention is made of this disease being found in three generations and as such a state of affairs has come under my notice I thought it would be worth while reporting.

A young girl about fifteen years old reported at

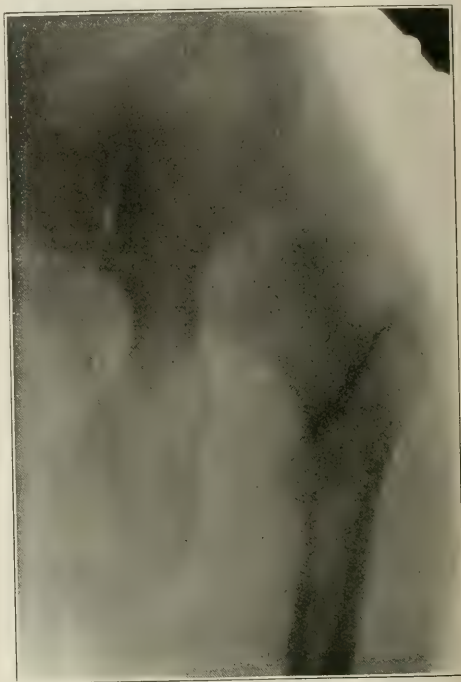


FIG. 2. -X ray showing congenital dislocation of hip in the daughter, apparently hereditary.

the clinic of the Hospital for Deformities and Joint Diseases for the cause and possible cure of a limp. She was accompanied by her mother. They had been referred to the hospital by Dr. J. Liff. The walk was with a limp to the right. A similar gait was noticed in the mother. The history revealed that this condition had always been noticeable both in the mother and daughter since walking was first begun. The mother also stated that her mother had a limp exactly similar to that of her daughter and herself. Physical examination revealed a tilting downward of the pelvis on the right side when standing. The trochanter of the same side was above the anterior superior iliac spines and the measurements taken from the anterior superior iliac spines to the internal malleoli showed:

Mother		Daughter	
Right	29 1/4 inches	Right	28 1/4 inches
Left	31 inches	Left	30 inches

X rays taken of both mother and daughter showed typical congenital dislocation of the right hip.

As the grandmother has been dead about thirty years it was impossible to obtain any data exclusive of the history; but the history is, I think, sufficiently conclusive to warrant the diagnosis.

# Medicine and Surgery in the Army and Navy

## THE SURGEON OF THE PORT OF EMBARKATION.

*Physical Examination of All Troops Bound Overseas.— Reception of Wounded Returning from the Battle Front.—Building and Equipping of Hospitals.*

High up in the tallest of the buildings of Hoboken—and they come as high as eight stories there—in a small bare office at a bare, flat topped desk, sits a powerfully built, weather tanned and grizzled man in khaki with silver eagles on his shoulders, who gives the final “once over” to every officer and every soldier before he sails for the battle front and who is the first to extend a helping hand to the sick, the maimed, and the wounded when they come back. During the month of July, he put his final O. K. on 272,022 soldiers. Without that final O. K., no officer nor soldier nor nurse, nor Y. M. C. A. secretary nor civilian worker may sail from the “Port of Embarkation” under his jurisdiction. And the term “Port” in this case has a special and wide significance, for it covers every port on our eastern seaboard and that of Canada from Baltimore to the North Pole. The long arm of the Commanding General of the Port of Embarkation reaches over the Canadian border and we find members of his staff, including representatives of the Surgeon of the Port, in Halifax, and in Montreal.

Just now, Brigadier General W. V. Judson is the Commanding General of the Port of Embarkation, having recently succeeded Major General D. C. Shanks, who organized the work and who has now been assigned to the command of a division which assures him the opportunity, coveted by all officers, of active command at the front. The Brigadier General Commanding the Port of Embarkation has a staff which covers every one of the varied activities which come under his jurisdiction and which includes ten colonels, twenty-two lieutenant colonels, 124 majors, 489 captains, 824 first lieutenants, and 789 second lieutenants, a total of 2,258 commissioned officers. In addition he has under his command 22,000 enlisted men, 500 civilian employees, and 350 nurses entirely aside from the casuals who are brought under his control by being detached from their organizations because of illness. One of the officers of his staff is the Surgeon of the Port of Embarkation, Colonel J. M. Kennedy. and it is his work that interests the readers of the NEW YORK MEDICAL JOURNAL.

On July 6, 1917, Colonel Kennedy assumed the duties of the Surgeon of the Port with two officers and one private; on July 31, 1918, he had under his command, thirty-three medical department organizations, 529 commissioned officers, 110 contract surgeons, 342 nurses, 2,649 enlisted men and sixty-five civilian employees. Included in his jurisdiction are thirteen hospitals with an estimated capacity of 12,500 beds, over 11,000 of which are now ready for occupancy. An additional 3,300 beds will be provided by the Grand Central Palace at Lexington avenue and Forty-sixth street, New York, which has been taken over by the Medical Department at

an annual rental of \$385,000 for use as a debarkation hospital. This does not include all the army hospitals in the territory covered, but only those which are directly under the control of the Surgeon of the Port of Embarkation.

### THE EXECUTIVE STAFF.

In military parlance, no officer below the rank of a brigadier general has a staff. From a civilian standpoint Colonel Kennedy has a staff, and a large and important one at that. The organization of the work being carried on under Colonel Kennedy's supervision is clearly shown by the accompanying chart drawn up by Lieutenant Clifton D. Wise, S. C., who is in-charge of the Historical and Statistical Division of the office, and was traced by Corporal L. J. Savage.

Captain G. C. Young, S. C., is the executive officer, which means that he is one of the busiest men in four counties, as he must keep track of all the varied activities of the office and must also do all that he can to protect the surgeon himself from time wasting details.

A liaison officer, Lieutenant J. W. Dennin, M. C., keeps Colonel Kennedy informed as to the movement of troops and transports so that he can make the proper disposition of his forces.

The Personnel Division, of which Lieutenant Colonel M. E. Hughes, M. C., is the chief, consists of five commissioned officers and twenty-two privates. The duties of this division are to see that an adequate personnel of men is detailed for the work of the office and of all the organizations under its control; to see that the proper reports are submitted at the proper intervals from all the thirty-six medical organizations; to supervise the mobilization stations of the Army Nurse Corps, the preparation of nurses and civilian employees for overseas service as regards equipment, identification and inocula-



Photo by Magnus  
COL. J. M. KENNEDY, M. C., U. S. A.,  
Surgeon of the Port of Embarkation.



tion; preparation and certification of their pay rolls and other money papers; and the preparation of reports, returns, etc., relating both to casuals and also to the permanent detachments at the hospitals and supply depots under the control of the Surgeon of the Port of Embarkation. In view of the rapid shifting of this personnel, particularly the casuals, this is an important, an onerous, and an intricate task. This division maintains correct lists of all Medical Department organizations and casuals ordered to the port for embarkation. It verifies and transmits all reports and returns, relating to these organizations and provides adequate medical attendance for all troops en route overseas. The division also receives, distributes, and forwards the personal mail of the personnel.

The *Division of Dental Service*, of which Captain

Europe as a member of a casual command and put into replacement troops. The probabilities are that he will never get back to his old command again. The patient thus detached becomes a casual and is carried on the pay rolls as such until he recovers his health and is assigned to duty in some other organization. Proper provision for his transfer is one of the multitudinous nonmedical duties which devolve on the Surgeon of the Port of Embarkation.

The method of weeding out the sick prior to embarkation is set forth in the following general order issued by the officer of the port of embarkation:

#### HEADQUARTERS PORT OF EMBARKATION.

GENERAL ORDERS, } HOBOKEN, NEW JERSEY,  
No. 51. } May 16, 1918.

I. 1. Upon the receipt of orders for foreign service, or upon the receipt of orders to proceed to point preliminary to embarkation, daily physical inspections should be made

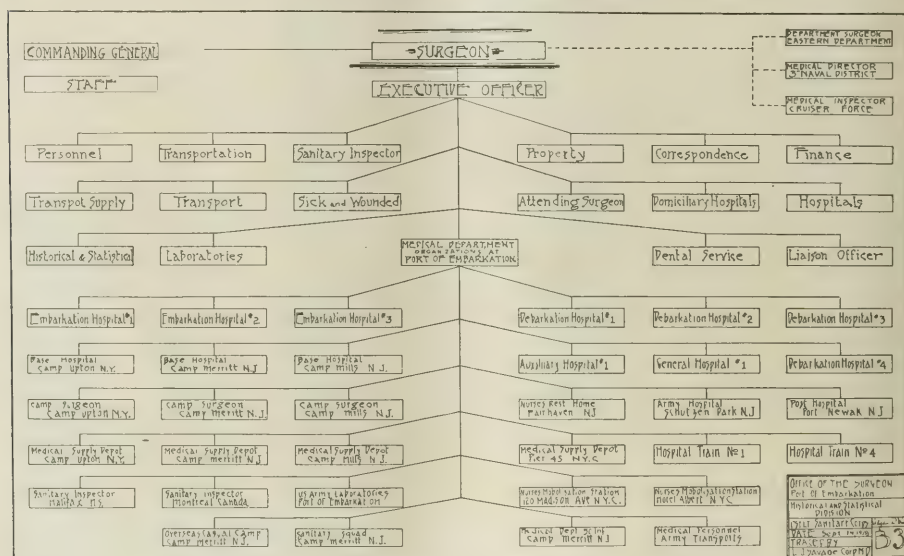


Diagram of the organization of the work of the Surgeon of the Port of Embarkation.

R. F. Doran, D. C., is director, supervises the dental service at the various places under the control of the Surgeon and assigns dental surgeons as the need demands.

A *Historical and Statistical Division*, in charge of First Lieutenant Clifton D. Wise, S. C., is charged with keeping and tabulating statistical and historical records. It is largely on his work that this condensed summary of the manifold and far reaching work of the Surgeon of the Port of Embarkation is based.

When any officer or soldier of troops ordered abroad is discovered, by the inspectors of the Surgeon of the Port of Embarkation, to be ill, he is at once detached from his command and sent to the appropriate hospital and attached to a casual command. His name is dropped from the rolls of his former command, and when he recovers, he is sent to

of all enlisted personnel belonging to the organizations specified in the orders, and these inspections should be continued daily until the troops are debarked at a foreign port. Inspections should be made by the medical officers of organizations to which they are assigned, or, where there is no medical officer on duty with an organization, one or more will be assigned to this duty under the direction of the senior medical officer, the division surgeon or the camp surgeon, as the case may be.

2. Medical officers will observe the greatest care in making these inspections, immediately removing from the organization all cases, or suspected cases, of communicable disease. They will carefully scrutinize all men, watching for the early signs and symptoms of disease or the presence of vermin, and will not be satisfied to wait until a condition has fully developed before making diagnosis and taking proper action.

3. Cases of communicable disease will not be permitted to proceed to port of embarkation, nor will known contacts of scarlet fever, cerebrospinal meningitis, and measles. All cases of venereal disease, acute or chronic, will be removed from their organizations.

4. Upon arrival at the port of embarkation, or en route to such point, a final examination will be made by the medical officers representing these headquarters and under the direction of the surgeon, Fort of Embarkation, Hoboken, N. J. At this examination the men will be stripped to the waist and carefully examined for signs and symptoms of venereal, as well as other communicable diseases, including vermin.

5. The medical officers making this final examination will submit a report to the surgeon, these headquarters, showing the presence, if any, of the disease in question, with the NAME, ORGANIZATION, NATURE OF DISEASE, DATE OF LAST PREVIOUS INSPECTION, and the NAME of the medical officer by whom it was made, and stating whether in the opinion of the medical officer detecting the disease the disease was present at the time of the last previous inspection.

6. Known contacts and cases developing among troops embarking at Portland, Me., will be transferred in the proper manner to the Post Hospital, Fort Williams, Maine, arrangements for their reception being first made with the district commander, Portland District, C. A. C. Headquarters, Fort Williams, Maine.

7. Known cases and contacts occurring casually at other

lighted; artificial light will not be used unless absolutely necessary.

2. Men will be stripped to the waist and will be prepared to lower their drawers and breeches for inspection of the genitals.

3. The parts inspected will be turned toward the light and as near the window as practicable, and the following order followed:

(a) Eyes, noting the presence of conjunctivitis.

(b) Nose, noting the presence of coryza.

(c) Parotid glands, noting the presence of swelling.

(d) Mouth, noting presence of Koplik spots, congestion of buccal mucous membranes, rash or congestion of hard palate, "scarlet tongue," or mucus patches.

(e) Throat, noting presence of sore throat and its character.

(f) Chest, abdomen, and back, noting presence of rash or signs of vermin.

(g) Genitals, noting presence of any venereal disease or vermin.

II. General Orders, No. 3, Headquarters Port of Em-



Embarkation Hospital No. 1, Hoboken, N. J. This was formerly St. Mary's Hospital. It has a capacity of 763 beds.

points will be disposed of by the medical officers representing these headquarters, under direction of the surgeon, port of embarkation.

8. Known contacts and cases at embarkation camps will be disposed of as follows:

Cases will be immediately transferred to base hospital thereat.

Known contacts will be held in strict quarantine for such period as surgeon directs.

9. One barrack building will be required for each of the following disease contacts: Scarlet fever, measles, and cerebrospinal meningitis.

10. At the daily inspections of troops aboard ship, careful search will be made to detect the presence of vermin, especially body lice. Cases of vermin will be promptly removed from contact with others until they have been deloused. Where steam sterilization of clothing is impracticable, clothing will be deloused by boiling, immersion in gasoline or kerosene, or ironing with hot iron. The body will be deloused by application of soap, or kerosene, or gasoline, followed by thorough shower bath.

11. The physical inspections directed in this order will be made as follows:

1. Place of examination will be warm and well

barkation, Hoboken, N. J., dated January 8, 1918, are hereby revoked.

BY COMMAND OF MAJOR GENERAL SHANKS:

R. E. LONGAN,

Col. A. G.,

Acting Chief of Staff.

OFFICIAL:

D. A. WATT,  
Major A. G. R. C.,  
Adjutant.

#### EMBARKATION HOSPITALS.

The hospitals are divided into two groups, those of embarkation and those of debarkation.

*Embarkation Hospital No. 1* is at Hoboken. It is under the command of Major T. C. Quick, M. C., with twenty commissioned officers, sixty-three nurses, 108 enlisted men, and five civilian employees. This hospital, which has a capacity of 763 beds, is located at Fourth Street and Willow Avenue, and was formerly known as St. Mary's Hospital. This is a general treatment hospital.



*Embarkation Hospital No. 2*, at Secaucus, N. J., under the command of Major S. B. Moore, M. C., has twelve commissioned officers and fifty-seven enlisted men on duty. This hospital was formerly the Hudson County Almshouse. Here are received the cases of scarlet fever, mumps, measles, etc.

*Embarkation Hospital No. 3*, which has 694 beds, is the old quarantine hospital on Hoffman's Island in the lower New York Bay. Major L. A. Walker, M. C., is in command here, with a staff of fifteen commissioned officers and 100 enlisted men, and a number of nurses. This hospital is especially fitted for use as an isolation hospital, having been used for this purpose by the quarantine officials before the war. To it are sent cases of communicable disease.

*General Hospital No. 1*, at Williamsbridge, New York, is the first of the general hospitals erected since we entered the war. It is built on the athletic oval of Columbia University, at Williamsbridge, and was described in detail in the NEW

YORK MEDICAL JOURNAL for July 14, 1917, page 75. It is under the direction of Colonel Simon Flexner, in so far as its scientific work is concerned. Major Alexis Carrel and others who have been associated with him, here give clinical instruction to army surgeons on the Carrel-Dakin method. While the expenses of this hospital are borne by the Rockefeller Institute, and Colonel Flexner is the scientific director, the patients come through the office of the Surgeon of the Port of Embarkation, who consequently has general supervision of the institution and who is represented by First Lieutenant E. Stillman, M. C., as commanding officer with four commissioned officers and twenty-four enlisted men. This hospital, which has 150 beds, was described in detail in the NEW YORK MEDICAL JOURNAL for August 11, 1917, page 268. Such types of cases are sent here as may be desired by Colonel Flexner to carry out his scientific program. While the majority of these are from overseas forces, some are furnished by the troops en route to Europe.



General Hospital No. 1, formerly known as Columbia War Hospital. Erected under the auspices of Columbia University by private subscription on Columbia Athletic Oval, at Bainbridge Avenue and Gun Hill Road, New York.

YORK MEDICAL JOURNAL for July 14, 1917, page 75. It has 1,100 beds, is of modern cantonment type, and is fully equipped in accordance with the most modern requirement. The staff includes fifty-six commissioned officers, 522 enlisted men, and 129 nurses, and is under the command of Lieutenant Colonel W. L. Sheep, M. C. As its name indicates, it is a general hospital, receiving all types of cases, whether surgical or medical, with the exception, of course, of patients suffering from communicable diseases.

*U. S. Auxiliary Hospital No. 1* is the official designation given to the Rockefeller Demonstration Hospital at Sixty-sixth Street and Avenue A, New York. This hospital was erected by the Rockefeller Institute for the purpose of providing a place for the demonstrations of the technic of the Carrel-Dakin method of treating septic wounds and for carrying on scientific investigations which had passed beyond the laboratory stage and which re-

*The Post Hospital at Port Newark Terminal, N. J.*, is organized along the lines of a regular army post hospital, with a personnel of four commissioned officers and twenty-four enlisted men, under the command of Captain H. W. Kennard, M. C. It is intended, principally, to provide hospital accommodations for the personnel on duty at Port Newark Terminal. This hospital has a capacity of about thirty patients.

*The Base Hospital at Camp Merritt*, near Tenafly, under the command of Major J. I. Sloat, M. C., has fifty-nine officers, 107 nurses, nineteen civilian employees, and 478 enlisted men. It is comfortably housed in permanent cantonment buildings and has generally been utilized to its full capacity of 1,846 beds, during the recent rush of troops for the battle front.

*The Base Hospital at Camp Mills*, near Mineola, L. I., serves a similar function to that at Camp Merritt. The troops move from there direct to the

transports, and all sick, and all who have been in contact with patients suffering from contagious diseases, are weeded out by the final physical examinations made on the day of departure. These patients are placed in the camp hospitals, all cases of communicable diseases being isolated and promptly removed. Major A. W. Cutler, M. C., is in command of the Base Hospital at Camp Mills, and has fifty-two commissioned officers, fifty-five nurses, five civilian employees and 443 enlisted men under his orders. This hospital has 1,506 beds.

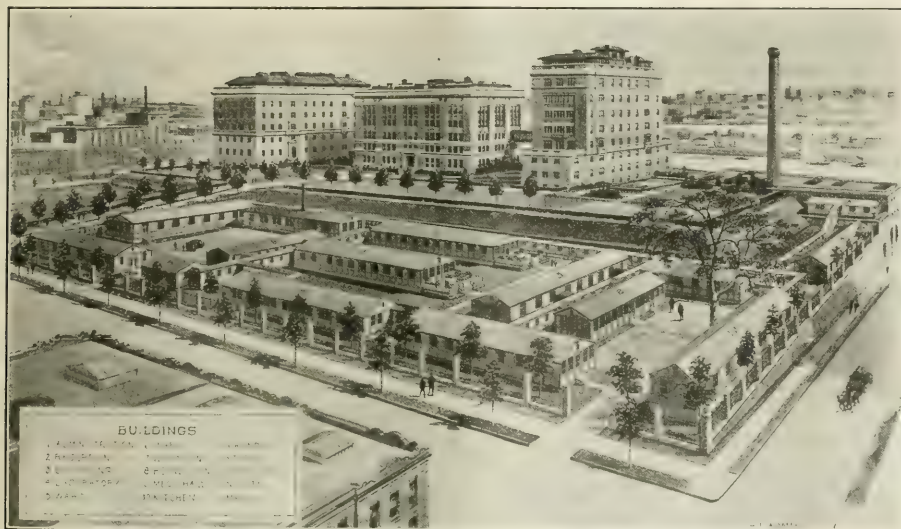
The hospital at Schuetzen Park, N. J., now in course of construction, will have 400 beds. First Lieutenant J. R. Downes, M. C., is in command with one commissioned officer and thirty-seven enlisted men.

#### DEBARKATION HOSPITALS.

All of the hospitals named above, with the exception of Auxiliary Hospital No. 1, the War Dem-

York has been taken over by the Army, and is known as Debarkation Hospital No. 1. It required relatively slight alteration to adjust it to the needs of a receiving station through which nearly all the patients returning from Europe pass. Here a preliminary sorting takes place. The Island, being operated somewhat like an evacuation hospital on a larger scale, patients are passed on as rapidly as possible, most patients staying only a day or two before assignment either to some special hospital or to one of the other three debarkation hospitals. Major C. R. Haig, M. C., is in command with thirty-one commissioned officers, forty-nine nurses, 229 enlisted men and twenty civilian employees. This hospital has 1,075 beds.

Debarkation Hospital No. 2 is a new hospital of cantonment construction which has been built at Fox Hills, Staten Island. It has a capacity of 1,762 beds and is under the command of Major C. A.



Auxiliary Hospital No. 1, formerly Rockefeller Demonstration Hospital. A portable war hospital of fifty beds, erected and maintained by the Rockefeller Institute, the buildings of which appear in the background, for the scientific study of war problems and for teaching the technic of the Carrel-Dakin method. Now part of the hospital system of the Port of Embarkation.

onstration Hospital of the Rockefeller Institute, have to do primarily with the sick of outward bound troops.

The reception and disposition of the sick, the maimed, and the wounded who are beginning to return from the battle front in steadily growing numbers, is another phase of the work of the Surgeon of the Port of Embarkation and one which will grow rapidly in volume and importance. These are received in a series of debarkation hospitals, where they go through a process of sorting, and eventually are sent to the various special hospitals, sanitarium, restoration clinics, or convalescent homes, spread out all over the United States.

Debarkation Hospital No. 1.—The Immigration Station at Ellis Island in the upper bay of New

Traylor, M. C., who has a staff of thirty-eight commissioned officers, fifty-five nurses, 452 enlisted men and fourteen civilian employees. To this hospital are sent debarkation cases in general.

Debarkation Hospital No. 3 is in the heart of the City of New York, occupying the western part of the block bounded by Sixth avenue and Eighteenth and Nineteenth streets. The building was erected and occupied by the Greenhut store, and its conversion into a hospital is not yet complete, though a temporary staff has been assigned to it consisting of Major W. J. Monaghan, M. C., three commissioned officers, twenty-seven enlisted men and six civilian employees, who at present are installing hospital equipment, furniture, etc. This hospital will have a capacity of 3,000 beds and





Embarkation Hospital No. 3, on Hoffman's Island in the Lower New York Bay, as seen from South Beach, Staten Island. This was formerly used by the Quarantine Officer of the Port of New York and is now used as an isolation hospital. It has a capacity of 694 beds.

staff of suitable size for so large an institution will then be assigned to it. Here will also be located the central clinical laboratory of the port, though there are, or will be, clinical laboratories attached to each of the hospitals. This hospital is expected to be ready for patients before this article reaches our readers.

*Debarkation Hospital No. 4.*—The Nassau Hotel at Long Beach, L. I., has been taken over by the Army and is now being fitted up as Debarkation Hospital No. 4. It will have a capacity of approximately 1,800 beds. It is still in the course of construction, or rather reconstruction, and the hospital staff has not yet been assigned to it. Major E. Martin Larson, M. C., is in command.

*Debarkation Hospital No. 5* exists only on paper as a hospital. The Grand Central Palace, on Lexington avenue from Forty-sixth to Forty-seventh street, has just been acquired by the Army at an annual rental of \$385,000, and this will become Debarkation Hospital No. 5. It has a floor space of 285,300 square feet, and it is estimated that it will provide 3,300 beds. To operate this will require approximately sixty officers, 300 nurses, 700 enlisted men, and twenty civilian employees. A staff of about the same size will be needed for Debarkation Hospital No. 4, in the Greenhut building.

*The Transportation Division* has three commissioned officers, one field clerk, and thirty-five enlisted men and two civilian employees on duty. Captain I. R. Ratner, Q. M. C., is chief of the division. This division furnishes transportation of men and supplies for the medical department, issues travel orders, transportation requests, tickets, etc., and maintains the liaison between the surgeons' office and the Transportation and Marine Divisions of the office of the General Superintendent of the Atlantic Transport Service and with the Adjutant of the Port of Embarkation. This division has charge of twenty-three ambulances and two hospital trains. Each of the latter has a capacity of 250 patients and is completely equipped in every respect.

*The Sanitary Inspection Division*, under Lieuten-

ant Colonel C. T. King, M. C., consists of eight officers and five enlisted men. This division is charged with the sanitary inspection of all buildings, camps, transports, piers, etc.; the delousing of troops and the fumigation of transports and buildings where this is necessary.

*The Domiciliary Hospital Division*, under Major W. J. Monaghan, M. C., is charged with the organization of a system for the purpose of using the various homes which have been offered to the Medical Department for use as convalescent hospitals, with the distribution of the patients and their medical treatment. So far, some fifty houses have been offered for this purpose. Some tender the use of the home only, others provide food, while some offer to provide both food and attendance. These homes will accommodate from two to fifty patients each, the estimated total capacity of the homes offered being about 1,200.

*The Hospital Building Division* makes recommendations as to the procurement of suitable buildings and inspects all the buildings offered. It has been much helped in its work by a committee from the Board of Real Estate Brokers of New York, whose members have given their expert services to the Government. Major E. J. Barrett, M. C., is the chief of this division, which consists of four officers and three enlisted men.

*The Property Division*, under Captain F. V. Gowen, M. C., receives and certifies to all property and stores needed, makes requisitions for all needed supplies, including blank forms, provides vaccines, sera, etc., for use at the headquarters and for issue to transports and organizations under the control of the Surgeon. This division also issues medical supplies to transports on requisition from the Transport Supply Division.

*The Finance Division*, under Captain J. D. Foley, S. C., checks and modifies or approves all requisitions for medical, dental, and veterinary supplies from all organizations under the control of these headquarters. It checks up all money papers for the Medical Department, that is, vouchers for supplies purchased, services rendered, pay rolls of civ-



Debarkation Hospital No. 1, Ellis Island, New York Bay. Formerly Immigration Station. Used as clearing hospital, whence patients are distributed to various special hospitals.

ilian employees and nurses, and all papers pertaining to the hire, discharge, resignation, etc., of the civilian help of the Medical Department. It also supervises the administration of the medical supply depots at Camp Merritt, Camp Mills, and Camp Upton.

*The Laboratory Division*, of which Major E. H. Schorer, M. C., is director, has supervision of the

clinical laboratories of the Port of Embarkation, one being attached to each camp and larger hospital. He is also engaged in the establishment of a central laboratory at the Debarkation Hospital No. 3, in the Greenhut building, New York. These laboratories make pathological, bacteriological, chemical, and microscopical examinations and analyses.

*The Transport Supply Division*, under Captain C. M. Thomas, M. C., sees to the equipment of hospitals and dental infirmaries aboard transports, places adequate medical and surgical supplies, vaccines, sera, etc., and blank forms of the medical department aboard the transports and arranges for the shipment of sera, etc., for the overseas use of the expeditionary forces. This division also makes contracts for the services of the civilian surgeons on merchant ships carrying troops, and certifies vouchers made under these contracts. It also arranges for the medical and surgical supplies of all troopships sailing from Montreal, Quebec, Halifax, Portland, Boston, Philadelphia, and Baltimore.

*The Transport Division*, under Major F. J. Pierce, M. C., supervises the embarkation of troops,

conducts the preembarkation physical inspections, and disposes of such patients as are detained at the time of embarkation. This division also supervises the debarkation of the sick and wounded returned from overseas, turning them over to the Sick and Wounded Division. In this work, Major Pierce is assisted by fifty-three officers and fourteen enlisted men. Some of these are stationed at the various camps and ports other than New York under the command of the Commanding General of the Port of Embarkation.

*The Sick and Wounded Division*, of which Major Clarence Quinan, M. C., is chief, receives, checks and forwards to the Surgeon General's Office the sick and wounded reports forwarded from the medical organizations of the port; keeps accurate records of patients in hospitals; of beds vacant, and of the disposition made of the patients received. The division also acts as a recruiting office for the port. It directs the classification and distribution of returning patients.

*The Attending Surgeons' Division* furnishes medical and surgical treatment, administers prophylactics and inoculation, makes physical examinations, maintains prophylactic and first aid stations, and, of course, keeps records and makes reports of its work. Seven commissioned officers and fourteen enlisted men are attached to this division. There are seven separate first aid and prophylactic stations, in addition to those maintained in the various camps and hospitals. These are located at Fourteenth Street, Hoboken; at Kearney Meadows, N. J.; at Erie and Pavia



Debarkation Hospital No. 3, Sixth avenue and Nineteenth street, New York. Formerly the Greenhut Building. Capacity 3,000 beds. The central laboratory is located here.

at Erie and Pavia



Avenues, Jersey City; at the West Forty-second Street ferry, and at the One Hundred and Thirtieth Street ferry, and at the Tennis and Racquet Club on Forty-third Street, New York, and at the Bush Terminal in Brooklyn. Four officers and twenty-five enlisted men are attached to this particular service.

**Nurses' Mobilization Stations.**—One of these is at the Hotel Albert, New York, under the supervision of Chief Nurse M. C. Jorgensen, A. N. C., and the other, at 120 Madison Avenue, New York, is in charge of Chief Nurse Minnie Winslow, A. N. C. The Nurses' Rest Home at Fairhaven, with

is used for the shipment of medical supplies to the American Expeditionary Force; that at Camp Merritt is in charge of Captain A. T. McKelvey, M. C., with twenty-two enlisted men, and the depot at Camp Mills is in charge of Second Lieutenant R. H. Wilson, S. C., with twenty-seven enlisted men; the one at Camp Upton is under the charge of Captain Burkhart of the Sanitary Corps.

**The Transatlantic Transport Service** employs sixty-nine commissioned officers of the Medical Department, and twenty enlisted men, all of whom come under the command of Colonel Kennedy.

**The Correspondence Division**, of which Captain



Debarcation Hospital No. 5, at Lexington Avenue and Forty-sixth Street, New York. Formerly known as the Grand Central Palace. This has a floor area of 285,300 square feet and will accommodate 3,300 patients.

Chief Nurse Edith Hine, A. N. C., in charge, is also under Colonel Kennedy's command.

**Medical Supply Depots.**—The troops which are sent abroad all take their own medical and surgical supplies, their needs being supplied through the three camp medical supply depots of the port. One of these is at Camp Upton, one at Camp Merritt, and the last at Camp Mills. These draw on the depots at Washington or New York, as circumstances dictate. The Medical Supply Depot at Pier 45 is in command of Lieutenant Colonel P. W. Gibson, M. C., with five commissioned officers, thirty-six enlisted men, and sixty-five civilian employees, and

G. C. Young, S. C., is chief, has full charge of the large correspondence involved in the work of the Surgeon. On July 31st, there were over 2,000,000 communications on file in the division, all of which are so carefully indexed that they are immediately available at any time.

Among the medical organizations not previously named which are under the control of the Surgeon of the Port of Embarkation are the Overseas Casual Camp, the Medical Detachment of the Fiftieth Infantry, the Sanitary Squad at Camp Merritt, and the Sanitary Inspectors at Montreal and Halifax.

## MEDICAL NEWS FROM WASHINGTON

*New Appointments in Medical Corps.—Concern Over Spread of Epidemic of Influenza.—Cooperation of American Red Cross With Navy and Marine Corps.*

WASHINGTON, D. C., September 23, 1918.

Captain Phillip Leach, Medical Corps of the Navy, who has been in command of the naval hospital at Boston, for some time, has been detached from that duty and ordered to Washington as a member of the naval examining and retiring boards. He relieves Captain William R. Du Bose, Medical Corps, retired on account of age. Captain Norman J. Blackwood, Medical Corps, who has been in command of the hospital ship *Mercy*, has been assigned to command the Boston hospital.

\* \* \* \* \*

The government authorities are much concerned over the outbreak of influenza at various camps and stations of the army and navy. The first re-

while laboratories at Washington, Philadelphia, and Great Lakes are making bacteriological investigations with a view of checkmating the disease, which appears to be in all respects pandemic.

About 1,500 cases and two deaths have been reported from Camp Devens, about 350 cases from Camp Upton, and about 1,000 from Camp Lee.

\* \* \* \* \*

The Secretary of the Navy has authorized the American Red Cross to cooperate with the navy in carrying out its desire at all times to do everything possible for the comfort and welfare of the enlisted men of the navy and marine corps, and particularly in the following ways:

Upon request of a medical officer of the navy, to render service in the naval hospitals, furnish emergency supplies, communicate with families of patients, render home service to patients, erect hospitals for convalescents and nurses, and furnish such other assistance as pertains to Red Cross work.



The Hotel Nassau at Long Beach, Long Island, which is being fitted up as Debarcation Hospital No. 4. It will furnish beds for 1,800 patients.

ports were limited to the New England district, but these were followed by reports of cases at Philadelphia, Pa., Pensacola, Fla., and Great Lakes, Ill., and at the army posts of Camp Devens, Mass., Camp Upton, N. Y., and Camp Lee, Va.

In the navy the disease is on the wane in the Boston district, where there have been about 2,500 cases, with 66 deaths from pneumonia. At New London there were 300 cases of influenza, with ten of pneumonia, and no deaths. In the New York naval district, the disease is increasing, with over 500 cases so far reported, but up to the present time the naval station at Pelham Bay has escaped an epidemic, only about ten cases having been reported. Nearly 700 cases have been reported from the Philadelphia navy yard, and reports of about 1,000 new cases a day have been coming in from the Great Lakes training station, though of a mild type.

Lieutenant Commander Milton J. Rosenau, Medical Corps, Naval Reserve Force, a noted specialist, has been conducting laboratory research at Boston,

When requested by commanding officers, to have sick and wounded men conveyed to a hospital and furnish them relief *en route*.

To conduct canteen service stations for furnishing refreshments to sailors and marines when traveling.

Upon request or suggestion of commanding officers of ships or stations, to render emergency relief to all persons under their command.

To relieve the anxiety and sustain the morale of the sailors and marines, by taking necessary steps to promote the comfort and welfare of their families at home.

\* \* \* \* \*

At the marine hospital at Detroit, which is under command of Senior Surgeon H. W. Austin, Public Health Service, the second floor has been entirely given over for reception of naval and marine corps patients. During the past month, over forty naval patients were cared for, a large number being admitted for injuries and for major operations.



# Editorial Notes and Comments

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### THE LIBERTY LOAN AND THE DOCTOR.

Thirty thousand five hundred and nineteen physicians are now in the Government service. Twenty-six thousand nine hundred and eighty-one of these are in the Medical Corps of the army, 2,818 are in the navy; 220 are commissioned as surgeons or assistant surgeons in the United States Public Health Service, while 500 are engaged in the service as contract surgeons without commissions. There are said to be about 76,000 physicians in the United States of military age; that 30,519 of them have engaged in the Government service voluntarily shows the patriotism of the members of the medical profession in a most convincing manner. Many of these men have made material sacrifices in giving up an established practice to enter the service, for the practice of a physician breaks down quickly during his absence, so that these men returning to civil life after an absence of a year or two must make an absolutely new start. The man in commercial life can frequently turn over his business to a subordinate and after serving in the army for a

year or two may return to find his business even more prosperous than when he left it. There is no such possibility with the physician. When he comes back to civil life he will find his practice scattered and he will have to begin all over again to build it up.

While it would not be nice to draw invidious comparisons, we are confident that in no other calling have more than forty per cent. of its members volunteered for service. And surely no other class of volunteers has done so at so great a pecuniary sacrifice as have medical men.

Those members of the profession who have not joined the colors have been called upon for additional service in the care of those of the civil population whose medical attendants have volunteered. The staff of every hospital has diminished and the remaining members have been required to do extra duty, which is being performed efficiently, energetically, and, for the most part, without complaint.

So great has been the service rendered by the medical profession that the committee charged with obtaining subscriptions for the fourth Liberty Loan have refrained from any special effort to obtain subscriptions from the profession, feeling that the members of a calling which had made such a generous response to the appeal for personal service would not fail to do their share in the matter of subscriptions to the Liberty Loan. There has, therefore, been no special committee appointed to solicit subscriptions from the members of the medical profession, but we bring the matter to their attention through our special Liberty Loan number, and through the generosity of our advertisers we place before our readers the appeal made by the Liberty Loan committee in the form of advertisements, thirty-two pages of which form a special section of this issue. Those who have not been able to give personal service in the cause of civilization can, by subscribing to the Liberty Loan, give valuable aid to the cause. It would be impossible to form any accurate estimate of the aggregate of subscriptions for Liberty Bonds made by the medical profession, since they will be made through local channels all over the United States, but we feel confident that the total volume of bonds subscribed for will be as generous in proportion to the means of the members of the profession as has been the number who have volunteered for service in the Army, the Navy, and the Public Health Service.

## GENERAL ANALGESIA FOR PAINFUL DRESSINGS.

We are very far away from the days when patients were held down by main force while portions of their anatomy were violently severed from them, when surgeons cultivated speed amounting almost to prestidigitation to shorten suffering, those days when, according to Bob Sawyer's friend, Mr. Hopkins, a surgeon, could take off a boy's leg so unobtrusively that after it was all over the patient would ask when they were going to begin. Nowadays the phrase "painful operation" has a strange sound, but there are still problems in analgesia unsolved. For example, what are we to do in cases where an operation must be followed by a series of painful dressings? It sometimes happens that these are almost as severe as the operation itself, and in their sum productive of much more suffering. We cannot be giving a general anesthetic for each dressing: this would hardly be practicable in private practice and would be out of the question in war hospitals, where the demands on the time of the surgeons are sometimes so excessive that wounds must remain untouched for twenty-four hours. The administration of morphine for each dressing would not dull the pain at the time greatly, although reducing the suffering afterward; moreover, it would tend to constipate, and, in addition, there would be the danger of habit formation.

With this problem in mind Captain Gwathmey and Captain Karsner, of the United States Army, have conducted a series of experiments to find a general analgesic available for painful dressings and short operations and have published their results in the *British Medical Journal*.<sup>1</sup> Such a therapeutic agent is particularly desirable, they say, in wounds accompanied by fractures, where the patient should be kept as quiet as possible. Animals were used for the preliminary experiments and as encouraging results were obtained they were further tested on wounded soldiers. Among the drugs tried were quinine and urea hydrochloride, trional, morphine tartrate, paraldehyde, ether in olive oil, and combinations of these drugs.

The conclusions reached were that general analgesia is safer than general anesthesia and that the safest example of the former is fifty per cent. ether in liquid paraffin or other bland oil. Its effect may be enhanced by the addition of a half dram or a dram of chloroform. The amount

of the ether and paraffin used is three and a half drams of each. The unpleasant taste of this mixture may be palliated by taking a mouthful of port wine, holding it for about thirty seconds, swallowing it, and then taking the ether mixture, followed immediately by the rest of the glass of wine.

The advantages of such an analgesia are incalculable, especially in war time. The busy surgeon is enabled to complete his redressings in half the time, thus giving more time to the freshly wounded as they come in, and the individual soldier is spared a great deal of suffering.

## THE KHAKI UNIVERSITY OF CANADA.

In the matter of education of the Canadian forces overseas a plan, quite recently devised, may now be said to be established upon a substantial footing. Like all other projects for the welfare of the Canadian soldier, which recognize the principle of preparedness so desperately brought home to civilized nations in four years of most horrible warfare, the Khaki University has definite objects in view. Many returned soldiers will not be fitted to engage in their own vocations, so the main object of the university is to prepare them by practical study and instruction for their future vocations. The work has been organized in various centres in England, and, to a certain extent, among the troops in France. If the recent good work of the armies of Foch, Pershing, and Haig be kept up, then the Allies may with confidence look forward to the period of demobilization, when the plan may be extended to include a system of education for the whole army.

The Canadian universities recognize the Khaki University, and the army authorities are also extending hearty cooperation; the Y. M. C. A. in Canada undertakes to finance the movement. The financial load is somewhat lightened by volunteer instructors, who, in the main, are chaplains, Y. M. C. A. secretaries, officers, and non-commissioned officers; and, in most cases, these men have already had experience in teaching.

Under the auspices of the Khaki University, there are already ninety-three libraries established in England and France. The registration totals 8,006 men in England alone, but exact figures have not been procurable for France. In commercial subjects, 2,351 are registered; agricultural subjects, 1,363; engineering, 1,503; general educational subjects, 2,789. Up to June 30, 1918, 341 lectures on general and practical sub-

<sup>1</sup>General Analgesia by Oral Administration. By Capt. J. T. Gwathmey and Capt. H. Y. Karsner, *British Medical Journal*, March 2, 1918, pp. 254-57.



jects had been given in thirteen army centres in England, with an average attendance at lectures of about 400. Between 40,000 and 50,000 individual men have attended one or more lectures; and the approximate attendance has numbered 170,000.

The source of the above information does not mention anything in the way of professional studies, but with the unequaled facilities for clinical instruction, especially in surgery, the opportunities should not be lost to medical students who have been called to the service overseas.

### THE DIAGNOSIS OF POLYNEURITIS FROM CARBON SULPHIDE POISONING.

In all polyneuritides when the muscles, peripheral nerves, and cord are examined, the most striking features are the marked changes in the peripheral nerves. Among the toxic polyneuritides those due to carbon sulphide are the least known and their pathological anatomy is yet to be studied. All that is known in carbon sulphide poisoning is the change taking place in the blood, so that when a positive diagnosis of the nerve lesions is to be made the past history of the case must be investigated, otherwise a diagnosis will be utterly impossible.

If the patient has been employed in the manipulation of carbon sulphide a direct diagnosis can be made or a differentiation between a polyneuritis and poliomyelitis may have to be considered. In the latter affection the onset is sudden and the paralysis involves the muscles of the roots of the limbs as well as the extremities, and disturbances of objective sensibility do not exist.

The etiological factor should always engage the attention. But among the paralyses which may be met with during carbon sulphide intoxication are some organic paralyses resulting from a change in the nerve fibre, the motor neuron; the others often are merely pure functional paralyses, related to hysteria.

One must carefully avoid mistaking these two types of phenomena, because, from the viewpoint of the prognosis and treatment of the affection, there is a capital difference.

It was long since shown by Marie that many accidents mentioned in carbon sulphide paralysis should be attributed in reality to hysteria. Toxic hysteria from carbon sulphide particularly calls for careful attention and should be detected whenever a paralysis is due to carbon sulphide poisoning, since a diagnosis of polyneuritis can-

not be made until it has been ascertained that hysteria plays no part in the sensitive, sensitivensorial, or motor phenomena present.

In quite a number of cases the onset of the hysteric accidents is sudden, because the hysteria was in a latent state and the causative factor in the production of its manifestations has been the toxic action of carbon sulphide. Among workmen manipulating this product a sort of aura, consisting of a sensation of heat in the genitalia and of burning or cold in the scrotum, is well known.

The onset of toxic peripheral neuritides is slow and insidious, and no hesitation in the matter of diagnosis should exist when a steadily progressing paralysis occurs, more often involving the extensor muscles and extremities of the limbs, without muscular atrophy, with disturbances of objective sensibility involving the mixed nerve trunks with marked diminution of the tendon reflexes, leaving the sphincters intact.

An electrical examination will frequently confirm the diagnosis by demonstrating the reaction of degeneration. Proper treatment will almost always produce a progressive amelioration and a cure in favorable cases which will leave no doubt as to the true nature of the paralysis.

The prognosis of polyneuritis from carbon sulphide intoxication is favorable in the majority of cases. While it has a serious aspect from the fact that relapses are probable, complete recovery may be said to be the rule.

### A MORE PRACTICAL STANDARDIZATION FOR PITUITARY EXTRACT.

Simplicity and uniformity characterize a new method for the biological standardization of pituitary extract reported by Spaeth [Reynold A. Spaeth: Concerning a New Method for the Biological Standardization of Pituitary Extract and Other Drugs; *Journal of Pharmacology and Experimental Therapeutics*, April, 1918]—two features of practical importance in such a procedure. Spaeth points out the defects of the two methods now commonly in use in the testing of the strength of pituitary extract. The use of strips of virgin guineapig uterus does not sufficiently take account of the variation in the strength of the samples of pituitrin to be tested, even when taken from individuals of the same species. There is also great variation in the sensitiveness of the uterine tissue. Moreover, the repeated use of the same strip of uterus gives no room for control experiment. The second form of test, that

of utilizing the normal blood pressure of dogs as the test object, is open to these same objections. Too many variable factors exist and there is the same lack of control experiment.

Therefore, the writer suggests that the test should be carried out upon units of tissue from the same animal which could be physiologically compared, and he proceeds to describe such a method. Here two groups of pigment cells, proved to be identical physiologically, are compared as to their reaction time in a standard and an unknown solution. The detailed physiological and chemical studies which have been made upon the melanophores of *F. heteroclitus*, the killie fish or mummichog, have shown them to be functionally modified smooth muscle cells and therefore particularly adapted to such test work in standardization. This little fish, moreover, is easily obtainable and maintains its normal condition under very simple artificial surroundings.

Potassium chloride was the solution chosen as the standard in the test, since it can be easily obtained pure and has a constant effect upon the melanophores. A definite mixture was selected, 2.5 parts of decinormal sodium chloride solution and 1 part of decinormal potassium chloride solution at a uniform temperature of 22° C. The preliminary tests consisted in finding by experiment pairs of melanophores with the same contraction time, which then could be tested in the standard solution and in a solution of unknown strength. The same preliminary tests may be used to determine the strength of the unknown solution. Here approximate results may be obtained by using three adjacent scales which may be compared also in size and number of melanophores, when the more rapid contraction will denote the approximate strength of the unknown solution. Further comparisons are then made between the solutions by using the pairs of scales already matched. In order to avoid interference with standardization through the preservative in commercial solutions these solutions have been diluted for experimental purposes with sodium chloride to a certain concentration, but it is suggested that in commercial practice, for the standardization of a given quantity of drug, solutions should be made up for immediate use without preservative, as far as this is possible. The writer suggests for pituitary extract an aqueous solution which when suitably diluted with one fifth normal sodium chloride solution will have the same action upon these melanophores as the standard potassium chloride solution.

It need not be objected, the author claims, that

the action of pituitary extract upon the melanophores is not comparable to that upon the mammalian uterus, for experiment has proved it otherwise in the guineapig. Far greater accuracy seems, moreover, to result from the melanophore method. The close relation of potassium chloride and pituitary extract might be questioned, but so far as experiment has gone in respect to the variability of these two substances, they incite the same response in the melanophores. The chief advantages established so far in this method are the elimination of the individual variation in the test animals and the providing of an "exact, quantitative, simultaneous, control experiment."

#### THE EPIDEMIC OF INFLUENZA.

The number of cases of influenza originating in New York continues to grow. On Tuesday 172 new cases were reported, twenty-two more than were reported on the previous day. Notwithstanding the presence of influenza fewer cases of pneumonia have been reported during the past week than in the corresponding period of last year. Sixty-five deaths were reported in twenty-four hours at Camp Devens, and between 5,000 and 6,000 cases were reported under treatment on Monday. The number of cases of influenza reported by the different camps is: At Greene, 1; Logan, 175; McClellan, 11; Sevier, 2; Syracuse, 596; Devens, 10,700; Dix, 1,897; Funston, 181; Gordon, 419; Grant, 70; Humphries, 209; Jackson, 794; J. E. Johnston, 14; Lee, 1,819; Lewis, 50; Meade, 223; Pike, 1; Sherman, 1; Taylor, 87; Travis, 37; Upton, 1,141; Newport News, 28; Hoboken, 1,417; Colt, Pa., 32; Edgewood Arsenal, 188, and miscellaneous posts, 118.

The commissioner of health, Dr. Royal S. Copeland, has sent a letter to all physicians, and to all hospitals, institutions, and sanatoria in the city directing attention to the fact that influenza, acute lobar pneumonia and bronchial or lobular pneumonia, have been included among the infectious diseases which are required to be reported to the Department of Health. Particular attention is called to the fact that isolation should be maintained until the termination of the disease, and the cooperation of the medical profession in the prompt reporting of cases of influenza or pneumonia and in the isolation of such cases is earnestly requested.

A press bulletin has also been given out by the commissioner giving information to teachers in the public schools, private schools, and other institutions for the care of children. A press bulletin was also released giving information to the general public relative to the nature of Spanish influenza, its prevention, and advising all persons who are sick to consult their physicians, informing the public that the epidemic is general throughout the country and that New York city is more free than other places, and that this freedom can be maintained only by general cooperation by the public with the Department of Health.



## News Items.

**Women Doctors in a French Hospital.**—At the opening exercises of the Woman's Medical College in New York, Dr. Eleanor C. Jones stated that the French Government is erecting a special building for the use of gassed patients, where fifty women doctors will be assigned to duty.

**The New York Neurological Society.**—This society will hold its first meeting of the season next Tuesday evening, October 3d, with Dr. Frederick Tilney, president of the society, in the chair. The principal address of the evening will be given by Dr. Walter B. Jones, president of the New York Academy of Medicine.

**The Wesley M. Carpenter Lecture.**—This lecture will be given at the New York Academy of Medicine, Thursday evening, October 3d, by Professor Graham Lusk, one of the representatives at the recent meeting of the "Interalled Scientific Food Commission" abroad. His subject will be The Scientific Aspects of the Interalled Food Situation.

**Personal.**—Dr. Abraham Jacob's summer home at Bolton-on-the-Lake, Lake George, N. Y., was badly damaged by fire Friday night, September 20th, and in making his escape from the flames Doctor Jacob, who is eighty-nine years of age, jumped from a second story window, to the ground, a distance of twelve feet. He sustained several slight injuries.

**Better Care in the Army than in Private Life.**—Surgeon General Gorgas, who is making an inspection of the Medical Service of the American Expeditionary Force, in France, is reported in a cable from Tours, as having said "I am very much pleased with the care and the health of the troops. Their sanitary condition is good, the sick rate is low, and the wounded are excellently cared for. A large bulk of these men are getting very much better professional care here than they would have had in civil life."

**Flight Surgeons.**—Brigadier General T. C. Lyster, Chief of the Air Service Division of the Surgeon General's Office in Washington states that the flight surgeons have been appointed to the various aviation commands. These men will be expected to fly, though they need not necessarily become pilots. They will not only examine applicants for admission to the air service but will keep in close touch with the flyers, so that any physical deterioration in a flyer will be noted and corrected before he suffers materially from it.

**End of Pasteur Institute.**—Dr. George Gibier Rambaud, who has been at the head of the Pasteur Institute on West Twenty-third street, New York, for the past eight years, has closed the Institute, accepted a commission as Major in the United States Army and has been ordered to France on active duty. In closing the Institute, he said that it had served its purpose in introducing the Pasteur treatment which is now available in all the larger hospitals. During the past eight years the Institute has cared for 10,030 patients, 8,292 of whom were treated without charge.

**Hospital Assistants Needed.**—At a meeting of a special committee on nursing composed of the leaders in the field of nursing and hospital management, which was held in Washington on September 20th, resolutions were adopted encouraging civil hospitals to arrange for the training of hospital assistants in accordance with the plans of the Army School of Nursing, such assistants to be enrolled through the American Red Cross with the understanding that they will accept service as may be required either in the hospital in which they had been trained, the American Red Cross or the United States Army Hospitals.

**New Building for Doctor Potter's Metabolic Laboratory and Clinic.**—A new wing has been added to the Memorial Laboratory and Clinic at Santa Barbara, California, of which Dr. Nathaniel Bowditch Potter, formerly of New York, is director. This addition to the clinic has been provided especially for the research work which is being carried on by Doctor Potter in the study and treatment of nephritis, gout, diabetes, and allied diseases. The money has been provided by C. G. K. Billings, George Owen Knapp, Clarence A. Black, and Frederick F. Peabody, and it is said that the institution will be equipped with everything needed in an up to date laboratory and clinic.

**Executive Committee of the Volunteer Service Corps.**—The following New York physicians have been appointed members of the executive committee of the Volunteer Medical Service Corps: Dr. George David Stewart, Dr. Walter B. James, Dr. James B. Clemens, Dr. J. E. Wilson, Dr. Nathan E. Brill, Dr. Walter F. Chappel, Dr. John E. Virden, and Dr. S. Waterman, of Brooklyn.

**American Woman's Hospital.**—A letter sent from France by Dr. Jean Howard Pattison, a member of Hospital Unit No. 1, of the American Woman's Hospitals, states that she and other members of the unit were on duty at Meaux. They worked eighteen hours one day and thirteen the next. Some of the wounded had paper bandages which they had taken from the German prisoners.

**American Orthopedic Hospitals in London.**—The American Red Cross announces that through the liberality of William Salomon, a New York banker, St. Katherine's Lodge, formerly one of the homes of King George, had been turned over to the American Red Cross for use as an orthopedic hospital. Baroda House, which was built by the Gaekwar of Baroda, has been turned over for the same purpose, by the present owner, A. Chester Beatty, an American mining engineer.

**Recruits for the Army Nurse Corps.**—It is stated that over 4,000 women have applied for entrance into the Army Nurse School and more than 1,000 have been enrolled. These students are to be sent to the Army Nurse Training Schools which have been established at various camps in the United States. Brigadier General Charles Richard, Acting Surgeon General of the Army, has emphatically denied a statement given to the press recently, to the effect that the nursing needs of the Army have been met. The figures given out by others have been misleading. More than 16,000 nurses are now on the rolls of the Army Nurse Corps, leaving 9,000 still to be obtained. Moreover, it is estimated that 50,000 nurses will be needed by July 1, 1919. General Richards says it is important that the false impression that the Army's need for nurses had been supplied should be emphatically contradicted. There is a great need for nurses now and there will soon be a greater need.

**Control of Venereal Diseases.**—One million dollars will be expended by the Federal Government through the State boards of health in venereal disease control during the fiscal year ending June 30, 1919. This sum is made available for expenditure, under regulations established by the Secretary of the Treasury, by an act of Congress approved July 9, 1918. An officer of the Public Health Service will have general charge of the work in each State in cooperation with the State health officer. The activities will be the following: a. Securing of reports of venereal infections; b. control of those infected, so as to prevent further spread of the diseases; c. establishment of free venereal clinics; d. suppression of vicious conditions which favor the spread of venereal infections; e. carrying out of a systematic educational program for the general public as well as for those who are infected. The act gives authority for a new division in the Bureau of the Public Health Service, to be called the Division of Venereal Diseases. Such a division has been organized and a chief appointed.

**War Work of Women Physicians.**—A meeting of women physicians was held in the Hotel McAlpin, New York, recently for the purpose of inaugurating a campaign to raise \$200,000 to enable the New York Infirmary for Women and Children, 321 East Fifteenth Street, New York, to reopen its wards, which have been closed for lack of funds on account of the war, and to extend its dispensary and outpatient service to the families of soldiers from the lower east and west sides of the city. Dr. S. Josephine Baker, of the Department of Health of the City of New York, is chairman of the campaign executive committee. Dr. Marie L. Chard, vice-chairman of the committee and head of the department of surgery at the infirmary, in an interesting address, told how women physicians were helping to win the war by vigorous participation in home service activities, by taking the places of men physicians, by working with the Red Cross among the dependents of men in the service, by joining the medical services of industrial plants and munition factories, especially those employing great numbers of women, and in a number of other ways. She said that the number of women physicians who were helping to win the war in varied activities at home was just about one hundred per cent.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### VICIOUS CIRCLES IN RESPIRATORY DISORDERS AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Concluded from page 519.)

#### BRONCHIAL ASTHMA.

One or more vicious circles are probably involved in all but the mildest of acute asthmatic paroxysms. The main factor in the paroxysm is generally considered to be a spasm of the bronchioles, to which is likely to be added a swelling of the mucous membrane of the bronchioles, with abnormal secretion. Whatever the precise origin of the bronchiolar obstruction, the result is a tendency to abnormal distention of the lungs.

An important feature of the condition constituting a basis for the production of added vicious circles is that, as McPhedran puts it, "the inspiratory act is violent, while the expiratory is quiet and prolonged. The whole endeavor of the patient is to get more air into the lungs, while he is little concerned to drive it out." Expiration being normally to a large extent dependent upon the elasticity of the lungs, while inspiration always demands activity on the part of the powerful inspiratory muscles, when an obstruction is offered to breathing inspiration seems likely to get the upper hand over expiration, with the result that every inspiration begins before the preceding expiration is complete, and overfilling of the lungs with air follows. Dixon, 1909, has laid special stress upon this view of inspiration as a more forcible act than expiration, with consequent overdistention. The action of the abdominal muscles as factors in expiration is believed to be interfered with in asthma because the overactive diaphragm is relatively depressed and fixed in these cases, thus preventing the increased intraabdominal pressure caused by contraction of the abdominal muscles from asserting itself on the contents of the thorax. Again, according to some, the obstruction of the bronchioles is more marked on expiration than on inspiration; McPhedran thinks strong efforts at expiration would, by compression, bring on further narrowing of these channels. This, if definitely shown to be the case, would supply another very direct mechanical reason in accounting for the overdistention of the lungs in asthma.

A number of vicious circles may, it seems likely, become superadded.

In the first place, granting the truth of McPhedran's view, just referred to, that violent expiratory effort may further narrow the bronchioles, the probability presents itself that the additional narrowing will necessitate still more forcible expiratory effort, with resulting further narrowing; a vicious circle would thus be established which could end only when the expiratory muscles had reached the limit of their contractile capacity.

Again, if the force of inspiration continuously exceeds that of expiration, the resulting interference with breathing, by promoting carbon dioxide accumulation, will tend to excite further the respiratory centre; as a result, the disparity between inspiration and expiration might be rendered greater than before, carbon dioxide elimination further reduced, and the central excitement correspondingly increased—a vicious circle being thus constituted.

Dixon has emphasized the effect of overdistention of the lungs in weakening the elastic expiratory power of their tissues. This is in agreement with Hewlett's statement that while, ordinarily, pulmonary distention soon disappears at the termination of an asthmatic attack, in prolonged and continued attacks restoration to the normal lung volume may occur only very slowly. In other words, the more pronounced the overdistention of the lungs in an attack, the less becomes their expiratory power and the less is the opportunity for additional oxygen intake. The greater the demand for oxygen, the more powerful the inspiratory efforts and the greater the overdistention of the lungs. A vicious circle is thus established which will tend to perpetuate the attack.

Another vicious circle, it seems probable, may depend upon the unusual exertion attending the patients' abnormally forcible respiratory movements. Such unusual exertion will increase oxygen consumption and the production of carbon dioxide. This, in turn, will further excite the mechanical respiratory function and increase the exertion in breathing, thereby completing a vicious circle which ceases operation only when exertion reaches its limit and tends toward exhaustion of the patient.

The congestive swelling of the mucous membrane of the bronchioles and secretion into their lumen which generally accompany the asthmatic bronchospasm are ascribed to either local vasomotor paresis, secretory stimulation through the vagus nerve, or actual inflammation. The question arises, however, whether they may not be favored also by one or more mechanical factors. A rise of systemic blood pressure due to accumulation of carbon dioxide because of inadequate respiratory ventilation, and reacting upon the vessels of the bronchioles—probably less susceptible to vasoconstricting influences than the systemic vessels as a whole—is a possible factor in this connection. Such an increase of systemic blood pressure, by promoting congestive swelling and exudation in the bronchioles, might increase the respiratory difficulty, correspondingly augment the accumulation of carbon dioxide, and induce a further rise of systemic vascular tension, thus establishing another vicious circle. The exertions of the patient in breathing, by increasing carbon dioxide production, would also tend toward heightened blood pressure, and were the latter to promote further congestion of the bronchiolar mucosa, a connection between the pre-



ceding circle and that just described would be established.

How are these vicious circles in asthma to be overcome? In the case of the first two circles referred to, reduction of the bronchial spasm is obviously the most available procedure. For this purpose drugs of the solanaceous series, atropine itself, nitrites, and adrenalin are of great value. In the second circle, in which carbon dioxide accumulation is a factor, absolute rest will probably be of additional service, tending to reduce the amount of carbon dioxide liberated in the system. In the third circle, featured by the excessive inspiratory efforts arising through the demand for more oxygen, inhalation of oxygen gas would seem the proper auxiliary measure to be combined with the bronchodilators. Segal, 1910, reported good results in two severe cases from simultaneous use of oxygen and adrenalin. In the fourth circle, oxygen, lack and excess of carbon dioxide seem the most vulnerable points; the former can be favorably influenced by oxygen inhalation, and both by medicinal bronchodilatation. Finally, in the fifth circle, the belladonna series is serviceable both through relief of bronchospasm and reduction of secretion; spirit of nitrous ether, or the more active nitrites, or chloral hydrate in moderate dosage might be of service by overcoming a tendency to systemic vasoconstriction and rise of blood pressure which would promote swelling and exudation in the bronchioles. Morphine in asthma probably acts by depressing the hypersensitive centres, irritation of which is causing them to constrict the bronchi through the vagal nerve distribution. It may also benefit through direct (local) bronchodilatation; by allaying unduly violent, fruitless inspiratory activity on the part of the respiratory centre, and by generally quieting the patient, thus minimizing carbon dioxide liberation. According to Goldschmidt, 1907, one twentieth to one twelfth grain is usually sufficient. The risk of eventual habit formation is, however, a serious disadvantage. According to some, caffeine and theobromine are serviceable as bronchodilators; this clinical view has received some degree of experimental confirmation by Higgins and Means, 1915.

**Prevention and Control of Respiratory Infections in Military Camps.**—Joseph A. Capps (*Journal A. M. A.*, August 10, 1918) calls attention to the great frequency of respiratory infections in our army camps, especially to those due to the streptococcus, and recommends the following procedures for their prevention and control. Since milk, cream and ice cream are well known to be capable of carrying and spreading various respiratory infections, scarlet fever and the streptococcus, and since several outbreaks of these diseases have been traced to the milks used in the camps, it is recommended that all milk be properly pasteurized at the camp. The second important method of preventing the spread of the respiratory infections has been proved to be by means of the proper use of the face mask. At the regimental infirmary every patient should be masked as soon as the diagnosis has been made. Every patient, irrespective of his

disease, should be masked on entering the ambulance and should continue to wear his mask at the receiving office. Patients who walk to the hospital should be masked before their entrance. All patients coming to the hospital should wear their masks during their examination and on their trip to the ward and should remove them only after entering their own cubicles. In all wards for contagious or respiratory diseases all patients, whenever they are outside of their own cubicles, and all physicians, attendants, and visitors must wear masks during their stay in the wards. Finally, less effective means of preventing the spread of these diseases are the detention in separate camps of all new contingents for three weeks, increasing the space between the beds in the barracks, placing the beds so that the head of one is opposite the foot of the other, and the hanging of a curtain down the centre of the mess table.

**Treatment of War Burns Due to Yperite.**—J. Bandaline and J. de Poliakoff (*Bulletin de l'Académie de médecine*, July 9, 1918) call attention to the efficacy of hot air in the treatment of burns caused by yperite, a gas used by the Germans in their offensive of March, 1918. These burns, even when very small, cause extremely sharp pain and sleeplessness. A number of cases were rapidly healed by hot air after various treatments, including ambrine, had failed. The peculiar effects of the gas are due to the local action of organic groups it contains and also to a constitutional intoxication. The first dressing with saline solution is almost impossible on account of the pain. To prevent adhesion: of dressings to the burn the authors used what they term linoserum—1,000 grams of a 1.5 per cent. infusion of linseed with nine grams of pure sodium chloride, filtered or sterilized in the autoclave for twenty minutes at 120° C. The preparation is warmed on a water bath before use. Opened bottles of it must be used on the same day, as it ferments easily. After two hot air treatments and in two days' time, local sensitiveness, in an illustrative case referred to, had greatly lessened and the sharp pains had disappeared. In two cases in which sleeplessness had been especially troublesome, sleep was gradually restored after four and five days of hot air treatment, and after three weeks of hot air, pain was entirely gone.

**Removal of Missiles from the Pleura or Diaphragm.**—E. Petit de la Villéon (*Presse médicale*, June 13, 1918) thinks that extraction with forceps through a buttonhole under x ray control should now supplant thoracotomy in most cases of projectiles in the pleura. Injury to the chest wall and complete pneumothorax are thus obviated, and the removal of loose, mobile foreign bodies greatly facilitated. The procedure is likewise applicable where a foreign body is only partly in the pleura, being in part embedded in the chest wall or lung. A single pleural region forms an exception, the mediastinal pleura; here a wide thoracotomy is indicated. In removing a pleural missile with forceps, the latter should never be inserted perpendicularly over the missile but always passed in a markedly oblique direction, through a buttonhole made at some dis-

tance from the missile. This is to avoid the difficulty of seizing the missile that may be experienced if the latter slips behind a rib during the manipulations. Thus, to extract a missile situated beneath the breast, the buttonhole should be made in the anterior axillary line, and to extract a missile beneath the scapula, it should be in the posterior axillary line. At times, to reach the missile it is necessary to have the forceps form a groove at the surface of the lung; this is better than passing the forceps directly through lung tissue. These directions do not apply to cases with suppuration, in which a broad opening with rib resection is required. Missiles situated over or in the tissue of the diaphragm should be dealt with according to their individual situation. In general, the presence of a missile in the diaphragmatic zone can be ascertained by radioscopia, with intentional changes of the patient's position. Missiles in the right half of the diaphragm, which rests over the liver, are best removed through the chest by the forceps and buttonhole method; this applies even if the missile projects from the diaphragm into the liver. In the case of projectiles of the left half of the diaphragm, however, such treatment would be unsafe, and is substituted by removal from the abdomen through an incision parallel with the left costal margin. The x rays are seldom required in such cases. Abdominal removal is also advised for missiles in the mediastinal portion of the diaphragm. Most of the author's operative removals were effected in men with their wounds healed, i. e., at least three weeks after the injury.

**Nocturnal Enuresis Cured by the Removal of Adenoids.**—Antonio Martin Calderan (*Revista de Medicina y Cirugía Practicas*, April 14th, 1918) reports success in several cases of stubborn nocturnal enuresis by removing adenoids. He admits that the explanation of the mechanism by which adenoids cause enuresis is difficult to explain, but he draws attention to the rich nerve supply of the nasopharynx and the frequent reflex conditions caused by hypertrophy of its lymphoid tissue, such as spasm of the glottis, persistent cough, etc. The most logical hypothesis is that the mechanical obstruction to respiration caused by adenoids, which is worse during the night, produces faulty oxygenation of the blood, and that the excess of carbon dioxide acts on the medulla, producing enuresis. This theory is supported by von Mering, Thomson, Chumier, and Schech. Dalavan claims that chorea may be caused by adenoids, Thomson adds epilepsy, while others ascribe to adenoids night terrors, mental deficiency, etc.

**Nephrotomy and Cæsarean Section in Eclampsia.**—Clifford White (*British Medical Journal*, July 6, 1918) believes, on the strength of his own studies, that the urinary suppression or diminished flow encountered in some of the cases of eclampsia is due to swelling of the kidneys producing increased intracapsular tension. The reduced urinary excretion is insufficient to permit the carrying off of the toxins from the blood, hence the indication is to relieve this intracapsular tension before the renal tissues undergo degeneration. Cæsarean section provides a simple and safe method of rapid delivery,

especially in primiparæ, avoids the dangers of severe perineal lacerations and produces a trauma less great than that of vaginal delivery. As a result of these considerations White recommends and practises in suitable cases the immediate performance of a Cæsarean section through a high abdominal incision. When this operation has been completed a retractor of the Doyen type is inserted and the opening enlarged by retraction upward and to the right, ample access to the kidney thus being possible by virtue of the lax abdominal wall. The right kidney is then exposed by an incision through the peritoneum lateral to the ascending colon. The renal capsule is incised along its convexity for its entire extent, a small drainage tube is passed through the skin of the loin, and the abdomen closed. The results of this method of treatment have been most favorable.

**Lateral Suture of the Popliteal Artery.**—Alary (*Presse médicale*, July 18, 1918) had a case of lenticular perforation of the popliteal artery by a shell fragment, the injury being three mm. in diameter. In view of the gravity of ligation of this vessel in the popliteal space, he attempted suture; two perforating sutures covered by a superficial purse string including the adventitia and media were employed. The results were excellent, no disturbance of the arterial circulation following. The anterior and posterior tibial arteries, examined daily for eighteen days until discharge, continued to pulsate normally. The only signs noticed were slight edema and tingling of the foot, and slight elevation of temperature above that of the opposite side. In general, in the case of arteries—ligation of which is dangerous, suture should be preferred. Circumstances under which this procedure can be attempted are, however, not frequent; the injury to the vessel must be relatively simple and the condition of the wound must be such that an aseptic course can be counted upon.

**Rodet's Serum in Typhoid Fever.**—O. Martin (*Paris médical*, July 20, 1918) has been trying out the serum of A. Rodet, sale of which is now officially authorized in France. It is obtained from horses immunized by serial injections of very active cultures of typhoid bacillus, previously filtered and thus deprived of almost all bacilli, but very rich in toxin. The inoculations are continued for three or four months, and the resulting serum is very strongly antitoxic. Clinically it must be employed before the eleventh day of the disease; it should be used as early as possible, as soon as the clinical diagnosis has been made and before laboratory confirmation. It is injected subcutaneously; the first injection is of fifteen mils; the second, ten mils, and the third, five mils. The second is given at least two days after the first, and is not resorted to unless the general condition becomes worse again or the temperature shows a tendency to reascend. The same considerations apply to the third injection. Usually two injections suffice. The effects of the serum comprise a rapid and marked improvement of the general condition; lessening of prostration and fever; strengthening of the pulse; marked subjective betterment, and a notable shortening of the course of the disease. The serum is especially intended for typhoid infection.



**Urethral Stricture.**—Clarence Martin (*Urologic and Cutaneous Review*, July, 1918) concludes that moderate and well executed treatment of gonorrhea prevents stricture and that 95 per cent. of strictures may be treated by dilatation. Thorough anesthesia and lubrication, coupled with patience, succeed in seemingly impassable strictures. When a stricture is undilatable, when urinary abscesses and infiltration and fistulas are present, urethrotomy should be done. Where this is necessary the combined internal and external operation, employing the Maisonneuve urethrotome for the former purpose is the best. Any stricture that will permit the passage of a filiform bougie may be subjected to an internal urethrotomy with the Maisonneuve. External urethrotomy without a guide is very rarely necessary. A urethrotomy should be performed only in cases where simpler measures fail. C. H. Solomon (*Interstate Medical Journal*, July, 1918) affirms that to successfully treat strictures of the urethra, their character and location must be diagnosed. Recent soft hyperplastic strictures may be gradually dilated with resulting absorption of the pathological deposit and restoration of the normal calibre of the canal. Dilators or sounds may be introduced for five to ten minutes every four or five days, followed by an antiseptic wash of weak silver nitrate or 1-4,000 solution of oxycyanide of mercury. All strictures of the hard cicatricial type, located anterior to the external sphincter should be treated by internal urethrotomy if not improved by dilatation or if dilatation is not practicable. After internal urethrotomy the patient is kept in bed five or six days on a dry diet with a minimum of fluids, and should be catheterized during this period with a fourteen to sixteen French soft rubber catheter. Only after the sixth day after the operation should the patient be allowed to urinate.

**A Preventive and Curative Serum for Gas Gangrene.**—H. Vincent and G. Stodel (*Presse médicale*, July 18, 1918) assert that the short incubation period and rapid course of gas gangrene make it impossible to rely on favorable results from injection of a specific vaccine. Passive immunization is therefore necessary. Their new, special serum was put to a severe test before being used in man. One or two days after intramuscular inoculation of very purulent *Bacillus perfringens* in guineapigs, with or without the other anaerobic organisms causing gas gangrene, the inoculated muscles were crushed. As shown in a previous research, this regularly brings on gas gangrene in nonimmunized animals. The animals not protected with the serum showed 100 per cent. of gas gangrene and a mortality of 79.07 per cent. Those surviving showed extensive loss of tissue, with necrosis of the abdominal wall or loss of the entire limb. Of the guineapigs immunized with the serum 95.65 per cent. survived; 6.52 per cent. developed a mild form of gas gangrene, and 4.35 per cent. died. In man equally good prophylactic and curative results were obtained. It was injected prophylactically in cases of extensive injury of the thigh or buttock, with infection by dirt and fragments of clothing and attrition of the tissues. For curative purposes it was injected in thir-

teen cases, of which four were already in a desperate condition or literally moribund, two having gaseous involvement of the walls of the abdomen, thorax, or dorsolumbar region. Eleven of these cases recovered. The twelfth had marked traumatic shock. Improvement of the local and general symptoms was very rapid, being manifest already in a few hours after injection of the serum.

**Advantages of Indirect Nerve Suture.**—Nageotte (*Paris médical*, July 20, 1918) has found experimentally that direct nerve suture exposes the limb to serious trophic disturbances of the muscles and skin and that these difficulties are obviated by interposition of a short dead nerve transplant between the two nerve ends. The number and calibre of regenerated fibres at the distal end are slightly greater after direct suture, but the functional recovery shows that the number of neurites passing through the scar is not the sole consideration; the manner in which they pass is equally important. The indirect suturing is done with two or three silk threads passed through the neurilemma. The dead transplants are obtained aseptically from calf fetuses fifty to sixty centimetres long, easily obtainable at abattoirs. They are fixed in fifty per cent. alcohol and kept in sealed tubes. Only four threads are used to hold them in place. These transplants remain at least a few weeks before absorption. Such treatment is practicable only in recent nerve injuries.

**Whitman's Abduction Treatment in Fractures of the Neck of the Femur.**—George M. Dorrance (*Pennsylvania Medical Journal*, June, 1918) describes the method as follows: The patient is etherized and placed upon a frame with a perineal bar; the thigh is then flexed upon the abdomen, adducted and extension applied. The thigh and leg are then abducted until the trochanter strikes the ilium above the acetabulum. It is then rotated inward and held in this position and a reinforced cast applied from just below the axilla to the tip of the injured foot, the other leg and thigh not being included in the cast. A pinch of cement applied to the plaster of Paris from which the bandages are freshly rolled not only increases the tensile strength but the rapidity with which the cast hardens. By these manipulations the fragments, if they are locked, are first unlocked by the adduction and then by the abduction with the trochanter against the acetabulum. The inward rotation so pulls the capsular ligament that the fragments are in approximate alignment. If the ideal is not obtained, at least they will unite at a right angle and the fractured ends will be in apposition. It is essential to have an x ray picture after the application of the cast to be sure the fragments are in apposition. The advantages of this method are that the fragments are placed in as near normal position and alignment as possible and held there in the cast, which not only immobilizes the fragments but the joints above and below. This allows the patient to be rotated and turned in any position without pain. He can rest easily on the abdomen or back. The patient can be placed out of bed in a wheel chair the following day. Certain conditions contraindicate its use—incontinence of urine or feces and the presence of a large hernia.

**Radium Treatment of Malignancy in the Mouth and Throat.**—Russell H. Boggs (*Pennsylvania Medical Journal*, June, 1918) has used radium in cases of epithelioma and sarcoma in these regions and concludes that its value is incontestable. Treatment varies according to the region and the nature of the lesion and the condition at the time radium treatment is instituted. While in many cases best results are obtained by a judicious combination of different therapeutic agencies, radium holds its own as a curative measure and supersedes all other methods as a palliative measure.

**Intraspinal Autoserotherapy in Pyocyanus Meningitis.**—J. Abadie and G. Laroche (*Bulletin de l'Académie de médecine*, July 2, 1918) add a new case of meningitis due to the *Bacillus pyocyanus* to the case reported by Chauffard and Laroche last year. The patient had had a penetrating wound of the skull with flow of cerebrospinal fluid, followed by subacute meningitis. The pyocyanus origin of the latter was shown by lumbar puncture and cultures and by the green color of the spinal fluid. The patient's serum agglutinated this organism in 1 in 1,000 dilution. Autoserotherapy was practised by intraspinal injection of three and five mls, respectively, of the patient's serum at an interval of two weeks. Rapid recovery followed. This form of treatment is somewhat similar to the isoterotherapy successfully applied by Netter in epidemic poliomyelitis, consisting of injections of serum from a convalescent or recovered case of the same disorder. In this case, however, autoserotherapy was indicated by the known presence of antibodies in the patient's own serum and the known difficulty in the penetration of antibodies from the general circulation into the meningeal spaces. Autoserotherapy had already been used successfully by one of the authors in protracted suppuration of soft parts resulting from war wounds.

**Soamine in Bronchial Asthma.**—B. N. Ghosh (*Glasgow Medical Journal*, June, 1918) recommends soamine in the interval treatment of true bronchial asthma. Some few cases improved on autogenous mixed vaccine, but several cases that improved with soamine failed to improve with vaccines. The cause of irritation giving rise to reflex paroxysms should always be sought. In cases in which egg albumen brings on asthma or urticaria, marked improvement occurs under calcium lactate and soamine. Cases showing no increase of eosinophiles in the blood do not improve under soamine, but these cases are few. The plan of treatment consists in giving one grain of soamine by hypodermic injection and increasing one grain with each injection until three grains are reached. At first the injections are given twice a week, and later, as the conditions improve, once a week for two or three injections. If paroxysms do not appear during this period, an injection may be given once a fortnight, and then once a month for one or two more injections. The number of injections required to produce total absence of paroxysms varied from six to eighteen—rarely more. Some patients, who used to have paroxysms almost daily, have been free from any attack for over one year. The mode of administration consists in boil-

ing one mil of water in a teaspoon, dissolving a soamine tabloid in it, and then injecting the solution in the arm, after local disinfection with tincture of iodine. The injection is not very painful; sometimes small nodular masses form, but these eventually disappear. No untoward results such as dimness of vision or albuminuria were ever noticed. Cases with chronic kidney lesions should, however, not be given the treatment.

**Treatment of Acute Poliomyelitis with Immune Horse Serum.**—E. C. Rosenow (*Journal A. M. A.*, August 10, 1918) presents further observations on the curative value of this serum and concludes that the results obtained in sporadic acute cases, as well as in the epidemic form of the disease, and in the experimental disease in rabbits are so striking as to leave little doubt of its merits. It is of the greatest importance in its use in treatment to recognize the poliomyelitis at the earliest moment. The characteristic syndrome of acute poliomyelitis should lead to immediate lumbar puncture for conclusive tests, but if there are symptoms suggesting involvement of the central nervous system and the spinal fluid shows increased abundance, increased cell content with a predominance of mononuclears and a positive globulin test, the serum should be given at once, no harm having thus been done should the further study of the case prove it not to have been poliomyelitis. In every instance the serum should be given intravenously and not into the spinal canal, since this mode of administration is not only more effective, but also because the injection into the spinal canal of horse serum may cause a reaction which will tend to increase the poliomyelitic involvement. The serum will be sent free to any one who desires to use it and who will furnish records of his cases.

**Sterilizing Action of Hot Formaldehyde Vapor.**—G. Louis and Rousseau (*Presse médicale*, June 9, 1918) agree with Chevassu that sterilization with formaldehyde obtained by heating trioxymethylene is unreliable; this is because the vapor thus formed becomes at once polymerized. Such is not the case, however, if one uses dry or but slightly hydrated formaldehyde gas. If the sterilizer is kept saturated with formaldehyde vapor throughout the period of sterilization; if a minimum temperature of 70° C. is supplied, and if the vapor acts for at least three quarters of an hour, perfect sterilization is obtained, the process being effectual even against the most resistant bacterial spores. In applying this method, which is especially suited for rubber gloves and instruments, metallic boxes are used in which, upon a double layer of gauze, are evenly sprayed three mls of forty per cent. formaldehyde solution previously neutralized with sodium or potassium hydroxide. On the gauze are then placed the instruments, which are covered with another double layer of gauze. The boxes are now placed in the hot, dry autoclave for three quarters of an hour at 70° to 80° C. Finally the formaldehyde vapor in the autoclave is removed by opening the large inlet for aseptic air and using the steam ejector for at least ten minutes. The efficacy of this mode of sterilization was shown by numerous bacteriological tests.



**Intravenous Injections of Hexamethylenamine in Infectious Diseases.**—Loeper and Grosdidier (*Presse médicale*, June 13, 1918) employed intravenous injections of urotropin solution, 0.25 gram per mil, prepared in the cold with sterile water, in typhoid diseases, bronchopneumonia, or lobar pneumonias, and hepatic and renal disease. The results were far better than those from oral or hypodermic administration of the drug. The intravenous injections always exerted a threefold action, antipyretic, sedative, and diuretic. More extensive use of the procedure is recommended.

**Magnesium Salts in the Treatment of Cancer.**

—Jules Regnault (*Bulletin de l'Académie de médecine*, July 9, 1918) states that, while using arsenic preparations for epithelioma in the course of the last eighteen years, he noticed that the best results were obtained with pastes containing magnesium silicate. At first he thought the silicate responsible, but when Robin, in 1913, called his attention to the presence of magnesia in the zone of natural defense around neoplasms, he continued the use of the magnesium salt, adding to it an eosin mordant. He had also found internal use of magnesia one of the best treatments for certain papillomatous warts. These various observations led him to prescribe hydrated magnesia and magnesium silicate—0.20 to 0.25 gram of each in a cachet twice daily—first in a case of papilloma, then in cases of epithelioma in conjunction with arsenic pastes locally, and finally in cases of inoperable cancer. In papillomas and superficial epitheliomas perfect results were obtained. In inoperable cancers the effects were not curative, but nevertheless encouraging, viz., arrest and even reduction of the tumors, marked diminution of pain, and improvement of the general condition. These results are ascribed to the phagocytotic action of magnesium compounds. The author now gives the magnesia and magnesium silicate cachets in all operated cases of cancer, with the aim of preventing recurrence. The cachets are taken only five days in every ten to obviate habituation.

**Severe Postmalarial Anemia.**—A. W. Harrington and W. Whitelaw (*Glasgow Medical Journal*, June, 1918) were impressed in Macedonia by cases of grave anemia, apparently of pernicious type. Careful examinations were made in eighty cases, all in Serbian soldiers, with the exception of a few Bulgarian and German prisoners. The twenty-two severe cases had red cell counts of two million or under, the fifteen moderately severe of three millions and under, and the remaining forty-three mild cases of over three millions. The severe cases presented all the signs and symptoms of pernicious anemia, but without evidence of oral or intestinal sepsis. The spleen was enlarged, sometimes considerably so. The blood showed, besides marked diminution of red cells, a high color index, leucopenia with a relative increase of lymphocytes and to a less extent of large mononuclears, poikilocytosis, megalocytosis, polychromasia, occasional granular basophils, megaloblasts and normoblasts, frequently a small percentage of myelocytes, and myeloblasts constantly. These cases occurred most frequently after subtertian malaria, but at times followed tertian. Recovery usually followed prompt, energetic

treatment, but sometimes death occurred; the gravity of the prognosis was found to increase with the age of the patient. Arsenic proved the best remedy, Fowler's solution being given by mouth in steadily increasing doses. In the worst cases and to those patients who could not take arsenic orally, kharsivan or galyl was given intravenously, with excellent results. Subcutaneous injections of new cacodyl proved no more efficacious than Fowler's solution. Galyl caused the parasites to disappear from the blood. The arsenic treatment should be combined with quinine, orally or intramuscularly. When indicated, iron was combined with arsenic.

**Occlusion of Inferior Vena Cava by Hypernephroma.**—V. C. Jacobson and E. W. Goodpasture (*Archives of Internal Medicine*, July, 1918) note that only forty-three cases of occlusion of the inferior vena cava by a new growth have up to the present been accurately described. In thirteen of these the growth reached as far as the right auricle or actually invaded it. In the authors' case a renal hypernephroma extended from the kidney into the left renal vein, traversed the inferior vena cava below as far as the iliac bifurcation and grew upward into the right auricle and right ventricle, causing mechanical embarrassment of the tricuspid valve. The orifices of the hepatic veins were plugged with the tumor, and there was acute central necrosis of the liver from thrombosis of the hepatic vein and its branches. Sudden enlargement of the liver was accompanied by the onset of acidosis, which continued until death, twenty-four hours later. Where signs of obstruction of the inferior vena cava already exist, sudden enlargement of the liver coincident with onset of acidosis probably means acute thrombosis of the hepatic veins.

**Prevention of Simple Goitre in Man.**—O. P. Kimball and David Marine (*Archives of Internal Medicine*, July, 1918) present reports on the prevention of simple goitre, by small doses of sodium iodide, in large series of schoolgirls in Akron, Ohio. In one series, the number of pupils taking the prophylactic treatment was 764 and the number of controls 1,879. In May, 1917, and again in November, two grams of sodium iodide were given in 0.2 gram doses each school day to pupils from the fifth to the twelfth grades. Not a single pupil in whom the thyroid had been normal at the first examination and who took the iodide showed any enlargement of the gland at the examination in November, 1917; of those not receiving iodide, twenty-six per cent. showed definitely enlarged thyroids—some moderately large goitres. Further, a therapeutic effect was clearly shown, one third of the enlargements marked small goitres having disappeared, and one third of those marked moderate goitres showing a decrease of two cm. or more. Among over 1,000 girls who took the full treatment only five developed any noticeable rash. None of these gave any trouble, the condition lasting only three or four days. In not a single instance was the possibility of producing symptoms of exophthalmic goitre by the small doses of iodide substantiated. Results are held to confirm the authors' earlier conclusion that, of all diseases, simple goitre is probably the easiest to prevent.

# Proceedings of National and Local Societies

## THE AMERICAN PEDIATRIC SOCIETY.

*Thirtieth Annual Meeting, Held at the Curtis Hotel, Lenox, Mass., May 27, 28, and 29, 1918.*

*(Continued from page 532.)*

**Standards for Growth and Nutrition.**—Dr. L. EMMETT HOLT presented this paper and showed charts giving the weight curves from observation upon over 50,000 boys of different nationalities, both in this country and abroad. Weight to age variations were so wide as to make this relationship of very little value when taken alone. The normal variations in the weight of healthy children of the same race were from ten to fifteen pounds between the sixth and the tenth years, while from the tenth to the sixteenth year the range was from twenty to forty pounds. In a private school in New York for boys who came from the wealthiest homes, the weight range from the twelfth to the sixteenth year was forty to fifty pounds, all being taken with clothes and by the same physician. Height to age variations were still less significant. Height was even more influenced by race and family inheritance than the weight. Children of the wealthier classes exceeded those of the less favored in height much more than they did in weight. The relation of the height to weight was the only one which was really important as indicating the state of nutrition, but here also considerable variation existed in healthy children. A child's nutrition might be considered below the normal when he was ten per cent. below weight for his height between the sixth and the tenth year, or twelve per cent. below from the eleventh to the sixteenth year. The best guide to the state of nutrition, more important than either of the foregoing, was the annual rate of increase of weight and height. The annual increase in weight was from four to six pounds a year from the sixth to the tenth year, while it rose to an average of thirteen pounds in the fifteenth year. Girls gained at the same rate as boys up to the tenth year, but surpassed them for the next three years. The annual increase in height varies normally less than in weight. The average increase was from one and three quarters to two inches a year from the sixth to the eleventh year. It rose to its highest point in boys from the thirteenth to the sixteenth year, when it was usually two and one half to three inches a year. In girls it was highest from the tenth to the fourteenth year. As a rule in healthy children, growth in height and weight were along parallel lines. On insufficient food growth in height might go on, though observations on 1,243 school boys between the ages of ten and sixteen years showed that they increased in weight one and one quarter pounds more in the six months from May to November than from November to May and that the gain in height was 0.38 inch more during the first named period.

Dr. FRITZ B. TALBOT, of Boston, said that they were in great need of just such figures as Doctor Holt had given, in their work in the Carnegie Laboratory. In their metabolic work they had found

such a divergence in the basal metabolism that they did not know where to find the normal and they first had to come to a conclusion as to what the basal metabolism was, and the normal relations between height and weight. There was quite a variation between height and weight in normal children. In the new born they had been able to establish a ratio between the metabolism and the body weight and it was most probable that there was some such relation between weight and height as they had found between weight and metabolism.

Dr. GODFREY R. PISEK, of New York, said there was need for just such an estimate as Doctor Holt had given. Many observations had been made in young children and in children of school age, but there was a gap between the ages of two and six years. Many of the observations in reference to weight and height that had been made were unscientific, but when observations were made by a member of this society or under his supervision, then the figures were reliable.

Dr. JOHN LOVETT MORSE, of Boston, stated that some observations with reference to the rapidity of growth at different seasons of the year showed that growth in height was most rapid in the spring and gain in weight most rapid in the autumn, and not most rapid in the summer as Doctor Holt had found in this series of observations.

Dr. J. P. CROZER GRIFFITH, of Philadelphia, stated that he had been interested in the growth and gain in weight of children during the neglected period of childhood—between the ages of two and six years—and he had made observations on over 200 children. All these children were weighed undressed, while all the observations made on older children were made with the clothes on. This led to a discrepancy between the figures for the younger children and for those who were older unless some allowance was made for the weight of the clothes. Attention should be called to this point so that the general practitioner would make an allowance for the weight of the clothes.

Dr. ALFRED F. HESS, of New York, said that during the past six or seven years he had been following the weights and heights of children that were undernourished. It had been his experience that they did not gain well in the summer months. He thought the reason Doctor Holt had noted a greater gain during the summer might be because these boys were out of doors and led a freer life during the summer. To be of practical value he believed that figures should be based on observations made on hundreds of thousands of children.

Dr. CHARLES HENDEE SMITH, of New York, said that in the nutritional classes of the outpatient department of Bellevue Hospital they had charted the height and weight of the children. These in a large number of the children ran below the average standards of Bowditch; they ran somewhere through the middle of his curves. They had found that undernutrition as well as age affected growth in height. These children could be made to grow in height as well as to increase in weight by careful



feeding. The factor of heredity also had a great influence. The children of taller parents if treated properly could be made to grow more rapidly than those whose parents were short.

Doctor Holt, in closing the discussion, emphasized the point that the normal curve was not a line but a zone and a much wider zone than we had appreciated and that was what the curves he had exhibited showed. Bowditch made his observations twenty years ago and it was said that the children of the present generation were taller than those of the previous generation. Doctor Griffith spoke of the weight of the clothes. Doctor Bowditch had shown that the weight of the clothes in boys and girls averaged very closely to the same figures. As to the question of more rapid growth in winter than in summer. The time from October to May occupied the period of outdoor life and perhaps that was the explanation of the more rapid growth during this period. In the records of individual boys the gain in weight and height was almost symmetrical, unless there was sickness, which sometimes made a difference. Perhaps in connection with this subject the Dunfermline scale should be mentioned, though Doctor Holt said he could mention it only to condemn it. Doctor Baker had had 170,000 school children in New York City examined by this scale and reached results that were quite at variance with what was true.

**Complement Fixation Test for Tuberculosis in Infancy.**—Dr. HENRY HEIMAN, of New York, stated that in the Pediatric Service of Mount Sinai Hospital the sera of fifty-nine patients from six to twelve months of ages were tested for tuberculosis, using the Wassermann system and the antigens of Miller and Petroff. Of these cases sixteen were tuberculous, six probably tuberculous, and twenty-eight were nontuberculous. Among the former group were six cases of tuberculous meningitis. Complement fixation reactions on the blood of these patients with both antigens was negative in four and suspicious in only two. Of seven patients with pleural effusion one was definitely tuberculous, three were probably tuberculous, and in three others the causative factor could not be definitely determined. In these cases the complement fixation tests were negative with both antigens. The serum of the three patients in whom the etiology was not definitely determined gave negative reactions also. Of six children with pulmonary involvement, two being cases of milary tuberculosis, all gave negative reactions with both antigens. One case of tuberculous peritonitis gave a negative reaction with both antigens. The diagnosis was subsequently confirmed by autopsy. Among twenty-eight cases with no signs or symptoms of tuberculous infection, complement fixation tests revealed three strongly positive reactions, one faint inhibition and one suspicious reaction. In view of the very favorable results reported by other men with the same antigens in general groups of individuals, before discarding the test for children the experience of others in this field would have to be ascertained.

Dr. PAUL ARMAND DELILLE, of France, stated that some years ago he had made complement fixa-

tion tests in tuberculous children and adults, using different tuberculins. He had found exactly what Doctor Heiman had found, namely, that in differentiating the tuberculous from the nontuberculous the complement fixation test was of no value. In fact he had obtained more positive results in healthy children than in children sick with tuberculosis.

Dr. J. P. SEDGWICK, of Minneapolis, expressed the opinion that the result with the complement fixation test in tuberculosis was largely a question of antigen. Doctor Larsen of the University of Minnesota had a better antigen than those now being used, and one which was giving very remarkable results. Doctor Larsen had been in France and was unable on that account to publish his results. The complement fixation test for tuberculosis should not be discarded as valueless until Doctor Larsen had time to publish his work.

Doctor Heiman agreed with Doctor Sedgwick that the complement fixation test for tuberculosis should not be discarded but thought that a further improvement in the technic was necessary.

**Pyloric Stenosis: Operation by the Rammstedt Method.**—Dr. CHARLES GILMORE KERLEY, of New York, said that these twenty-six cases of pyloric stenosis had occurred in his private practice since 1914. Of the patients seventeen were boys and nine were girls. The child weighing least at operation was four pounds, two ounces; the birth weight was five pounds, eight ounces. This infant made an uneventful recovery. The onset of the vomiting was abrupt in all these cases, except one. Twenty-three were entirely breast fed at the onset of the vomiting. The vomiting in all cases was projectile. The peristaltic wave was present in every case. A tumor was palpable in all the cases but one. The tumor could best be palpated when the stomach was empty. It was most frequently located above and to the right of the umbilicus. There was no post operative vomiting in seventeen cases; nine patients vomited postoperatively, but these recovered. Postoperative temperature above 101 was noted in seven cases. Four cases terminated fatally, a mortality of 15.3 per cent. Three of these children were in wretched condition, and the fourth baby had vomited for ten weeks, but in spite of this was in fairly good condition. Immediate operation was advised, but the family persuaded Doctor Kerley to keep the child under observation for a few weeks. The child developed a gastrointestinal affection and in three days the operative risk had risen fifty per cent. This child died in collapse five hours after the operation. Doctor Kerley described the post operative management of these cases which was that evolved by Doctor Holt at the Babies' Hospital and was extremely important. Feeding was begun an hour and a half after the operation when ten c. c. of water was given. Two hours later the same quantity of barley water and breast milk was given. The amount was very gradually increased and at the end of forty-eight hours the barley water was discontinued. The baby was not permitted to nurse until the eleventh or twelfth day, and measurement of the food must be kept up a week longer by

weighing the baby before and after feeding. It was important for an hour or two after the operation to keep the head of the bed lowered to prevent the aspiration of mucus into the larynx. A low mortality in these cases depended on early diagnosis and immediate operation. Operation by the Rammstedt method, which meant a rapid operation, would in the hands of a competent surgeon give a mortality of about five per cent. The surgical risk which the patient offered depended in a large measure upon the duration of the vomiting. Sudden and unexpected death in the palliatively treated cases was not uncommon.

Dr. L. EMMETT HOLT, of New York, stated that their experience with hypertrophic stenosis of the pylorus included about 200 cases, and the more he studied the matter the more he was convinced that the treatment was operative. In 100 cases in which vomiting had not lasted over four weeks the mortality was forty per cent., while in those in whom the vomiting had lasted over four weeks it was fifty per cent. This showed very clearly that the chances from operation were very much better if the operation was performed early. While the risk of operation was something to be considered, the risk of not operating was greater than the risk of operation. Hemorrhage occurred in very few cases. In their last fifty or seventy-five cases there had not been a serious complication. They gave food immediately after the child came out of the anesthetic, and gradually increased the amount until at the end of forty-eight hours the child was getting an ounce of breast milk at a feeding. At the end of a week the child was getting two ounces, but the child was never put on the breast until nine or ten days after the operation. The after treatment of these cases was much more difficult than the operation.

Dr. JOHN HOWLAND, of Baltimore, did not advise any special method of treatment for these cases but thought it was possible to cure a great many of them without operation. In their last thirty cases they had had eight operations and all recovered. Twenty-seven of the thirty cases recovered. He thought a great deal could be done for these cases by careful, consistent, patient treatment. There were some cases that could not be treated in that way and under serious circumstances operation should be done at once. Patients with hypertrophic stenosis of the pylorus could not be cared for at home and they could not be treated by operation without breast milk. Operation did not stop the vomiting in all cases. He had had babies that after operation vomited for several weeks—almost as badly as though they had not been operated upon. One could not necessarily say that a tumor represented a large mass of hypertrophic tissue; the spasm was what counted most. To have immediate recourse to operation because there were peristaltic waves and a tumor was most unwise.

Dr. ALFRED F. HESS, of New York, agreed with Doctor Howland that operation was not always necessary in cases of hypertrophic pyloric stenosis. The operation had been so simplified that the tendency was to do it too frequently. The prognosis depended not upon how long the baby had vom-

ited, but it was a question of the operator. It took a very skilled man to do this operation and get good results. He thought the spasm was present in every case and that active peristalsis did not necessarily mean hypertrophy. A catheter could frequently be passed through a pylorus where there was active peristalsis, and even where there was a tumor one might be able to get the catheter through. It had also been noted that during the last forty-eight hours of life there might be diarrhea and the pylorus would be found relaxed, so that the catheter could be passed through it easily, whereas during the previous week or two this had been impossible.

Dr. HENRY DWIGHT CHAPIN, of New York, cited an instance in which a child died within forty-eight hours after the Rammstedt operation was performed and at autopsy it was found that the food had gone through into the peritoneal cavity. The surgeon had gone too far and cut through the mucous membrane.

Dr. HENRY HEIMAN, of New York, said that every case of this kind should be treated on its own merits. He thought that to place dependence on the length of time that vomiting had lasted was not so important as to watch the feces.

Dr. WALTER REEVE RAMSEY, of St. Paul, believed that a progressive and continuous loss of weight was always an indication for operation in these cases.

Dr. HENRY F. HELMHOLZ, of Evanston, Ill., reported on a series of fourteen cases of hypertrophic pyloric stenosis treated by himself and his associate, with thick cereal gruel. He stated that these cases all showed the typical symptoms of pyloric stenosis. They found that if the cereal was not thick enough it would not stay down. Thirteen of the fourteen cases recovered without operation; the other case was operated on and that also recovered.

Dr. H. M. McCLANAHAN, of Omaha, stated that he had had, in all, fourteen cases of this condition and his mortality had been higher than that given by Doctor Kerley. He believed there were cases of spasm and cases of stenosis and cases of a combination of both spasm and stenosis. When the stools contained nothing but bile and mucus then surgical interference was absolutely essential. The experience of the Mayo Clinic had shown that traumatism and exposure of the bowel was an important factor influencing the mortality. He had had a case in which vomiting had persisted after operation and he had seen two post mortems; one of these infants died of hemorrhage on the fifth and the other on the second day after operation. Dr. McClanahan emphasized the fact that one might have spasm without stenosis and these cases would naturally get well without operation.

Dr. J. P. CROZER GRIFFITH, of Philadelphia, said he had formerly delayed operation and treated these cases medically. He had had cause to regret delay, but he had had no cause to regret operation. If there was a spasm present and one did not know whether there was hypertrophy or not he was inclined to favor operation. He favored operation more frequently than he formerly did and at an earlier period.



Dr. JOHN LOVETT MORSE, of Boston, expressed surprise at the difference of opinion in regard to hypertrophic stenosis of the pylorus. He said it was difficult for him to understand how, with stenosis still present months after a gastroenterostomy, any method of medical treatment could be successful. When a diagnosis of hypertrophic stenosis of the pylorus had been made, an operation was in order. It seemed to him that the Rammstedt was the preferable operation. It required a good surgeon, who could do the operation in ten minutes.

Dr. OSCAR M. SCHLOSS, of New York, called attention to the possibility that in these children with hypertrophic stenosis of the pylorus the diminished intake of fluid and the lessened excretion of urine might cause a retention of waste products and a resulting acidosis that might have a deleterious effect in case of operation.

Dr. DAVID M. COWIE, of Ann Arbor, said the advisability of operative treatment depended upon the degree of stenosis present, whether the stenosis was of large or small calibre. He thought that the cases with a stenosis of large calibre might be treated medically. As time passed the calibre of the stenosis enlarged with the growth of the stomach.

Doctor KERLEY, in closing the discussion, said that the cases in this series had all been treated palliatively before coming under his care. They were cases of hypertrophy and not of spasm alone. In some of the cases a knitting needle could not be passed through the pylorus. Dr. Kerley said he had passed through all the stages of palliative, nonoperative treatments, and of waiting to see what would happen, and he had seen the children die. His conclusion had been reached as the result of observations on sixty or seventy cases. Presence of a well marked palpable tumor was necessary for diagnosis. Those who would not accept that as a diagnostic sign now would do so when they had seen a few more cases.

#### Value of Auxohormones in Infant Feeding.—

Dr. E. W. SAUNDERS, of St. Louis, described a series of cases occurring in his practice in which the clinical course was as follows: A baby, previously apparently healthy, was suddenly taken ill and died unexpectedly. The symptoms presented were insomnia, frantic nervousness, vomiting, and loathing of the particular food upon which the child had been fed. In addition there would be momentary slight convulsions, rapid pulse, slight or no fever, and acetone breath. Occasionally tetany was manifested in the hands or feet. Death came without warning. A study of the etiology of these cases showed one common factor, viz., a history of prolonged feeding with only a dead food. There was a class of fat rickety cases due to a certain tinned food, another class, a peculiar type of Barlow's disease, due to another brand of patent food, and nine tenths of the writer's cases were found to have subsisted for many months on a third variety of these destroyers. In the treatment of this condition much might be hoped from the prompt and vigorous employment of glonoin dropped upon the tongue, and exclusive tube feedings, using a live rennet whey containing a rapidly increasing per-

centage of unsterilized cream, autolyzed yeast, and green vegetable juices. In extreme cases a very small hypodermic of morphine and atropine was given, but ordinarily a fractional dose of veronal acted as a sedative and antiemetic. Calcium bromide and phosphates seemed to be beneficial in all cases. The author attributed the condition described to the lack of vitamins in the food and said that if we did not stop the craze for high sterilization we would have a nation of rickety dwarfs. To protect against this tendency we might feed with yolk of egg, never white; honey, by which a child would profit more than by other sugar, and vinegar, which he had used for the past two years with increasing satisfaction, and which authorities said enhanced the value of vitamins. Gruels of natural grains, ground whole, had proved far more acceptable than the one per cent. decoctions of devitalized grains. Baby's milk might be constructed out of an ounce or more of coconut oil, emulsified with natural gruel which had been boiled with cabbage and sweetened, preferably with honey. The patient foods for babies were destitute of vitamins and glandular fat and of an adequate mineral content and in whole or in part deserved governmental supervision in the interest of the children. Doctor Alsberg, chief of the Department of Chemistry, was anxious to meet a committee of the society with a view to formulating a bill to be presented to Congress requiring a label on all patent foods showing whether they contained hormones and antiscorbutics. Every parent should be taught the value of green vegetable juices and of honey and the deadly effect of dehornonized cereal foods like polished rice, which, however, could be rendered harmless by the addition of domestic yeast.

(To be continued.)

## Letters to the Editors.

### SPANISH INFLUENZA.

1330 WILMOT AVENUE, ANN ARBOR, MICH.,

August 14, 1918.

#### To the Editors:

This disease, called in Madrid slang, the Naples soldier, is rapidly extending all over Europe, especially in Switzerland and South Germany. Many foolish things have been said about this disease especially in the newspapers. Notes for this article were taken from a paper by Doctor Hernandez, professor of therapeutics in St. Carlos Medical School of Madrid. Doctor Hernandez, together with Doctor Marañon, Doctor Espina, and Doctor Elizagaray from the General Hospital, Doctor Hinojar from the Medical School, Doctor Martin Salazar, General Inspector of Health, and Doctor Cortés, Ex-minister of Public Instruction and President of the Royal Board of Health, all think that the epidemic is identical with grippé. Doctor Pittaluga, on the contrary, thinks that the disease is new. His position as professor of parasitology and tropical diseases in Madrid Medical School lends authority to his statement.

In some cases the period of incubation lasted but twelve hours; in others the period was two, three to eight days. The disease appears suddenly with pain all over the body, severe headache, asthenia and fever with a temperature of 37.5° C. to 41° C., lasting for a variable period, according to the intensity of the infection and the presence of complications. Slight coryza and anorexia were frequently present. In some patients the disease is generalized throughout the whole system; in others, there

is a marked predilection for one system. Tonsillitis and bronchitis may develop, and though the attacks are generally mild in form, they may become more intensive. The bronchitis may develop into a pneumonia. This may have two forms: Ordinary pneumonia, and fibrinous or lobar pneumonia, giving the bronchopneumonia picture. Vomiting sometimes occurs, associated with either obstruction or diarrhea with colic and tenesmus. Some patients have delirium and convulsions that together with the vomiting constitute the pseudomeningitic feature of the grippé. Frequently Spanish influenza arouses other latent diseases to full activity. In tuberculosis, the disease was accelerated when already in the advanced stages, or was set in evidence when latent.

In the Spanish epidemic, the first cases were more benign than those occurring later; perhaps because of exalted microbic virulence. The fatal cases were due to disease of the respiratory tract. The reports of the mortality have not been exaggerated; many cases of severe character are now frequently seen in Switzerland.

Examinations carried out by the Spanish bacteriologists chiefly by the Epidemiology Section of the Alfonso XIII Instituto, under the charge of Ramón y Cajal and Tello, resulted in the finding of the Pfeiffer bacillus in a great many cases and diplococci from the meningococcus and pneumococcus group, closely associated with Pfeiffer's bacillus. In many epidemics, however, the Pfeiffer's bacillus was not found (Clemans, Jochmann, Besançon). In one Leipzig epidemic, studied by Cursmann, no Pfeiffer's bacillus was found.

Prophylaxis is much too difficult to carry out on account of the rapidity of the spread of the disease. In Madrid, in about fifteen days there were about 150,000 patients. Prophylactic measures to be efficacious would necessitate the isolation of all cases; but in many cases the attack is so benign that the patient is unaware of the disease. Germ carriers would present another difficulty.

The regular hygienic measures must be carried out; open air, baths, mouth and nose disinfection. Kissing and infectious contacts must be avoided. Thorough disinfection of handkerchiefs and sputum must be carried out. No really efficient method of treatment is known. As only one case in 1,000 is fatal, a useless treatment has an apparent chance of success in 999 cases. Symptomatic therapeutics and treatment of complications as they arise is the course to be followed.

JOSÉ LUIS CARRERA,  
Former interne of Madrid Medical School, Pensioner of  
the Spanish Government in the United States.

## MILK AS A GALACTOGOGUE.

NEW YORK, September 20, 1918.

### To the Editors:

In the August 31, 1918, issue of the NEW YORK MEDICAL JOURNAL there appears an article by Leroy S. Palmer, Ph. D., and C. H. Echels, D. Sc., of the Department of Dairy Husbandry, University of Missouri, under the title of Milk as a Galactagogue, referring to an article previously written by me that appeared in the January 6, 1917, issue of the NEW YORK MEDICAL JOURNAL under the title of A New and Powerful Galactagogue. There I distinctly stated, "The technic consists in injecting one c. c. of the mother's milk into her subcutaneous tissues, under strict asepsis. In two days, repeat, and if necessary, in five days repeat again. This treatment is particularly applicable in cases where the delivery has been recent and in which the supply of milk is quickly diminished." In this article the writer reports cases treated successfully both by him and other physicians. These include three cases treated by Dr. A. J. Nossman, of Pasoga Springs, Colo. The writer commented on these, telling Doctor Nossman how he believed his technic could be improved. Dr. Harvey D. Morris, of Port Arthur, Tex., is quoted as stating, after treating many mothers whose supply of milk had become scanty immediately after delivery, "The injection of mother's own milk will stimulate the mammary glands when all other known methods fail."

Dr. Alexander L. Blackwood, of Chicago, Ill., author of several widely used medical textbooks, has been using this method successfully for several years and values it highly, as does also Dr. Clement A. Shute, of Pottstown, Pa.

Dr. R. Becerro, in an able article on the subject that appeared in the *Revue de thérapeutique médico chirurgicale*, reports favorable results where there has been a sudden cessation of mother's milk. He compares it with other well known and accepted methods of treatment and points out the superior therapeutic advantages it possesses over these.

Since then others have verified this treatment. Among these are Dr. J. H. Wilms, of Cincinnati, Ohio, who not only reports having treated a number of cases successfully where the delivery has been recent, by hypodermically injecting a few drops of the mother's own milk, but one case where the supply of milk had been stimulated a much longer time after delivery than the writer had any idea this treatment would prove effective. A review of this latter case is interesting at this time, in view of this discussion. Doctor Wilms reported this case and many others in a paper read before the local County Medical Society in Cincinnati. "The milk failed thirty-five days after delivery. There was scarcely enough at first for the injection, but a few drops were injected. In a week he injected five drops; the supply had increased. In another week he injected twenty drops. He again made an injection of the patient's own milk at the end of another week. After this the supply increased in quantity, and the quality was good, till the patient was able to nurse her child as she did before the milk failed."

In the article referred to, in the opening paragraph, Doctor Palmer and Doctor Echels state (the italics are ours): "Two experiments were performed to determine the effect on injecting the milk of the fresh cow on the daily milk flow of the cow more advanced in lactation. One experiment was also carried out to determine whether the milk has an immediate action on the mammary secretion when injected from a heavy milking cow which had recently freshened into one which had lost some of its natural stimulus, due to advanced lactation." As the result of these tests they make the following statement: "Unfortunately it appears no new and powerful galactagogue has been found in cow's milk." This statement is based on tests, not one of which is in conformity or accordance with the technic advanced in my article. They apparently entirely lost sight of the auto factor that enters into the technic of all the cases reported in my paper. Furthermore there is no evidence in any of their tests that the supply of milk in any animal treated by them had failed immediately after delivery.

It appears that the Department of Dairy Husbandry of the University of Missouri is to be congratulated on the skill and wisdom some of its members possess in interpreting plain English.— CHARLES H. DUNCAN, M. D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Civic Biology.* A Textbook of Problems, Local and National, That Can Be Solved Only by Civic Cooperation. By CLIFTON F. HODGE, Ph. D., Professor of Social Biology in the University of Oregon, Author of *Nature Study and Life*; and JEAN DAWSON, Ph. D., Department of Sanitation, Board of Health, Cleveland, Formerly of MacDonald College, Canada, and Cleveland Normal School, Author of *The Biology of Physa and Boys and Girls of Garden City*. Illustrated: New York: Ginn & Co., 1918. Pp. x-380.

This book strikes a new note in the progressive chorus that makes for better living and we welcome it and would encourage our readers to know more specifically of its aims and purposes. Never has there been a time when all kinds of knowledge could be so utilized by those who have it—by which civic happiness might be encouraged and made a practical issue of daily life. Our bird life, the trees,



the soil, the water rats, flies, mosquitoes, the San José scale, hookworms, diphtheria, tuberculosis, these are among us—in profusion—and causing untold distress, discomfort, and unrest.

If individual citizens knew what to do about such things—that is, knew enough to get together and stop wrangling about the nonessentials—then these could cease to be.

The ideal here taught is that of a cooperative good will in attack on these problems. Thus is built up a mass of principles of inestimable worth to society and a sound civic psychobiology is made effective. This book is an attempt to get together on essentials along many of the lines indicated; a short, practical manual of things everybody would do well to know in order to live comfortably.

*Essentials of Dietetics.* By MAUDE A. PERRY, B.S., formerly Dietitian and Instructor in Dietetics at Michael Reese Hospital, Chicago, Illinois; Corresponding Secretary of the American Dietetic Association; Red Cross Dietitian for Base Hospital Unit No. 14. St. Louis: C. V. Mosby Company, 1918. Pp. 160.

This small work is a really excellent elementary text on dietetics for nurses. Its most conspicuous feature is its perfect adaptation to the pupil nurse's needs. It is addressed directly to nurses, and throughout this purpose is adhered to rigidly. Miss Perry knows her subject and is expert in presenting it clearly, concisely, and simply. We commend especially her brief, almost choppy sentences and her positive style, which tend to clarify and drive home essential points. Qualifications or exceptions to statements are taken up immediately and discriminately and without confusing detail. Emphasis upon individualization is another good point which comes up repeatedly throughout the book under many different topics. The material has been well selected from this extensive subject and serves to establish a foundation either for successful general nursing or for further specialization.

*Principles and Practice of Infant Feeding.* By JULIUS H. HESS, M.D., Major, M.R.C., U. S. Army, Active Service, Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine; Chief of Pediatric Staff, Cook County Hospital; Attending Pediatrician to Cook County, Michael Reese, and Englewood Hospital, Chicago. Illustrated. Philadelphia: F. A. Davis Company, 1918. Pp. xii-338.

There is always room for another text in this highly important field and room for improvement upon previous texts. Hess's object here is, modestly, not so much to improve upon the many excellent but voluminous works covering this subject, but to present it in concise form in a small volume. This manual, "to be used in preparation for clinical conferences by teachers and students," should find a definite place for this purpose. In addition, it is characterized by a clear and workmanlike style, scientific accuracy, and practical common sense. A great deal of the latest and most valuable material is given here and every effort has apparently been made to make this small work a real contribution toward solving the problem of first year infant mortality, always of paramount importance, but at present even more imperative. Introductory chapters on the anatomy and physiology of the digestive tract of the infant and metabolism in the infant give the necessary foundations. Part

II, on Nursing, contains valuable chapters on maternal nursing and wet nursing, the nursing infant, mixed feeding and weaning, nutritional disturbances in the breast fed infant, and methods of feeding premature infants. Part III discusses fully and definitely artificial feeding and Part IV nutritional disturbances in artificially fed infants. An appendix contains much important miscellaneous matter bearing on the subject.

*The Treatment of War Wounds.* By W. W. KEEN, M.D., LL.D., Major, Medical Reserve Corps, U. S. Army, Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. Second Edition, Reset. Philadelphia and London: W. B. Saunders Company, 1918.

Major Keen performs a great service in this rapid up to the minute report on war work. Things are moving so quickly; scientific progress of a decade is accomplished overnight; the literature is enormous and one cannot keep up with it and carry at the same time the increased load of professional work, both war and civilian. This short, pithy, and authoritative résumé of work at the front "does not pretend to be complete, but is only a memorandum on some of the more important and most recent improvements in the treatment of war wounds." Major Keen has added much very important material to his interesting and valuable first edition. He includes work on acriflavine, proflavine, and brilliant green, and the latest technic on the paraffin treatment of burns, work with dichloramine-T, and the simplified technic of Dakin for the treatment of infection in wounds, and the antitoxin against gas gangrene. He has condensed from very recent current literature and other sources, as, for instance, personal correspondence with Bowlby, Blake, Crile, Halsted, and Heiser, in this small volume, the vast practice of war surgery and leavened it with critical discussion and judgment from his own rich experience. Comment on particular phases of the wonderful development of technic would be unjust and perhaps unnecessary for readers who are familiar in a general way with the marvels of the surgery of today. We recommend this little work for its general surgical interest, as a source of special information and for its bibliographies.

## Births, Marriages, and Deaths.

### Died.

DEMAREST.—In White Plains, New York, on Wednesday, September 18th, Dr. John H. Demarest, aged eighty-two years.

DENNING.—In Boston, Massachusetts, on Wednesday, September 18th, Dr. Frederic J. Denning, aged thirty-three years.

HANDS.—In Cambridge, Massachusetts, on Wednesday, September 18th, Dr. H. A. Hands, aged sixty-six years.

McGOWAN.—In Philadelphia, Pennsylvania, on Saturday, September 7th, Dr. Joseph A. McGowan, aged forty-three years.

SHOLLENBERGER.—In Reading, Pennsylvania, on Monday, September 16th, Dr. Louis A. Shollenberger, aged thirty-three years.

STEVENS.—In Marlboro, Massachusetts, on Wednesday, September 18th, Dr. Charles E. Stevens, aged forty-three years.

WARNER.—In Red Bank, New Jersey, on Tuesday, September 10th, Dr. William B. Warner, aged fifty-eight years.

# New York Medical Journal

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## Original Communications

### THE GENERAL DIAGNOSTIC STUDY BY THE INTERNIST.\*

*Cooperating with Groups of Medical and Surgical  
Specialists.*

By LEWELLYS F. BARKER, M. D.,  
Baltimore.

(Concluded from page 542.)

#### DIAGNOSTIC CONCLUSIONS OR BELIEFS.

To verify a diagnostic inference after having found out what it implies, we must establish the identity of the facts with its implications. Correspondence with what has been, or can be, observed is the only legitimate proof of a diagnostic hypothesis. We test an idea that we have tentatively entertained and rationally elaborated by seeing first whether it can be identified with the conditions that are actually observable in the patient, and, secondly, whether the distinguishing criteria of rival tentative ideas of diagnosis can be proved to be absent. In this testing we may, as we have seen, be compelled both to extend our direct observation of the patient and to make certain additional experiments that will permit the making of special observations that will strengthen or weaken the suppositional inference. In other words, after we have thought, we must again observe in order to corroborate, or refute, a tentative diagnostic conjecture. In our infected patient with palpable spleen, fever, and leucopenia, we may on closer observation discover some previously overlooked rose spots; or we may find on the lip a slight herpes that had been passed over as insignificant; or, again, on looking carefully through a stained smear of the blood we may find a single crescent shaped malarial parasite, or we may make a culture from the blood in bile bouillon, grow a motile bacillus, and on testing it find that it is the *Bacillus paratyphosus*; or we may after the application of many tests still remain in doubt as to the cause of the infection until a week or two later, perhaps, we find ourselves able to demonstrate the presence in the blood of specific agglutinins previously non-demonstrable. Diagnostic suggestions elaborated by reasoning have to be tried and tested until some one of them is corroborated and verified. Then, and only then, should we permit ourselves to accept an inference, to conclude that it is correct, to believe it. Even when all these precautions are taken we shall sometimes make mistakes in diagnosis. Who among us, including the most careful,

does not occasionally arrive at a diagnostic conclusion that he is later compelled to revise? But if we recognize how difficult diagnosis is, if we try to observe accurately ourselves and enlist the aid of experts in accurate observation in special domains in the collection of data, if we develop fully the implications of the diagnostic suggestions that occur to us and compare these with the data observable before permitting ourselves to arrive at diagnostic conclusions, in other words, if we apply the method of science to clinical diagnosis, we can feel sure that we are working in the right way, and that as we grow in knowledge and experience we shall become as good diagnosticians as is possible within the limitations placed by our natural endowments and our opportunities.

#### APPENDIX.

To illustrate my own application of the methods in everyday diagnostic work, very brief summaries of four cases recently studied may be given.

CASE I.—Male, age forty-one; lawyer; seen October 19, 1917. No. 1157. Complaint: Attacks of "unconsciousness." *Drumstick* (summary): Healthy until present illness, except for recurring tonsillitis, old antral infection (right), and an attack of functional aphonia (1913). Slight vertigo at times on sudden movement of head. Married fourteen years; wife never pregnant; denial of venereal infections. Excessive use of alcohol and tobacco. Family history negative, except that one sister is hysterical. No epileptic ancestry.

In April, 1916, while eating in a restaurant, fell unconscious (twenty to thirty seconds). During next three months five similar attacks, three at table, two on rising from bed. No more attacks until September, 1917; severe attack while at table eating; fell to floor; unconscious (five to six minutes); bit tongue; confused after attack. In October, 1917, similar severe attack. Home physician regarded earlier attacks as psychogenic, but has been led by later attacks to the diagnosis of epilepsy.

*Physical examination (summary):* Height, five feet ten inches; weight, 212 pounds; calculated ideal weight, 165 pounds; some dead teeth; gingivitis; pigmented eyelids; slight struma with slight eye signs; blood pressure, 125/90; phimosis; scanty hair; transverse crines; hypoplasia of gonads and phallus; small prostate; reflexes normal.

*Laboratory tests requested:* Blood; cerebrospinal fluid; gastric contents; feces; urine.

*X ray tests requested:* Stereoscopic of skull; paranasal sinuses; teleroentgenogram; gastrointestinal tract; teeth.

*Examinations by specialists requested:* Neurologist; psychiatrist; ophthalmologist; rhinologist; dentist; urologist.

#### LABORATORY REPORTS.

Blood examination:		No.	Per cent.
R. B. C. ....	4,192,000	152	60.8
W. B. C. ....	10,700	2	.8
Hb. ....	90%	8	3.2
R. B. C. and platelets normal. No abnormal cells seen.		71	28.4
		L. M. ....	
		Tr. ....	17 6.8

250 100.0

\*Address delivered at the New York Academy of Medicine, December 6, 1917.



**Blood Wassermann reaction:** Antigen—A, cholesterinized human heart, negative. B, acetone-insoluble lipoids, negative. C, plain extract beef heart, negative.

**Cerebrospinal fluid examination:** Negative with antigens A, B, and C. Pressure much increased; globulin, faintly plus; fluid clear; colorless; cells, 16 per c. mm., gold, completely negative.

**Gastric analysis:** 12 c. c. recovered; colorless.

Free HCl.....	65	Occult blood .....	0
C. acid .....	15	Lactic acid .....	0
T. A.....	80 ac. %	Micro., negative.	

**Stool:** brown, soft.

Occult blood, { Guaiac, 0.  
                  { Benidine, +.

Bile, +

Micro.: negative.

**Urine:**

	Night.	Day.
Specific gravity .....	1034	1014
Albumin .....	0	trace
Sugar .....	0	0
Few finely granular casts, no R. B. C. nor W. B. C.		

#### X RAY REPORTS.

**Stereoröntgenogram of skull:** Examination shows a very large, deep sella. It is well formed, however; no irregularities in its outline can be made out. Sphenoidal sinus is quite large and clear. Nothing abnormal is noticed in the rest of the cranium.

**Teleröntgenogram:**

M. L.....	9.5
M. R.....	5.
T.....	11.5
L.....	15.
A.....	7.5

**Paranasal sinuses:** Clear. The right frontal is not quite as clear as the left, but this is probably due to a shallow sinus, as the ethmoids on that side are clear. There is an unusually large development of the ethmoidal cells, especially of the posterior ethmoids.

**Teeth:** No definite abscesses could be made out. One lower molar has a beginning granuloma.

**Gastrointestinal tract:** Impression: functioning normally. No definite lesion made out.

#### REPORTS OF SPECIALISTS.

**Neurologist:** The only objective finding from my standpoint is the suspicious L. optic nerve. It is certainly not normal, and if it is an acquired condition would be of importance. The nasal edge of the R. one, too, is not absolutely clear. For the rest, the attacks suggest epilepsy, but why he should have it at his time of life is a mystery. The history of what seem to be two attacks of scintillating scotoma is interesting. He is, of course, of a highly neurotic temperament.

**Psychiatrist:** It does not seem as if there could be any doubt about the epileptic character of the attacks in this patient. At the same time there is a psychogenic component in his make-up, as shown in an aphonia which he had about six years ago and which lasted six weeks, and the fact that the patient has had a great deal of self-reproach for autoerotism, which he carried on partly on account of a peculiar tendency to secretion of his prepuce, which would come on, according to his impression, when he did not masturbate. The patient does not, however, give any evidence that the attacks as such appeared under any special affective strain. I did, however, emphasize the importance of relieving himself of the self-reproach and the ensuing tension.

The mental status does not bring out any deficit. The patient retains eight digits but fails with nine. His calculation when hasty is somewhat faulty, but correct under proper attention. There is no evidence of any focal brain lesion.

It seems that the patient has been taking bromide without any attempt at reducing his sodium chloride. It would seem very probable that the attacks could be kept in check better than has been the case in the past.

**Ophthalmologist:** 1, Central vision normal when refraction error (hyperopic astigmatism) is corrected. 2, Muscular balance normal. 3, Perimetry (two examinations, on dif-

ferent days) reveals slight bitemporal contraction; right eye more involved than left. 4, Eyegrounds: Low grade of edema at neuroretinal margin on nasal side of each disc, more marked in right eye than in left, corresponding to contraction of visual field. Not enough change yet to demand decompression for the sake of his eyes, but that need may develop. Advise watching eyegrounds closely. No signs of retinal arteriosclerosis.

**Rhinologist:** Tonsils adherent; small mass of adenoids; sl. septal deflection; hypertrophy of left inferior turbinate; sinuses clear; pharynx and larynx negative. Ears normal.

**Dentist:** Marked gingivitis. One inferior molar tooth has beginning granuloma.

**Urologist:** Both testicles very small; right smaller than left; small cyst in left epididymis; prostate very small and indistinct. Seminal vesicles small. No signs of urogenital infection. No indication for cystoscopy.

#### REARRANGEMENT OF THE DATA IN CASE I.

**Case I.**—(No. 4155.) Male. Age forty-one. Lawyer. **Complaints:** Attacks of unconsciousness.

**Habits:** Excessive use of tobacco (twenty cigarettes, several pipes) before present illness; alcohol in excess.

**Previous infections:** Recurring tonsillitis; denies venereal disease.

**Operations:** Cauterization of tonsils ten years ago.

**Respiratory system:** Morning cough for years; sore throat frequently; slight nasal obstruction (septal deflection); enlarged inferior concha (left); tonsils enlarged and adherent; small mass of adenoids in nasopharynx; emphysematous thorax; lungs negative; x ray of paranasal sinuses negative.

**Circulatory system:** Pulse rate 88; radials just palpable; B. P. 125 systolic, 90 diastolic; heart negative except for soft systolic murmur at apex; teleröntgenogram: MR 5; ML 9.5.

**Blood system:** R. B. C. 4,192,000; Hb. 90 per cent.; W. B. C. 10,700; WaR. 0 (3 antigens); PMN. 60.8 per cent.; PME. 0.8 per cent.; SM. 28.4 per cent.; LM. 6.8 per cent. Epitrochlear and retrocervical nodes palpable.

**Digestive system:** Free HCl 65; TA. 80; occult blood, 0; stool 0; slight gingivitis; tongue coated, tremulous; several dead teeth; x ray of stomach and intestines after barium, negative; one lower molar has a beginning granuloma (x ray).

**Urogenital system:** Urine: Sp. gr. 1014-1034; alb. 0; sugar 0; few granular casts; W. B. C. 0; R. B. C. 0. Sl. nocturia; phimosis; hypoplasia of gonads and phallus; small prostate.

**Locomotor system:** Negative.

**Nervous system:** Aphonia after father's death, four years ago; under great pressure of work at the time; history of self reproach for autoerotism; occasional dizziness; occasional scintillating scotoma; attacks of unconsciousness (seven) since April, 1916; attacked most often when eating at table; unconscious one to six minutes; in recent attack bit tongue and jerked (grand mal); one sister is hysterical; patient always neurotic; deep and superficial reflexes normal; cerebrospinal fluid under increased pressure, sixteen cells, WaR. and gold-sol. tests negative; low grade edema of optic discs; slight bitemporal narrowing of visual fields.

**Metabolic and endocrine systems:** Former weight 261, now 212; height five feet ten inches; ideal weight 168 pounds; narrow lid slits; pigmented eyelids; slight eye signs; slight struma; scanty hirci; transverse crines; hypertrichosis of trunk; large deep sella in x ray.

#### DIAGNOSTIC SUMMARY.

1. Epilepsia tarda.
2. Initial stage of bilateral choked disc.
3. Enlargement of sella turcica [struma (?); neoplasm (?)].
4. Endocrinopathy (dystrophia adiposogenitalis).
5. Slight oral sepsis.
6. Chronic tonsillitis; slight adenoids; hypertrophic concha.
7. Psychoneurotic state (history of aphonia, of self reproach for autoerotism, etc.).
8. Slight nephropathy.
9. Gastric hyperacidity (cause not yet determined).
10. Tabagism and potatorium.

CASE II.—Male, age 51, coal dealer (seen October 30, 1917). No. 4187.

**Complaint:** Fever in afternoons for two and one half months, with headache, soreness in the abdomen, weakness and stiffness of the neck.

**Family history:** Negative; married twenty-six years; wife and three children living and well.

**Personal history:** Always thin; much trouble with teeth; otherwise healthy; denies venereal infection. Rapid eater. Smokes eight cigars daily; whiskey occasionally. Indoor occupation.

**Present illness:** Began to feel badly about three months ago. Fever in afternoons. Treated for malaria. In bed ten days. Fever ceased but returned ten days later with headache and discomfort in abdomen. Has had x ray of stomach, reported negative. Much sore throat lately. Neck sore. Loss of appetite. Loss of weight. Nervousness. Insomnia. Home physician suspected 1, malaria; 2, intestinal toxemia; 3, septic fever from hidden focus. His dentist extracted several teeth, but the fever continued. Finally, his physician suspected the apices of lungs and referred him for general diagnostic study.

**Physical examination:** (Summary of positive findings). Height six feet; weight 130 pounds. Long extremities. Straw tint to skin; thickened radials; B. P. 115/80; retrocervical lymph glands palpable; slight eye signs; teeth suspicious. Throat injected. Crackles after coughing at right apex. Accentuated aortic second. Spleen just palpable. Tenderness of left epididymis.

**Laboratory tests requested:** Total blood examination, including W.B.C. and blood culture; sputum; gastric juice; urine; feces.

**X ray examinations requested:** Paranasal sinuses; lungs; C.-V. stripe; G.-I. tract.

**Special examinations requested:** 1, teeth; 2, nose and throat; 3, eyes; 4, lungs; 5 urogenital system.

#### LABORATORY REPORTS RECEIVED.

Blood:		No.	Per cent.
R. B. C. ....	5,232,000	P. M. N. .... 165	66.0
W. B. C. ....	7,000	P. M. E. .... 0	0.0
Hb. ....	90%	P. M. B. .... 0	0.0
R. B. C. and platelets normal.		S. M. .... 67	26.8
No abnormal cells seen.		L. M. .... 18	7.2
		T. R. ....	
		250	100.0

#### Blood Wassermann reaction:

Antigen A, cholesterinized human heart, fixation 100 per cent.

Antigen B, acetone insoluble lipoids, fixation 100 per cent.

Antigen C, plain extract beef heart, fixation 100 per cent.

#### Gastric analysis:

14 c. c. recovered, colorless.

Free HCl. ....	30	Micros.: negative.
C. acid ....	20	Occult blood ..... 0
—	—	Lactic blood ..... 0
T. A. ....	50 ac. %	

#### Stool:

Soft; brown; bile +; occult blood { benzidine. 0  
guaiac. .... 0  
Micros.: negative.

**Sputum:** Mucopurulent; colorless; negative for tubercle bacilli.

#### Urine analysis:

	Night.	Day.
Specific gravity ....	1020	1014
Albumin .....	Tr.	Tr.
Sugar .....	0	0
Micros.: Few W. B. C. and one finely granular cast.		

**Blood culture:** Negative on fifth day.

#### REPORTS FROM THE RÖNTGENOLOGIST.

The examination of the paranasal sinuses shows a very slight clouding of the right antrum, suggesting an old infection. The septum is straight and the air passages are clear.

The examination of the lungs shows a chronic fibroid change throughout both lungs, particularly the left upper; calcified glands in the mediastinum; root consolidations. These changes impress me as being tuberculous in origin but inactive.

The fluoroscopic examination of the cardiovascular stripe shows it to be practically normal; a very slight dilatation of the first curve, but this cannot be considered as a true dilatation, but seems a normal variation when the age of the patient is considered. No evidence of any aneurysm. Heart is not enlarged.

The fluoroscopic examination of the gastrointestinal tract shows a prolapsed stomach; fundus in the pelvis; very sluggish and atonic; no filling defects to be made out; upon palpation the stomach is stimulated and bismuth flows through freely. Transverse colon prolapsed, lying on the floor of the pelvis, pulled in and adherent to the cecum and cannot be separated upon palpation. Patient complains of pain in this region when pressure is made. Condition impresses me as being an enteropositis plus a mild lower right quadrant lesion.

#### REPORTS FROM SPECIALISTS.

**Dental report:** Radiographic review of doubtful areas of mouth shows that in No. 27, the right inferior canine, and No. 22, the left inferior canine, there has been complete destruction of alveolus; these teeth should be extracted and the sockets curetted, after which the lower denture can be arranged. No. 6, the right superior canine, No. 12, the left superior first bicuspid, show periapical rarefactions, which are not deep; root canals well filled; present bridges are so necessary for mastication, would suggest that apicoectomy be done; these teeth should be kept under radiographic survey, and if they do not clear up they should be extracted and the sockets curetted.

**Nose and throat specialist:** Sinuses, right antrum dark on transillumination; left not quite clear. Tonsils, adherent; right tonsil red and injected. Pharynx, injected. Larynx, normal. Nasopharynx, negative. Nose, slight septal deflection to left; hypertrophy of right inferior turbinate. Impression: Patient has subacute pharyngitis and tonsillitis on right side as well as chronic infection of tonsils. Probably all his complaints are due to his tonsils. Right antrum possibly infected.

**Ophthalmologist:** The chief trouble I have found in this patient is his refraction error, which I thought insufficiently corrected. I think he will be more comfortable with his new glasses. Ophthalmoscopically there was nothing wrong to note. The only field defect is a slight narrowing of 10° or 15° for red, up and down, in each eye; of no especial significance.

**Tuberculosis expert:** (Details of report not given here, only the conclusions.) The patient has an old chronic pulmonary tuberculosis involving the two upper lobes. Judging from the physical signs, lesion is relatively inactive. However, the condition of the lungs might easily explain all the patient's symptoms.

**Urologist:** No evidence of tuberculosis, either in epididymis, vesicles, or prostate. Patient evidently had an old simple inflammatory infection of left vesicle and epididymis, now entirely subsided. No inflammatory process in genitourinary tract that needs attention.

#### REARRANGEMENT OF THE DATA IN CASE II.

CASE II.—F.N., male, age fifty-one, coal operator. (4187.)  
**Complaints:** Fever in afternoon; headaches; cough; weakness and stiffness of back.

**Habits:** Eight to twelve cigars daily; almost no alcohol; rapid eating.

**Previous infections:** Recurring colds in the head and sore throat, especially recently; oral abscesses; denied venereal diseases; malaria suspected since fever began.

**Operations:** None.

**Respiratory system:** Cough; some sputum, negative for tubercle bacilli; respiratory rate 22; slight nasal obstruction; tonsils adherent; diminution of respiratory movements over both upper lobes, especially the left; left shoulder sags; dullness at both apices to second rib on right, to third rib on left; roughened breathing and prolonged expiration at both apices; a few fine moist râles (after coughing) at each apex, both in front and behind. Tuberculosis expert reports "both uppers relatively inactive." X ray of paranasals: sl. clouding of right antrum, also dark on transillumination. X ray of lungs: slight fibroid change in both upper lobes.

**Circulatory system:** Pulse 104; hands cold and clammy; radials thickened, whipcord-like; B. P.: 115 systolic, 80 diastolic; slight cyanosis; A 2 +; roentgenoscope of C. V. stripe: sl. dilation of aorta; no aneurysm; heart not enlarged.



**Blood system:** R. B. C. 5,232,000; Hb. 90 per cent.; W. B. C. 7,000; WaR.: Fixation 100 per cent. with three different antigens; P. M. N. 66 per cent.; P. M. E. 0.0 per cent.; S. M. 26.8 per cent.; blood culture 0. Pallor; lemon yellow tint to skin; retrocervical glands palpable (small nodes).

**Digestive system:** Free HCl; 30 T. A.; 50. Occ. bl.; 0 stool; 0 dysphagia; gaseous eructations; constipation; soreness in abdomen; subicteric tint to sclera; suspicious teeth, odor of pyorrhea; tongue coated; subacute pharyngitis; spleen palpable; slight tenderness in R. L. Q. Dentist reports proliferative periodontitis (q. v.) and gingivitis. Röntgenoscopic of g. i. tract: prolapsed stomach, fundus in the pelvis, sluggish motility, transverse colon adherent to cecum; impression, viceroposis plus mild right lower quadrant lesion.

**Urogenital system:** Urine: Sp. gr. 1014-1020; alb. trace; sugar 0; cyls.; one seen; W. B. C. few; R. B. C. 0; right kidney palpable and mobile; left epididymis tender. Urologist: No evidence of tuberculosis of epididymis, vesicles, or prostate; no genitourinary infections; thickness of epididymis due to an epididymitis one and a half year ago.

**Locomotor system:** Weakness; soreness.

**Nervous system:** Nervousness; insomnia; motility, sensation and reflexes normal; refraction error (corrected).

**Metabolic and endocrine systems:** Loss of weight; now forty-five pounds under weight; temperature 98°-102°; long extremities; fingertips quadrangular; enophthalmos; bare, bald scalp; hypertrichosis of eyebrows; struma; hypertrichosis.

#### DIAGNOSIS.

1. Lues: WaR. = 100 per cent. fixation. Surprise. Patient, when informed, admitted probable luetic infection about one year ago and treatment for a skin eruption last summer; luetic angina; retrocervical adenitis; headaches; fever; palpable spleen.
  2. Oral sepsis: Pyorrhea alveolaris; periapical rarefactions due to granulomata (proliferative periodontitis).
  3. Chronic pulmonary tuberculosis (relatively inactive).
  4. Chronic tonsillitis; old infection of right antrum.
  5. Viceroposis; mild R. L. Q. lesion.
  6. Emaciation: Forty-five pounds under calculated ideal weight.
  7. Beginning atherosclerosis: Thickened radials; slight dilatation of aorta; slight nephropathy.
- Remarks:** In order of importance at present, probably 1, 2, 6, 3, 4, 5, 7.

#### PLAN OF THERAPY OUTLINED.

1. Lues to be thoroughly treated; rest; diet; salvarsan; mercury; special isolation.
2. Oral sepsis to be overcome. Extract No. 27 and No. 22. Curette sockets. Do apicoectomy on No. 6 and No. 12. Later keep under röntgenographic survey; if necessary, extract and curette sockets. Prophylaxis of gums.
3. Rest and feeding cure to gain forty pounds in weight. Rest in bed four or five weeks. Special nurse. After a few days of Dubois diet, give three large meals a day, with two quarts of milk a day and one or two raw eggs after each meal. Massage thrice weekly. Bed in open air, night and day. Psychotherapy.

**CASE III.**—Male, age fifty-one years, merchant, seen October 30, 1917. No. 4186.

**Complaint:** Waterying and weakness of the eyes for two years; pain over heart on exercise; intermittent swelling of neck and eyelids; increased saliva; itching of skin.

**Anamnesis (summary):** Single man. Always fairly healthy. Family history negative. History of otitis media, nasal polypi, bronchial asthma, and gonorrhea; denies lues. Habits regular.

Present illness began insidiously about two years ago. Tendency to increase in weight; noticed increased flow of saliva and pain in precordial region on exertion. Slight nocturia. Neck swells diffusely at intervals; eyelids often puffy; eyes "watery"; slowing of thought and speech.

**Physical examination (summary):** Height five feet eight inches; weight 187 pounds; calculated ideal weight 154 pounds; pulse rate 68; blood pressure 180/140; skin dry and pudgy; tongue large; suspicious teeth; pyorrhea alveolaris; pharyngitis; conjunctivitis; scanty hirci and crines pubis; transverse crines; hypertrichosis of trunk and extremities; puffy eyelids; small thyroid; enlargement of heart; accentuated aortic second sound; reflexes normal.

**Laboratory tests requested:** Blood count; Wassermann test; gastric contents; feces; urine; renal function tests.

**X ray examinations requested:** Paranasal sinuses; teeth; teleröntgenogram; röntgenoscopic of gastrointestinal tract.

**Examinations by specialists requested:** Dentist; ophthalmologist; rhinologist.

#### REPORTS OF LABORATORY TESTS.

##### Blood examination:

	No.	Percent.
R. B. C. ....	5,212,000	
W. B. C. ....	6,900	
Hb. ....	85%	
R. B. C. and platelets normal. No abnormal cells seen.		
P. M. N. ....	159	63.6
P. M. E. ....	2	.8
P. M. B. ....	0	.0
S. M. ....	72	28.8
L. M. ....	17	6.8
Tr. ....	250	100.0

##### Blood Wassermann reaction:

Antigen A, cholesterolized human heart, negative.

Antigen B, acetone insoluble lipoids, negative.

Antigens C, plain extract beef heart, negative.

**Gastric analysis:** 15 c. c. recovered; colorless.

Free HCl.... 60 Occult blood ..... 0

C. acid..... 15 Lactic acid ..... 0

T. A..... 60 ac. % Micro: negative.

**Stool examination:** Small, brown, formed.

Bile ..... 0

Occult blood ) guaiac ..... 0

benzidine ..... 0

Micro: negative.

##### Urine analysis:

Specific gravity ..... Night. 1028 Day. 1022

Albumin ..... Ft. tr. Ft. tr.

Sugar ..... 0 0

Micro: Few finely granular casts.

##### Pathologic output:

First hour ..... 100 c. c. 52%

Second hour ..... 80 c. c. 24%

..... 180 c. c. 76%

#### REPORT OF X RAY EXAMINATIONS.

##### Tele measurements:

M. L. .... 12.2

M. R. .... 3.6

L. .... 17.8

T. .... 10.3

Examination of the paranasal sinuses shows a slight clouding of the left antrum and an indefinite shadow in the right antrum which I believe is a polyp. The sphenoidal sinus is clear. Septum is straight and air passages are clear.

The fluoroscopic examination of the gastrointestinal tract shows a stomach occupying a transverse position, not prolapsed. This position, however, is due to the large amount of fat in the abdomen and not due to any adhesions. Stomach is freely movable; good motility; good expulsion of contents; no evidence of any filling defects. Transverse colon is in normal position; good motility; cecum, however, contains a small bit of bismuth and the cecum is apparently fixed to the pelvic wall and cannot be moved. With this exception the entire examination is negative.

#### REPORTS OF EXAMINATIONS BY SPECIALISTS.

**Dentist:** Radiographic review of doubtful areas of mouth shows No. 4 the right superior second bicuspid, No. 10 the left superior lateral, No. 14 the left superior first molar, No. 27 the right inferior canine, No. 29 the right inferior second bicuspid, to have definite periapical rarefaction with much damage to alveolar septal crests. Bridge "A" should be removed and all these teeth should be extracted and sockets curetted. Well marked injury to the gingival crests, which should have treatment.

**Ophthalmologist:** Patient has considerable chronic conjunctivitis, for which I have given him a collyrium of zinc sulphate. His eyegrounds are healthy and his vision is perfect with correction of his hyperopic astigmatism in the right eye and hyperopia in the left eye.

**Rhinologist:** Examination of the ears, sinuses, and throat practically negative except for slight polypoid degeneration of inferior turbinates. Would advise a two per cent. solution of bicarbonate of soda as a nasal spray.

REARRANGEMENT OF THE DATA IN CASE III.

**Case III** (No. 4186).—Male, age fifty-one; merchant.

**Complaints:** Pain in region of heart on walking one block; puffiness of face; watery eyes; increased flow of saliva; weakness.

**Habits:** Hard mental work; sedentary; two cigars daily; little alcohol; no sexual excesses.

**Previous infections:** Otitis media (left) twice; gonorrhea in youth; sore on penis then also.

**Operations:** Nasal polypi removed at three operations (last, two years ago).

**Respiratory system:** History of bronchial asthma four or five years ago; paroxysms were nocturnal; lungs now negative. X ray of paranasals: cloudy left antrum, shadow in right antrum (polyp); tonsils small but adherent; polypoid inferior conchae.

**Circulatory system:** Pulse rate 68; no arrhythmia; B. P.: 180 systolic, 140 diastolic; enlarged heart to the left. Tele-röntgenogram: M. R. 3.6, M. L. 12.2; paramanubrial dullness due to diffuse dilatation of aorta; accentuated aortic second sound.

**Blood system:** R. B. C. 5,212,000; Hb. 85 per cent.; W. B. C. 6,900; WaR. negative (three antigens).

**Digestive system:** Free HCl 45; T. A. 60; Occ. Bl. 0; stool 0; sialorrhea; constipated; gaseous eructations and flatulence for years; nausea in morning, attributed to swallowing saliva; x ray of gastrointestinal tract (after barium) negative. Periapical granulomata at roots of five teeth; bad pyorrhea alveolaris.

**Urogenital system:** Urine: Specific gravity 1022-1028; albumin +; sugar 0; cyls. + (granular casts); W. B. C. 0; R. B. C. 0; phthalein 76 per cent. Slight nocturia; gonads normal.

**Locomotor system:** Weakness; no paralysis.

**Nervous system:** Bradyphasia; somnolence; deep and superficial reflexes normal; chronic conjunctivitis; hyperopic astigmatism (right eye); hyperopia (left eye); deafness.

**Metabolic and endocrine systems:** Drowsy; sensitive to cold; slowing of thought and speech; soft parts of hands increased; obesity (thirty pounds overweight); quadrangular finger tips; nose broad and thick; puffy eyelids; exophthalmos; lips thick; double chin; pads of fat above clavicles; general hypotrichosis (barba, hirci, and crines scanty); crines transverse; skin dry and harsh; thyroid not palpable.

DIAGNOSTIC SUMMARY.

- I. *Arteriovascular sclerosis.*
  - a. Arterial hypertension 180/140.
  - b. Atherosclerotic cardiopathy with cardiac hypertrophy.
  - c. Stenocardiac attacks (coronary sclerosis?).
  - d. Slight arteriolar nephropathy (albuminuria, cylindruria, hyperpermeability to phthalein 76 per cent.).
2. *Multiglandular endocrinopathy with dystrophia adipogenitalis.*
  - a. Thyreogenitohypophyseal syndrome.
    - i. Hypothyroidism.
    - ii. Hypogenitalism.
    - iii. Hypopituitarism.
3. *Oral sepsis.*
  - a. Proliferative periodontitis (five teeth).
  - b. Pyorrhea alveolaris.
4. *Chronic conjunctivitis and refraction error.*
5. *Nasopharyngeal catarrh.*
  - a. Hypertrophic and sl. polypoid conchae.
  - b. Pharyngitis.

OUTLINE OF PLAN OF THERAPY.

- I. *Oral sepsis.*
  - a. Extract five teeth; curette sockets.
  - b. Pyorrhea treatment.
2. *Hypothyroidism and obesity.*
  - a. Administration of thyroid extract.
  - b. Reducing diet (880 calories).

3. *Atherosclerosis and its effects.*

- a. Dietetic-hygienic régime.
- b. Prevention and management of stenocardiac attacks.

4. *Eyes.*

- a. Correction of refraction error.
- b. Collyrium for conjunctivitis.

5. *Nose and throat.*

- Spray—two per cent. soda bicarbonate; keep antra under survey.

**CASE IV.**—Male, age fifty-six, manufacturer. (Seen in consultation) November 4, 1917. (No. 4436.)

**Complaint:** Cough; shortness of breath; swelling of abdomen.

**Family history:** Negative.

**Personal history:** Always healthy. Formerly moderate potatorium. Recently, habits good.

**Present illness:** Onset in June, 1917, with slight swelling in glands of neck; later abdominal discomfort with alternating diarrhea and constipation; low fever; development of cough and shortness of breath; physician suspected oral sepsis and had roentgenograms of teeth made, revealing periapical granulomata; removal of bridges; gums inflamed; isolation of bacillus with morphology of diphtheria bacillus; extraction of diseased teeth; development of a slight papular exanthem on trunk, forearms, and thighs. Liver found enlarged October 4th; on October 21st, pleural effusion found on right side; at end of October, fluid demonstrable in peritoneal cavity; also beginning edema of lower trunk and genitalia.

SUMMARY OF PHYSICAL EXAMINATION.

Moderate emaciation; slight fever; one loose tooth still present; moderate enlargement of jugular; retrocervical and axillary lymph glands; signs of fluid in right pleural cavity and in abdominal cavity; edema of lower trunk; edema of genitals; enlargement of liver and spleen.

RESULTS OF LABORATORY TESTS

**Sputum:** Negative for tubercle bacilli.

**Blood:**

R. B. C. 3,820,000 to 4,480,000; Hb. 74—80 per cent.

W. B. C. 10,200 to 16,400.

P. M. N. 78—89 per cent.

Blood culture negative on two occasions.

Wassermann negative.

**Urine:**

Specific gravity 1011-1025.

Oliguria.

Slight albuminuria at times.

A few hyaline casts.

No blood.

Phthalein output 65 per cent.

X RAY REPORTS.

**Mediastinum:** No large masses seen.

**Right pleural cavity:** Shadow (fluid).

**Cardiovascular stripe:** D's placed to left.

REARRANGEMENT OF THE DATA IN CASE IV.

**Case IV** (No. 4436).—Male, age fifty-six, manufacturer. **Complaints:** Cough; shortness of breath; weakness; swelling of abdomen.

**Habits:** Formerly moderate potatorium; abstainer recently.

**Previous infections:** None. Low fever for last four months. Oral sepsis treated. Diphtheroid bacillus isolated from inflamed gums.

**Operations:** None.

**Respiratory system:** Cough; dyspnea; fluid in right pleural cavity during past two weeks; sputum negative for tubercle bacilli. X ray of mediastinum: no large masses seen. X ray of thorax reveals shadow on right due to pleural effusion.

**Circulatory system:** Right hydrothorax; hydroperitoneum; edema of lower trunk and of external genitals. X ray of C. V. stripe shows dislocation of heart to the left.

**Blood system:** R. B. C. 3,830,000; Hb. 78 per cent.; W. B. C. 16,400; WaR. negative; P. M. N. 89 per cent. Glands in neck began to swell in June, 1917; now moderate enlargement of jugular, retrocervical, and axillary lymph glands; palpable spleen.

**Digestive system:** Abdominal discomfort; alternating constipation and diarrhea; periapical granulomata; gingi-



vitis; liver enlarged for past month; fluid in peritoneal cavity recently.

*Urogenital system:* Urine: Specific gravity 1011-1025; alb. sl.; sugar 0; cyla.; a few hyaline casts; W. B. C. 0; R. B. C. 0; phthalein output 65 per cent.

*Locomotor system:* Negative.

*Nervous system:* Slight delirium at times. Asthenia.

*Metabolic and endocrine systems:* Moderate emaciation; slight fever.

*Skin:* Papular exanthem on trunk, forearms, and thighs.

TENTATIVE DIAGNOSTIC SUGGESTIONS AT DIFFERENT TIMES DURING THE STUDY BEFORE THE CONSULTATION.

1. Oral sepsis with cervical adenitis and metastatic pleuritis.
2. Diphtheria.
3. Pulmonary tuberculosis.
4. Lymphatic leukæmia.
5. Lues.
6. Aleukemic leukemia.

Unsatisfactoriness of these hypotheses on rational elaboration and attempts at corroboration. Diagnostic perplexity continued.

#### ADDITIONAL DIAGNOSTIC SUGGESTION AT CONSULTATION.

Possibility of Hodgkin's disease. Suggestion based upon memory of a case previously seen, a public ward patient, in which right hydrothorax, hydroperitoneum, and edema of the trunk in association with enlarged glands in the neck proved at autopsy to be due to Hodgkin's disease with infiltration of the tissue about the vena cava.

#### Rational elaboration of "Hodgkin's disease" idea.

- a. Lymph glandular enlargement.
- b. Fever.
- c. Enlargement of liver and spleen.
- d. Involvement of mediastinum.
- e. Infiltration of tissue about vena cava.
- f. Diphtheroid bacillus.
- g. Papular exanthem.
- h. Blood picture.
- i. Histology of lymph gland.

*Corroboration of the inference:* There is identity between the facts collected and the elaborated diagnostic suggestion. A lymph gland was excised and was studied histologically. In the histological section, stained with hematoxylin and eosin, the typical "Dorothy Reed lesions" of Hodgkin's disease were visible.

#### Diagnosis:

1. Hodgkin's disease (lymphadenitis; anemia; venous obstruction).
2. Oral sepsis.
3. Undernutrition.

#### Therapy:

Under radium treatment, the patient rapidly improved. The swelling of the lymph glands subsided and the edema disappeared. The appetite improved, the patient is gaining weight, and is sitting up.

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1035 NORTH CALVERT STREET.

## RECURRENT TERATOMATOUS GROWTH OF THE TRACHEA.\*

By WOLFF FREUDENTHAL, M. D.,  
New York.

The patient, whose history I take the liberty of reporting here, has been presented to the Section in Laryngology of the New York Academy of Medicine on several occasions, the last time in February, 1915.

As the case is interesting, not only from the point of view of this society, but also from the standpoint of the pathologist, the anamnesis will be given in detail.

CASE.—S. F., a tailor, aged twenty-seven, had been tracheotomized, in Russia, on account of diphtheria, when he was fourteen years old. Following the operation he felt well up to the time he presented himself for treatment in one of my clinics in 1913, i. e., five years later. Shortly before consulting me he had suffered from dyspnea, especially on exertion. His voice was clear. Examination revealed, about an inch below the glottis, a weblike, grayish looking mass, that included the greater part of the trachea, with only a small opening anteriorly—all this apparently due to the former tracheotomy. Nose and throat were normal.

In order to remove the mass the patient was placed under suspension laryngoscopy, and it was interesting to me and to all who saw the case, to notice the change in the appearance of the web. While under ordinary inspection it looked like a thin, grayish membrane, under suspension it appeared reddish and of some dimensions. It seemed quite easy to remove the mass under suspension, but the patient absolutely refused any operative intervention without a general anesthetic. This was given a few days later, but the patient became cyanotic to such a degree before we had begun the operation that a hurried tracheotomy had to be done. All of the visible mass was then removed and everything thoroughly cauterized. The wound healed and the patient was soon discharged, breathing normally.

A year later he returned in the same condition, and again all the visible growth was removed under general anesthesia, this time under suspension. Nine months later he again presented himself for treatment, and naturally we began to be suspicious of the nature of the condition. The patient was put under rectal anesthesia and, with a straight tube, an effort was made to extirpate all of the intra-tracheal mass. The bleeding, however, was so profuse that the attempt had to be abandoned before any large amount of the mass had been taken out. A few days later, he was again placed under general anesthesia (rectal), and the trachea opened, three rings of the trachea being incised this time in order to obtain free access to the growth. Great masses of granulation tissue were found and removed with very little hemorrhage. The pathologist reported the growth to be an endothelioma.

It was difficult to determine which means to employ—whether to remove the affected portion of the trachea and then apply radium, or to give radium a trial first. After consulting with several colleagues, it was decided to use the latter method for twenty-

\*Read at the First Annual Meeting of the Association of American Peroral Endoscopists, Philadelphia, May 31, 1918.

four hours. This seemed to have a very good effect; everything appeared in good condition and the patient was discharged. He reported at the clinic regularly. When seen in January, 1915, there was nothing abnormal to be found in the trachea. Three weeks later, however, a new mass was found to be springing up from the lateral wall, and another one anteriorly. I stated at that time that this was undoubtedly a recurrence of the endothelioma. The question again arose, whether radium should be tried or a part of the trachea removed.

At this stage he was demonstrated before the Section in Laryngology of the New York Academy of Medicine, and I remember the remark made by Dr. Thomas J. Harris, on this occasion, that if he himself were the victim of such a condition he would prefer to be let alone. His statement was based upon his experience with a similar case seen by him at the clinic of Professor Chiari at Vienna. But we could not follow such a course, since the tracheal stenosis was increasing and the use of radium at this stage was not without danger. Consequently he was operated upon again on April 14, 1915, by Dr. C. Goodman and myself (intratracheal anesthesia). A median incision was made, the trachea separated from the surrounding tissue—which was difficult, owing to the adhesions—and then opened. The tumor, which was situated on the right wall of the trachea, was soft and irregular and extended over an area of two tracheal rings, both of which were resected, leaving the posterior membranous wall intact. Healing again was uneventful and there was no trouble for several years, for which the patient was grateful. In fact, he looked and felt so well that when he was called for examination for the army early in 1918, he would have been drafted had it not been for the intervention of one of my younger assistants, who had been present at the last operation and recognized him. However, a slight dyspnea had already set in at that time and was getting worse quickly. He was planning to get married and demanded a radical operation.

The tracheoscopic picture now was a most interesting one. Below the glottis there appeared what might have been (in fact, was) mistaken on superficial examination for another glottis. About an inch below the glottis on the left side, there was a whitish mass reaching almost to the centre of the lumen of the trachea, which looked very much like a vocal cord. On the right side was a smaller one, somewhat congested and, of course, also immobile. On deep inspiration, when nothing was seen of the true vocal cords, these neoplasms could easily be mistaken for them.

What was this white mass on the left side? Was it cicatricial tissue or was it cartilage, i. e., a portion of a tracheal ring that had been cut through? Either assumption was possible. The cicatricial tissue outside on the neck was very evident and there had been a great deal of cutting of cartilage in the different operations. The microscopic examinations of the tissue cleared up these details.

After attempts to stretch the stenosis by long intubation tubes and von Schroetter's bougies, which I was forced to give up owing to the resistance of the patient, it became imperative to operate

again. That was done, but, unfortunately, he died soon afterwards from a hemorrhage. The specimens that were removed were sent to Dr. J. H. Globus for microscopical examination, who kindly furnished me with the following report:

The fragments do not suggest in any way the organ from which they were removed. Microscopic sections presented several interesting features which led to the diagnosis of a teratomatous growth. In certain areas the sections present cylindrical structures filled with mucus and lined with several layered epithelioid cells supported by a rich stroma of a mucoid character. In other areas solid cords of epithelioid cells are seen supported by a mucous connective tissue stroma. Still in other fields plaques of embryonic cartilage, the mucous connective tissue, and the peculiar arrangement of the epithelioid element suggest the diagnosis of a mixed tumor. Diagnosis: myxochondrocyndroma (endothelioma).

#### CONCLUSIONS.

From this description we learn that plaques of embryonic cartilaginous tissue were present, but no true cartilage was found. We, therefore, concluded that the white mass seen intratracheally consisted both of neoplastic and scar tissues.

In the literature I was able to find only two cases resembling this one pathologically, namely, the case of Henrici and that of Heymann. (The one described by Doctor Goodman in the *Annals of Otology* is my own case.) The nature of the pathological structure in Chiari's case is not mentioned. But there is a doubt in my mind whether Henrici's and Heymann's patients belong to the same class as mine, since of late the nomenclature has been changed. Under the new classification my case here comes under the general group of teratoma, and its special nature is that of a myxochondrocyndroma.

This type of neoplasm has been frequently seen in the parotid gland, but as far as I could find out, never in the trachea. It is not actually malignant, as it does not form any metastases, but it recurs repeatedly, and in that way renders the prognosis doubtful.

The great value of the direct methods in operative work and direct medication in the lower air tract has been demonstrated at our meeting by the great variety of reports given. These methods have come to stay. Is it, therefore, too premature to speak of some limitations in this field, at least so far as tracheal work is concerned? In the case here cited very little was accomplished under local anesthesia, as the patient was exceptionally unruly; but even under a general anesthetic the attempt to extirpate the neoplasm had to be given up on account of severe bleeding. In Heymann's case the tumor was removed in two sittings by the straight method, but recurred so soon that Gluck had to open the trachea and extirpate the growth radically.

In spite of these experiences I should feel inclined to try either one of the direct methods again, should a similar case come under my observation. It seems plausible that in connection with other means, the galvanocautery, for example, if applied carefully under a local anesthetic by means of Lynch's galvanocautery point, should prove of value in nonmalignant cases.



## TEN THOUSAND WASSERMANN TESTS.

*During 1916 and 1917 in the Philadelphia General Hospital.*

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In the NEW YORK MEDICAL JOURNAL, June 30, 1917, a report for the year 1916 was made in which there were 5,106 Wassermann tests recorded; for the year 1917 an additional 5,829 tests were performed,—making a total of 10,935. A considerable number (150) of specimens were anticomplementary and are not included in this report. As three antigens were used in each test, there were actually 32,805 Wassermann tests performed.

The general percentage of positive results during 1917 upon the blood submitted for examination was 25.9 of 5,110 cases, while of the spinal fluid 23.6 per cent. were positive of 710 cases examined. Taking the previous year's percentage of positive reactions obtained with the blood, 27.4, it gives an average for the two years of over 26.65 per cent.; while of the spinal fluids the average for 1916 was 22.2 per cent., making the average for the two years 22.9 per cent.

In 1917 there were 159 cases in which a positive reaction was obtained with the cholesterinized antigen alone, while the luetic and acetone insoluble antigens were negative. A further elaboration of the cholesterin positive cases will be taken up a little later, after a general departmental résumé is given.

From the men's medical ward, 1,364 specimens of blood were tested, and 305 were positive, or 22.3 per cent.; from the women's ward, 277 examinations were made, and eighty-seven were positive, or 31.4 per cent. From the psychopathic ward, 1,339 cases were studied, and 237 were positive, or 17.6 per cent.; while from the insane department 284 specimens were received and 16.1 per cent. were positive. From the men's and women's nervous wards, of 534 tests, 29.7 per cent. were positive and from the men's and women's surgical wards 284 were studied and positive results obtained in 27.8 per cent. From the men's and women's venereal wards, of 329 specimens, 67.1 per cent. were positive, while from the maternity, of 326 cases studied only forty-five were positive, or a percentage of 13.8. From the tuberculosis wards (male and female), 162 specimens of blood were received, and of these forty-two were positive, or a percentage of 25.9. From the gynecological ward 114 were examined, and thirty-one were positive, or 27.1 per cent.; and from the children's ward 106 were studied, and eighteen were positive, or 16.9 per cent.

The number of spinal fluids totaled 710 and came from the following wards or departments: From the men's medical, 255, of which thirty-three were positive, or 12.9 per cent.; from the psychopathic, 125, of which fifty were positive, or forty per cent.; from the insane, sixty-one, of which thirty-three were positive, or fifty-four per cent.; from the men's and women's nervous wards 144 were studied, of which forty-six were positive, or 31.9 per cent.; from the surgical wards (male and female) only twenty-eight were submitted, of which six were pos-

itive, or 21.4 per cent.; from the women's medical ward thirty-eight were studied, with five positive, or 13.1 per cent.; from the tuberculosis wards sixteen, of which two were positive, or 12.5 per cent.; from the children's ward thirty-five cases with only one positive, or 2.85 per cent. Six specimens of spinal fluid were received from the gynecological ward; all were negative. From the men's and women's venereal wards only two were received, and both were negative.

One hundred and fifty-nine cases gave a positive reaction in the cholesterinized antigen, with absolutely negative results in the other two antigens. In a certain number of these cases no history could be obtained, while in the majority a more or less definite history of syphilis was given by the patient or a diagnosis of a syphilitic nature was made before the test was performed. Where, in a number of instances, a direct history of syphilis was denied, after close questioning, exposure was admitted and alcoholism or drug indulgence was recorded on numerous occasions. The history of having had a chance several years previously, up to a period of thirty-one years, was quite common. Others had had as many as eight positive Wassermanns obtained in other institutions; and still others had had treatment with salvarsan (thirteen doses) or other medicaments. Numerous instances of dementia præcox, of spinal lues, of paresis, leg ulcers, and one or two of tabes dorsalis, are included in this group of positive cholesterinized antigen.

As in the previous year's work, these tests were all performed by the technician, Miss McNitt. The writer is indebted for the efficient manner in which she has done these tests and for obtaining the history of the cases, where noted. The same technic was used as in the previous year's work, and results were read after placing in the refrigerator over night. In the spinal fluid 0.8 c. c. was used, and of the inactivated serum of the patient, 0.1 c. c.

RÉSUMÉ OF SPECIMENS OF BLOOD AND SPINAL FLUID  
WITH NUMBER OF POSITIVE AND NEGATIVE  
REACTIONS OBTAINED DURING 1917.

Wards.	Blood			Spinal Fluid		
	Pos.	Neg.	Total	Pos.	Neg.	Total
Men's Medical....	305	1,059	1,364	33	222	255
Psychopathic.....	237	1,102	1,339	50	75	125
Insane.....	16	238	284	33	28	61
Men's and Women's						
Nervous.....	150	375	524	16	98	114
Men's and Women's						
Surgical.....	70	205	284	6	22	28
Women's Medical....	87	100	277	5	33	38
Men's and Women's						
Tuberculosis....	42	120	162	2	11	16
Maternity.....	45	281	326	0	2	2
Men's and Women's						
Venereal.....	108	221	329	0	6	6
Gynecological.....	31	83	114	1	34	35
Children's.....	18	88	106	..	..	..
Total.....	1,157	3,062	5,110	176	534	710
Total Positive 1157 or 25.9%				Total Positive 176 or 23.6%		
Total Positive in 1916—27%				Total Positive in 1916—22.2%		
Total Positive in 1917—25.9%				Total Positive in 1917—23.6%		
General Average....	26.45%			General Average....	22.9%	

**Cholesterinized antigen.**—It appears from the whole number of tests performed (10,935) during two years and the number of specimens giving a positive reaction in cholesterinized antigen alone, 292, or two per cent., that this antigen should be

the one of selection as of especial value in determining the presence of any doubtful syphilitic infection.

As mentioned in the previous report (1916), I believe that the Wassermann test is the most valuable laboratory aid in the diagnosis of syphilitic infection. More than one antigen should be used for the test, as a number of patients showing a positive reaction in cholesterinized antigen alone would no doubt have been given clean bills of health if only the acetone insoluble and syphilitic liver antigen had been used.

### ACIDOSIS.\*

BY CLAUDE D. WALTZ, M. D.,  
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To many of us, no doubt, acidosis is a comparatively new condition and still one of the most important findings in acidosis, a decreased alkalinity of the blood upon introduction of an acid, was reported by Walters forty-one years ago and twenty years before that, in 1857, acetone was discovered in the urine of a diabetic patient by Petters. The term "acidosis," however, was not "invented" until 1906 when Naunyn used it to apply to cases with an increased excretion of acids in the urine, both normal and abnormal. A thoroughly scientific study of acidosis did not take place until 1909 when L. J. Henderson presented a masterly paper on the subject.

My own conclusions regarding acidosis are quite definite. In the first place, acidosis cannot be looked upon as a definite disease. It is a condition, a symptom complex, complicating or resulting from certain diseased conditions. Secondly, the term acidosis is not correctly applied to simply one single symptom. A case showing no other symptom of acidosis but acetone in the urine should not be called acidosis as it is by many but should rather be termed ketonuria or acetonuria. In discussing acetonuria, do not say acidosis; if talking about low carbon dioxide states, do not say acidosis. True, in acidosis acetone is found, and a low carbon dioxide tension, an increased hydrogen ion concentration, etc.; but simply because acetone is found in the urine the diagnosis of acidosis is not determined even though it may throw suspicion that way. A carbon dioxide tension need not spell acidosis, for it may be due to altitude. It has been aptly proved that the higher the altitude the lower the carbon dioxide tension. One investigator (Fitz) made the statement that the altitude of a community can be determined by the alveolar carbon dioxide tension of its inhabitants.

Acidosis, as defined by Van Slyke (1), is a condition in which the concentration of bicarbonate in the blood is reduced below the normal level. Normally the blood is in a constant state of equilibrium as far as its contained acids and bases are concerned. Fluctuations may and do occur; e. g., the fluctuation due to the interchange between blood and respired air, although these changes are normally so slight as to be of little mo-

ment. Lawrence Henderson (2) defines acidosis as any disturbance of this acid basic equilibrium whereby the power to resist acids in the body is lost.

Primary acidosis is unknown. It is always secondary, arising during pathological processes and in turn influencing their course. It may be due to faulty absorption of bases; to an unusual loss of bases from the body; to neutralization by abnormal amounts of acids, either normal or abnormal; or to the failure to eliminate acids. This increased amount of acids may be due to the production of abnormal acids or an over production of normal acids, either from ingestion of acids or of foods leading to an increased production of acids. It is practically impossible to determine the normal amounts of acids and bases in the body although we can determine their proportion. The main change in acidosis is the loss of blood bicarbonate and that this is a serious change can readily be seen when you stop to consider that bicarbonate is the third constituent of the blood, water being first and salt second. Pritchard, of London, (3) explains the enlarged ends of long bones in rickets as due to the depletion of bases. He claims that the mineral depletion of red cells brings on an hemolysis or destruction of red cells. A severe anemia would result if it were not for the compensation of the blood forming centres of the red marrow of long bones.

Beneath all metabolism is a constant diminution of bicarbonate in the blood which, unless repaired, results in acidosis. Even though the reaction of the blood is alkaline, a certain degree of acidity (or of acidosis if you so wish to term it) is physiologically necessary for stimulation of the respiratory centres. The marked hyperpnea of acidosis is explained from this fact. Fluctuations of the acid basic equilibrium may occur without changing hydrogen ion concentration of the blood; the hydrogen ion concentration, is as I understand it, the amount of hydrogen that can be ionized from an atmosphere of hydrogen into the blood plasma. In other words it constitutes the degree of acidity of the blood. A change in the hydrogen ion concentration is only noted when the protective mechanism is broken down. Rountree (4) has aptly classified this as uncompensated acidosis. If the blood and tissues can overcome the decreased alkalinity of the blood without interfering with the normal ratio of bases to acids in the blood the acidosis is said to be compensated. Hence it is to be seen that the various degrees of compensated acidosis cannot be diagnosed by a determination of the hydrogen ion concentration. The acid basis equilibrium of the blood is maintained by means of several factors; namely, the excretion of carbon dioxide by the lungs, the activity of the kidneys, the formation of ammonia. Rountree adds a fourth, the "buffer" action of the blood (5), by which is meant the ability of the blood to take up considerable quantities of bases or acids without change in the hydrogen ion concentration. Even though there is found in acidosis a decrease in the alkaline reserve, he also found that the "buffer" action of the blood was decreased, not only for acids but for bases as

\*Read at Glenville Academy of Medicine, Cleveland, April 18, 1918.



well. The method of determining the "buffer" value of the blood is so complicated that it can only be used in experimental work.

Carbon dioxide is constantly being transferred from areas of high tension to areas of low tension; from the tissues where carbon dioxide is formed it is transferred to the blood, from there to the alveolar air, finally to the external air where the tension is the lowest. In this process the bicarbonate of the plasma plays an important part, since the carbon dioxide is replaced by an acid leaving a neutral salt, e. g.,  $\text{NaHCO}_3 + \text{HCl} = \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$ .

The kidneys perform an exceedingly important part in the prevention of acidosis by excreting an acid urine from the blood which is alkaline, in this way freeing the body of acids and acid phosphates while the bases are conserved. Thus a new function of the kidney is recognized, conservation of bases.

The production of ammonia, is not always increased in acidosis as it is not called into play until the fixed bases have failed to neutralize the rush of acids. Hence in certain types of acidosis this mechanism is not called upon. The lungs and kidneys, however, always show some evidence of acidosis.

The body fluids contain free carbonic acid in such amounts that it converts into bicarbonate all bases not bound by other acids. Hence the bicarbonate of the body represents exactly the excess of base left over after all the nonvolatile acids have been neutralized and is available for immediate neutralization of further acids. The acid products of metabolism may be volatile, like carbonic acid, or non-volatile, like sulphuric acid, or oxybutyric acid, etc. The latter acids permanently unite with the reserve alkali of the blood producing genuine acidosis. Thus it is seen that the bicarbonate constitutes the alkaline reserve of the body, acidosis being a condition in which the bicarbonate concentration of the blood is reduced below normal level.

There are three avenues by which we may determine the existence of acidosis through laboratory tests—the urine, the expired air, the blood. In as much as there are no known methods of determining tissue acidosis we must accept these three intimate neighbors, and it can be assumed without question that they reflect proportional, if not minutely exact, tissue changes.

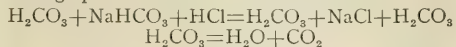
The urinary tests include—a determination of the ammonia content, the quantity of acetone bodies (acetone, diacetic, oxybutyric acid, etc.,) the alkaline tolerance test. The ammonia may be increased or decreased depending upon the type of acidosis. In diabetes and eclampsia its determination is of real import, an increase being present; whereas in nephritis it is of no significance. Urea is usually decreased, while ammonia is increased in acidosis. This finding, however, needs confirmation for it may be due to a protein diet or the breaking down of proteins. Urea may be easily determined by the use of the Doremus ureometer. The determination of total nitrogen by the Kjeldahl method is too complicated for ordinary routine work. The detection of acetone is easy, as well as its immediate

precursor, diacetic acid. Oxybutyric acid is harder to isolate and is of no more importance than acetone of diacetic acid except that it is found in severe and practically fatal conditions. The acetone bodies have a significance of their own aside from being associated with a depleted alkaline reserve. The formation of acetone bodies indicates that fatty acids, derived either from fats or amino acids are being incompletely oxidized. Acetone is formed in the liver and is normally almost entirely oxidized to water and carbon dioxide. The alkali tolerance test gives an approximate measure of acidosis, providing the kidneys are functioning normally. It would be unreasonable indeed to expect even a fair estimation of acidosis by this test if the kidneys were unable to excrete the acids that were causing the trouble. A patient presenting an extremely acid urine with acetone, but having an apparently good excretion from the kidneys is given five grams of baking soda by mouth. In two hours the urine is examined and if still acid the dose is repeated. The normal amount necessary to render healthy urine alkaline is five to fifteen grams. A patient with acidosis may require as high as ninety grams. Williamson says that two drachms of baking soda will render normal urine alkaline in twenty-four hours. Personally I would hesitate giving a patient such an immense dose of bicarbonate merely for diagnostic purposes when this test is held merely as corroborative and not conclusive or valuable alone. Cammidge (6) uses the excretion of the five bases—sodium, potassium, calcium, magnesium, ammonia—in the urine as a guide. Because of the difficulty of estimating the first two he relies upon the last three;—calcium, magnesium, ammonia. He noticed an increasing excretion of magnesium due to nervous influences such as excitement, there also being a relation between magnesium and calcium excretion and oxybutyric acid.

The best that can be said regarding the findings of urinary tests in acidosis is that they determine only the amount of acid excreted by the kidneys and not the amount actually present in the blood and tissues.

An examination of respired air, however, gives us quite definite information regarding acidosis. The determination of the carbon monoxide tension of alveolar air is an indirect, but very valuable method, of determining acidosis, as it gives an approximate estimate of the bicarbonate reserve of the blood. The alveolar tension is decreased in acidosis. The alveolar air is in equilibrium with arterial blood in respect to its carbon dioxide content. Consequently in accordance with the law of gas solubility the concentration of alveolar carbon dioxide is directly proportional to the free carbon dioxide of the blood, which in turn is kept proportional to the bicarbonate of the blood with normal respiratory control as will be shown later. Hence the alveolar carbon dioxide through the medium of the blood carbonic acid is a fairly accurate measure of the blood bicarbonate. By way of illustration: If an acid is poured into an aqueous solution of carbonic acid in an open vessel exposed to the air, to which a certain amount of bicarbonate has been previously added, the acid will react with the bicarbonate forming its own salt

and free carbonic acid which escapes into the air, having split into carbon dioxide and water.



This is just what happens in the body; just in the body, the lungs instead of eliminating just this newly formed carbonic acid eliminate some of the original carbonic acid, thus lowering the carbon dioxide tension of the blood and likewise of the alveolar air. This decreased tension is nearly proportional to the fall of bicarbonate. Hence there is practically no change in the proportion of carbonic acid to baking soda or sodium bicarbonate in the blood in certain cases of acidosis. In other words the hydrogen ion concentration is unchanged. That there exists a constant definite proportion between carbonic acid and sodium bicarbonate has been amply proved. This was determined by an analysis of the carbon dioxide gas in the blood. It was found that blood plasma contains sixty per cent. of its volume of carbon dioxide gas bound as bicarbonate and three per cent. carbon dioxide bound as carbonic acid (7), hence the ratio carbonic acid : sodium bicarbonate :: one : twenty, i. e., for every molecule of carbonic acid in normal blood plasma there are twenty molecules of sodium bicarbonate. As long as this ratio is maintained, the hydrogen ion concentration is unchanged and if acidosis is present it is compensated. But if this ratio becomes 1:10 or 1:10 there is an increased proportion of carbonic acid to sodium bicarbonate and consequently an increased hydrogen ion concentration.

The process of accelerated respiration and circulation in acidosis is proportional to the fall of blood bicarbonate, so that as already explained the 1:20 ratio and hydrogen ion concentration are kept constant. This can continue until the respiratory and circulatory organs are no longer able to eliminate carbon dioxide so rapidly as to keep the proportion up to 1:20. Up to this stage the condition is called a compensated acidosis. Rowntree estimates that the equivalent of several hundred cubic centimetres of a normal acid are excreted by the lungs in twenty-four hours. The maintenance of this 1:20 ratio is arterial; the carbonic acid of venous blood is increased by the absorption of carbon dioxide from the tissues; hence venous blood is less alkaline than arterial. The difference is so slight, however, that normal venous blood taken at rest, and without stasis, can be regarded as but slightly inferior to arterial blood. Van Slyke found arterial hydrogen ion concentration to be PH 7.44, and venous hydrogen ion concentration PH 7.41. Arterial sodium bicarbonate and carbonic acid yields fifty cubic centimetres carbon dioxide, while venous blood yields fifty-five cubic centimetres.

In the examination of respired air, it is noted that the bicarbonate concentration of the blood fixes the level of the carbonic acid of the blood, which in turn fixes the level of the alveolar carbon dioxide. Consequently the determination of alveolar carbon dioxide tension by the Haldane method is an indirect method of determining the bicarbonate concentration of the arterial blood. Under certain pathological conditions, or under the influence of

drugs or decreased atmospheric tension, of anxiety or excitement, the sensitiveness of the respiratory centre may vary, so that the alveolar carbon dioxide tension is not even an approximate measure of the blood bicarbonate, under all conditions. It has also been shown that simply changing the position from erect to recumbent has altered carbon dioxide tension six millimetres. The air at the end of respiration does not contain as much carbon dioxide as does air taken at the middle of respiration; evidently the gas exchange varies in different parts of the lung. All these sources of error, however, even in pathological conditions, occur within such limits that clinical use of alveolar carbon dioxide tension as a measure of blood bicarbonate is thoroughly established. However, there are so many other factors influencing the alveolar carbon dioxide tension, besides the blood bicarbonate, that it makes the alveolar carbon dioxide far from an ideal measure of alkali reserve. Alveolar air may be collected by the Haldane or Plesch-Levy method. By the Haldane method, the patient with a single quick expiration fills a glass container. By the Plesch method, the patient breathes in and out of a rubber bag for thirty or forty seconds. The latter approaches venous blood, but has the advantage of requiring less cooperation on the part of the patient. In fact it has even been used successfully on children.

Laboratory tests upon the blood for the detection of acidosis are accurate but difficult for the ordinary routine. The tests are: the hydrogen ion concentration of the blood; the alkaline reserve of the blood; the carbon dioxide tension of the blood or plasma. An increase in the hydrogen ion concentration of the blood is only noted in cases of uncompensated acidosis. I believe that most cases of acidosis would show an unchanged hydrogen ion concentration. The normal hydrogen ion concentration of the blood is PH 7.65. All cases with a hydrogen ion concentration greater than 7.4 constitute a true acidosis. All cases with a normal hydrogen ion concentration, but a decreased alveolar tension and a decreased alkali reserve, constitute compensated acidosis. The alkaline reserve of the blood is lowered in every case of acidosis. The plasma bicarbonate is influenced by the free carbonic acid content.  $\text{NaHCO}_3 + \text{Protein} = \text{H}_2\text{CO}_3 + \text{Na Proteinate}$ . This is the reaction chiefly responsible for the variations in the plasma bicarbonate caused by varying  $\text{H}_2\text{CO}_3$  content. Another reaction which may take place, of less importance, however, is  $2\text{NaHCO}_3 = \text{Na}_2\text{CO}_3 + \text{H}_2\text{CO}_3$ . This reaction is of no real importance because of the small amount of sodium carbonate in the blood. These reactions are reversible so that an equilibrium is constantly maintained normally between sodium bicarbonate and carbonic acid.

The alkaline reserve of the blood is estimated from the amount of carbon dioxide bound as bicarbonate, using the Van Slyke method. Investigations are being made with colorimetric methods so that the actual bicarbonate concentration of the blood can be measured instead of estimating it from the carbon dioxide. Williamson (8) estimates the reserve alkalinity of the blood by a modification of Wright's method. Blood is drawn



from the arm and allowed to coagulate. The serum is then drawn off. Normal sulphuric acid is diluted with distilled water in strengths of one twentieth, one thirtieth, one fortieth, etc., up to 1:100. One fourth of a c. c. of the serum is mixed with one fourth of a c. c. of the acid solution and the strength of the acid required to neutralize the serum is recorded. The average is between one thirtieth and one forty-fifth, the normal is expressed thus: —  $\text{H}_2\text{SO}_4$ . If acidosis is present and

$\frac{N}{35}$  the alkalinity is decreased it will take a weaker dilution of sulphuric acid to neutralize the serum.

Hence in acidosis the result would be, e. g. —  $\frac{N}{60}$

or even —  $\frac{N}{70}$   $\text{H}_2\text{SO}_4$ . His experimental results on pregnant women were as follows: six normal

women (thirty-fifth week)  $\frac{N}{37}$  to  $\frac{N}{40}$ ; nine toxemia

patients (eclampsia, kidney of preg-  $\frac{N}{48}$  to  $\frac{N}{88}$ ,  $\frac{N}{68}$  nancy)

The fall in alkalinity bears no relation to the severity of the toxemia. In the case with the lowest fall there were only two convulsions and a temperature of 100.5°. The alkalinity was normal in four cases of chronic nephritis. This test is not accurate but is valuable because of its simplicity.

The carbon dioxide tension of the plasma is the capacity of the plasma to unite with carbonic acid under definite tension which determines the amount of alkali in excess of acids, other than carbonic. In acidosis the carbon dioxide tension is markedly lowered. It is noted that in acidosis the nonvolatile acids increase at the expense of the carbonic acid. These acids unite with the bicarbonate of the blood leaving a diminished amount of bicarbonate shown in making the determination of the carbon dioxide tension, hence a decreased tension.

The best methods for the determination of acidosis are: 1, reserve alkalinity (Van Slyke); 2, alveolar carbon dioxide tension (Plesch-Levy); 3, hydrogen ion concentration (dialysis indicator of Van Slyke). These tests determine whether acidosis is present or not and whether it is compensated or uncompensated. They are, however, quite difficult for the ordinary laboratory. For the determination of acidosis in ordinary routine work the following tests are suggested: 1, acetone (nitro prusside test); 2, diacetic acid (ferric chloride test); 3, alkalinity of the serum (Williamson); 4, alkali toleration. The clinical evidence must not be forgotten in the reckoning, e. g., inability to hold the breath for twenty seconds, the normal being thirty to forty seconds.

Clinical symptoms are due to the impoverishment of bases. The dominant feature is an "acyanotic hyperpnea" or rapid breathing without cyanosis, also called air hunger. This rapid breathing is necessary to eliminate the carbonic acid and is due to the in-

creased stimulation of the respiratory centres. An acetone or sweetish odor to the breath may be noticed showing that a ketonuria, and possibly an acidosis, exists. There is restlessness, a rapid pulse, and maybe some temperature. In children there is apt to be nausea and vomiting. The clinical picture in a child is very similar to pneumonia, with a flushed face, rapid respiration, and quick pulse. The laboratory findings need not be repeated. In as much as the colon bacillus has a preference for an acid medium, a colon infection of the urinary tract should be watched for. Doctor Blodgett emphasizes a sore spot over the pancreas in cases of acidosis. Rhamy finds that acetone bodies appear in some lesions of the pancreas. Acidosis is found more often in children than in adults but the severest forms of acidosis are encountered in diabetes. The reason for the increased susceptibility of children to acidosis is the normally low carbon dioxide tension, the somewhat lower alkaline reserve and the fact that acetone bodies develop upon very slight provocation. The so called cyclic vomiting of children is due to acidosis. Lichty called attention to this periodical vomiting of children being sometimes the precursor of a permanent tendency to migraine, particularly if there is a history of migraine in one or more parents. He believes that the acetone found in children with cyclic vomiting is the result of the starvation incident to the vomiting and not the cause of the condition. Cyclic vomiting must not be confounded with meningitis, intestinal obstruction, nervous or hysterical vomiting. The laity term these attacks "bilious spells."

Acidosis is also found very frequently in the toxemia of pregnancy, postanesthetic vomiting, and starvation. It may also be found occasionally in rickets, sepsis, cachexias, and severe anemias, renal and cardiorenal diseases, infantile diarrheas. It is also reported following burns, in drug addicts following the withdrawal of the drug, in cancer, uremia, marasmus, etc. Gillespie, of London (10), gives an interesting description of postoperative acidosis. "In minor cases of acidosis it is noticed that the patient vomits a little longer than usual. In severer cases it is noticed that during the course of the operation the patient goes under with surprising ease, the breathing is shallow, even with good air entry there is a tinge of cyanosis, the patient requiring careful watching. It takes a long time for the effect of the anesthetic to wear off; if conscious the patient becomes very restless and tosses about; the cyanosis becomes definite; the vomiting is frequent and of small amounts; the pulse rate increases rapidly but decreases as rapidly in volume; the temperature shoots up even in a clean case; and visions of sepsis appear; the patient soon becomes unconscious. In children there are shrill cries, in an adult maniacal delirium requiring restraint; coma supervenes, terminating in death in the matter of thirty-six hours. If the urine be examined, acetone and diacetic acid will be found. If the case is more prolonged these may be absent and crystals of leucin and tyrosin may be found."

The predisposing factors of acidosis are nervous and muscular activity, starvation, decreased oxidation of diseased and injured tissues, direct injury to

the liver by the anesthetic. Starvation causes a rapid decrease of the circulating glycogen in the blood. Morphine helps to prevent an acidosis but tends to increase it after it has once developed.

#### TREATMENT.

The first and most important thing is alkali in the form of sodium bicarbonate. It may be given in any way possible, depending upon the nature and severity of the acidosis, by the mouth, by the rectum, subcutaneously, or intravenously. The amount depends upon how quickly the symptoms of acidosis subside. At any rate the hydrogen ion concentration should return to normal, or if the urine is quite acid, until the reaction is neutral or slightly alkaline, never strongly alkaline. A two per cent. solution is used subcutaneously and may be combined with potassium citrate or infusion of digitalis. A four per cent. solution is used intravenously. Transfusion by the syringe method of prealkalinized serum from a healthy donor has been used successfully (11).

The clinical effects of the successful treatment of acidosis with alkalies are relief of dyspnea and diuresis, and occasionally mental improvement.

The use of carbohydrates in the treatment of acidosis is of decided benefit, either in the diet or in the form of glucose. A diet rich in fats may be responsible for acidosis for with the increase of fats in the intestines is the increased formation of alkaline soaps derived from the splitting up of the fats into fatty acids and glycerine. Thus the alkalies are prevented from reaching the body. For the complete utilization of two molecules of fat, one molecule of glucose must oxidize; thus two molecules of fat yield six molecules of fatty acids and two molecules of glycerole; the two molecules of glycerole yield one molecule of glucose. Now if for any reason this complete process is interfered with, you have the fatty acids remaining in the intestines unused. This is where the glucose treatment can be of use, as well as a carbohydrate diet. Carbohydrates contain a large proportion of oxygen in their molecules in contrast to the small amount of oxygen in fats. A part of this oxygen is given up and assists in acidifying the fats into simple harmless products. Glucose may be administered by mouth if there is no vomiting, one dram to a glass of water several times daily. It may be used in a five per cent. solution per rectum. If the case be urgent a four or five per cent. solution subcutaneously, or as high as a seven per cent. solution intravenously, may be used. The glucose solution must be freshly prepared, since, being a good culture medium, it is easily contaminated. Glucose is utilized very quickly and readily by tissue cells.

A very important part of the treatment, particularly in children, is the regulation and control of the diet. Van Slyke found that digestion increases carbon dioxide tension. If a child is continually being overfed the excess of energy supplied and generated is normally cared for by storage of glycogen or fats, or by such end products as carbonic acid, water, urea. This method involves complete oxidation. If the body cannot afford to lose oxygen, or has not the oxygen to lose, the oxidiza-

tion is incomplete and acids are left unoxidized. These acids are neutralized by the body and if bases are inadequate the drainage from the tissues takes place—potassium and sodium from the red cells, carbonate from the plasma, iron from the hemoglobin, calcium from the bone, ammonia from the proteins, etc.—and acidosis results. If energy is derived from protein or fats without the presence of carbohydrates, an increase of acids results. When an individual fasts his cells naturally continue to oxidize foods. The proportion of fats and carbohydrates in the body is largely determined by the previous diet. If the patient has but little fat then the cells will live on protein. This type, however (doubtful), does not produce acidosis because about fifty per cent. of the protein is capable of conversion into glucose and of the remaining fifty per cent., only a small fraction consists of aminoacids capable of yielding acidosis bodies. But if the patient has a considerable glucose reserve and also a normal amount of fat, there is no acidosis at first; but later, after the glucose decreases and the fats are being used, there is a rising acidosis. If fasting is pushed until fats are used up and the protein is reached, then acidosis decreases. If the individual contains considerable fat in proportion to the glycogen the result is a quicker and more severe acidosis.

Reduce the amount of the diet, particularly fats; keep it simple; creating demands for food, however, is better than curtailing the supply. The alimentary tract should be emptied with castor oil or calomel, although one author (Williamson) warns against calomel for the bowels or mercurial douches because mercurial poisoning causes the same lesions as are present in acidosis. Glucose and bicarbonate are administered. Barley water may be used. Water is the best diuretic. In children when the periodic vomiting has ceased give a low diet, low in fats, proteins, and carbohydrate, but not fat free. Skimmed milk, rice water, barley water, oatmeal water, may be given for a limited time only. Juice of oranges, pineapples, grapes, baked apples, prune sauce, pear sauce, etc., are allowed. It takes fifty pounds of apples to replace the protein of one pound of beefsteak and yet two or three apples contain enough alkaline base to correct the acidity arising from the cereals normally consumed in a day. Fruits are poor in protein but contain considerable sugar, cane, dextrose, and levulose. Levulose, or fruit sugar, is so delicate and unirritating that it can usually be borne by the most sensitive stomach. The final stage of fruit digestion is the change of fruit acids and salts into alkaline salts, chiefly carbonates. Vegetable foods contain considerable alkaline base when raw, but when cooked forty to fifty per cent of the mineral parts is lost. Meat contains a large excess of acids and cereals contain nearly one third as much as meat.

The prolonged use of alkali tends to produce acidity in the long run, either by stimulating acid secretion or by decreasing the alkaline output. Massive doses should not be given day in and day out, and even an excess of alkali should not be pushed, as this tends to further disturb the acid basic equilibrium. In some cases, after the use of



alkali, small, well diluted doses of acids may stimulate the body to produce its own alkali.

A few added suggestions for treatment might be given regarding the acidosis of diabetes. Precaution against acidosis should form a part of the treatment in every case of glycosuria. A careful diet is the best method. Drugs are palliative, and even though the acidosis were corrected, shown by a return of the hydrogen ion concentration to normal, the original condition, diabetes, would still be present. Even though diabetic coma is due to acidosis, in some cases of diabetes in the terminal stage of coma it is possible to correct the acidosis and return the blood to normal alkalinity and still have the patient die in coma, due to the inability to correct acidosis in the tissues as well as in the blood. The diet should have three objects: 1, limitation of the acid products of metabolism; 2, conservation of the store of alkaline bases in the tissues and blood; 3, maintenance of the balance at normal level. The acid production of metabolism may be limited by the elimination of fats from the diet. To prevent acidosis in the obese, a weight reduction is necessary, thus eliminating a source of fat supply. The tolerance for carbohydrates should be increased. "In diabetes the maximum rate at which glucose can be oxidized is lower than in the healthy body. The limited amount of glucose the diabetic can oxidize fixes the amount of fat that can be oxidized without developing acidosis. And so a fatty acid metabolism which would be normal in health becomes exceedingly high in severe diabetes with the consequent development of acidosis" (12). Rest and warmth help to inhibit the mobilization of fats and assist the glucose to oxidize. The protein intake should be restricted just enough so that there will be no nitrogenous waste left to form acids. This is best governed by the nitrogenous output in the urine. In some cases of diabetes, withdrawal of food increases or provokes an acidosis. Judicious administration of carbohydrates may correct an acidosis provoked by starvation. In severe cases of diabetes the volume of urine must not be allowed to decrease with the sugar.

#### SUMMARY.

Acidosis is not in itself a disease but like a fever, an incident of disease. Alkali therapy for acidosis is certainly beneficial, but, like the treatment of fever with ice, it is merely symptomatic (13). Acidosis exists in numerous diseases but all tests may not be present. Acetone may be found in diabetes and in certain diseases of children but not in chronic nephritis. All of these conditions may show a decreased alveolar carbon dioxide tension, or an increased soda tolerance, etc. Therefore acidosis is not due to the same abnormal factor in each case. Arterial blood must be kept neutral or slightly alkaline. This is normally maintained by the removal of surplus acid radicals by the kidneys, and by the neutralization of the excess of acids, by body bases, and by ammonia which, if not used, would be excreted as urea. When for any reason this balance mechanism breaks down, the alkali reserve of the body is lost, alkali starvation results, all nutritive functions become disordered, and coma or even death may follow.

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#### SARCOMA OF THE BRAIN.

By H. M. FISHER, M. D., and A. G. ELLIS, M. D.,  
Philadelphia.

(From the Ayer Clinical Laboratory of the Pennsylvania Hospital.)

#### CLINICAL NOTES—BY DOCTOR FISHER.

Mrs. C., fifty-two, a widow, born in Italy, was married at the age of eighteen. Two years later she gave birth to one child, who lived only a week. Following the birth of this child the patient suffered from dysmenorrhea for many years, also from symptoms of gastric and intestinal indigestion and did not become pregnant again.

In 1897, Dr. George M. Boyd operated, removing both ovaries and tubes and, following this operation, the patient's general health improved, although, from time to time, I was sent for, owing to repeated attacks of flatulent dyspepsia. Last winter (1916) the patient had a bad attack of ear ache and was very much depressed. The trouble proved to be due to a furuncle in the external auditory meatus, and no evidence of middle ear catarrh was detected.

July 26, 1917, I was called to see the patient, and was informed that for a week or more she had been complaining of slight thickness of speech and some weakness of the right arm. On August 20th, she came to my office, still complaining of the same symptoms, but was able still to walk with some assistance, although complaining of some weakness in the right leg. On September 10th, I was sent for and suggested a consultation with Dr. M. J. Lewis. Since there was no evidence of arteriosclerosis, systolic pressure 110-120, nor of heart or kidney lesion, nor of any sudden loss of power, Dr. Lewis decided that the symptoms pointed to an intracranial growth or to cerebral syphilis.

Patient complained at this time of some pain over the left orbit, but so far as I could ascertain headache had at no time been a prominent symptom. She was somewhat emotional, and the thickness of speech from which she had previously suffered had become much more marked. Any attempt to speak more than a few words at a time seemed to fatigue her very much. At this time there was slight, but fairly well marked, paresis of the right arm. A Wassermann blood examination proved negative, and the urine was absolutely normal. From this time her condition became rapidly worse and on September 13th she was admitted to the Pennsylvania Hospital.

The following notes are from the history of the case taken by Doctor Randall, resident physician of the Hospital:

Patient is semicomatose. Respiration quiet and

regular. Pupils unequal; the right is the larger and does not react to light. Left pupil reacts fairly promptly. Breath very foul. Heart sounds very weak and distant. Pulse weak and irregular. Patellar reflexes  $++$ . No ankle clonus. Suggestive Babinski on both sides. No distinct paralysis, as all limbs move responsively to pin pricks. Systolic pressure 110. Diastolic fifty-five. Condition seems critical.

September 14.—A lumbar puncture was made and twenty-five c. c. of slightly cloudy fluid were removed under increased pressure. The fluid contained 165 cells, mostly mononuclear. Spinal fluid Wassermann negative.

September 20.—Condition unchanged. The treatment from the time she was admitted to the hospital consisted in inunctions of one dram of mercurial ointment three times daily. Mercury succinimide, one-quarter grain hypodermically, twice daily, and benzoate of sodium and caffeine on account of the weak heart action, and digalen hyperdermically as required.

September 21.—Weaker. Medication stopped as patient appeared moribund.

September 24.—Treatment started again, patient's condition having improved considerably since a lumbar puncture made yesterday. The fluid passed out under about normal pressure, was clear, and contained only twenty-five cells. Wassermann made on this fluid proved negative.

September 27.—Patient was seen by Doctor Spiller in consultation, who found both knee jerks reduced, also that neither pupil reacted to light. Suggested either cerebrospinal lues or uremic poisoning.

Examination of the functional capacity of the kidneys by phenolphthalein test showed elimination at end of first hour thirty, at end of second twenty-five; total fifty-five. For the past two days patient has voided urine normally, having had previously complete retention, and catheter had been used regularly twice a day. Examination of eye grounds by Dr. P. N. K. Schwenk made several days ago showed no pathological changes in either eye. Patient died in the evening of this day. Her temperature had varied from 97.6° on the date of admission to 101.2° three days later, the curve lying for the most part between 990 and 1000.

#### **PATHOLOGICAL FINDINGS.—BY DOCTOR ELLIS.**

The pathological diagnosis was as follows: Fatty degeneration of the heart; congestion of the left lung; congestion and edema of the right lung; chronic adhesive pleuritis, right side; congestion of the spleen; congestion of the kidneys; congestion and parenchymatous degeneration of the liver; bilateral salpingoophorectomy; abdominal scar; tumor of the brain.

*Brain.*—The brain weighed 1,220 grams. In the left parietal region was a round elevated area two or three cm. in extent, that was slightly roughened and was grayish in color. At one border of this area was a smooth, rather yellowish spot, two cm. in diameter, that fluctuated when pressure was made on the surrounding brain. The entire elevated area was soft, as though fluid were contained beneath.

Incision of the yellowish area, in making inoculation from it, allowed the escape of a thin reddish fluid, apparently blood tinged serum. The remainder of the brain had the usual consistency and appearance, except that the small vessels of the pia mater were somewhat injected.

A horizontal incision at about the midpoint of the bulging area opened into a cavity five cm. in diameter, at opposite poles of which were masses of fairly firm, gray, homogeneous tissue. The cavity itself was filled partly by fluid, partly by softened or necrotic tissue that hung in shreds from the solid portions of the wall. The general appearance was that of a solid mass that had softened and become partly fluid, with small hemorrhages occurring into it. The solid portions of the mass were quite sharply separated from the brain tissue, although on close inspection there appeared no distinct capsule or similar structure separating the two. The mass had reached almost to the pia mater on the outer surface, accounting for the fluctuation before the cavity was opened. Internal to the softened area the brain tissue for a zone three to four cm. in width was tinged distinctly yellow by pigment, presumably due to deposition from the hemorrhagic tissue in the cavity. The mass had apparently exerted some pressure on the left lateral ventricle but did not appear to have actually invaded it. Inoculations on agar and in broth were made from the content of the mass. The spinal cord and its meninges showed no gross lesions.

#### **MICROSCOPICAL EXAMINATION.**

The microscopical findings of the tumor were:

*Brain.*—Sections of the tumor were very largely cellular. These cells were round or oval and possessed palely stained nuclei. In areas they were closely massed, in other portions they were separated by faintly staining, fibrillar substance. The growth had no sharp line of demarcation from cerebral substance; the latter was gradually infiltrated by the cells which extended for some distance into recognizable brain tissue before the latter was completely replaced by the tumor.

The growth was, in general, quite vascular, the vessels having fibrous walls. Quite extensive areas were telangiectatic in structure, being composed of closely placed vessels or channels separated by thin bands of tumor tissue, and having no distinct wall other than occasioned endothelial cells. In these spaces were large bodies, apparently "shadow" red cells, and fibrin. Small hemorrhages were near these areas in one section and they bounded degenerative and necrotic portions of the tumor that formed the border of the cavity in the growth. In the necrotic tissue were scattering leucocytes, chiefly polynuclear in type.

Inoculations from the content of the cystic portion of the tumor proved sterile. The cord and its meninges had no noteworthy changes.

The structure of the tumor was very suggestive of glioma, which was the diagnosis provisionally made. Sections stained to demonstrate glia fibres, however, failed to show their presence. The conclusion was that the tumor was a sarcoma containing some very vascular areas.



## PILOCARPINE IN CHRONIC DEAFNESS.\*

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St. Luke's Hospital.

The use of pilocarpine in the treatment of deafness has been advocated for many years, but in a perusal of the literature I have been unable to find any definite data concerning the part of the auditory mechanism that is affected. The consensus of opinion seemed to be that the drug was especially efficacious in nerve deafness. I have used it frequently in cases of nerve deafness, otosclerosis, and in cases which I had been unable to attribute to a nasal or pharyngeal disturbance. When the pilocarpine is inflated directly into the middle ear through the eustachian catheter, the hearing and tinnitus are in some instances improved; but comparing the tests the changes in the tone limits have always been in the lower vibrations. The question arises: Does the pilocarpine influence the change or is it induced by the routine inflation which is used to assist the injection into the tympanum, and what part of the auditory apparatus is influenced?

Occasionally I have administered the pilocarpine solution by mouth, especially in the case of patients who come from out of town and find it difficult to return for extended treatments. In one of these cases the result was so obvious and constant that it seemed to be of sufficient importance to report.

CASE.—Miss E., age thirty years, single. First came under my observation at St. Luke's Hospital in Doctor Dench's otological service on July 6, 1915. She was employed as a bookkeeper and stated that she was afraid of losing her position because of her deafness. There was no history of any other deafness in the family. She also stated that she had been treated by a number of specialists for a considerable length of time—the treatment consisting principally of inflation—with no apparent change. She gave a history of having had measles seven years ago, when she was seriously ill. At that time her ears discharged, and the right ear had been impaired ever since. Five years ago she fell on the back of her head and became completely deaf in the left ear. One year ago the deafness and tinnitus increased in the right ear. Both tympanic membranes were intact, but were slightly retracted and thickened. The nose and throat were apparently normal. In testing, the left ear was totally deaf with the use of the noise apparatus, and the static labyrinth failed to react to turning or ice water irrigation. With the right ear patient heard moderate voice at three inches, but the watch was negative. Low limit at 55 d. v.; high limit, 9,290 d. v. vibration. Bone conduction was greater than air conduction. The static labyrinth was nonreactive. These limits remained the same after inflation. Both tubes were very patent. A Wassermann reaction was negative. Pilocarpine solution was given to the patient, with instructions to take it to the point of physiological reaction or until a free perspiration was induced. Upon returning the following week, she stated that she had had a most profuse perspiration, with an immediate change of hearing which was quite perceptible to herself as well as to her family. In testing again in the same environment, the left ear remained totally deaf and both static labyrinths inactive. In the right ear, however, she was able to hear the same watch at one inch and the moderate voice at eight feet. The low limit was now 16 d. v.; high limit, 9,290 d. v. After an interval of more than two years, the patient returned, upon invitation, June 2, 1917. The comparative tests showed the hearing to be identically the same, and she stated that she had very little tinnitus.

\*Read before the Otological Section of the Academy of Medicine, November 14, 1917.

The change in this case was in the lower vibrations, from 55 d. v. to 16 d. v., or normal low limit. The hearing for the voice improved from three inches to eight feet; and for the watch from zero to one inch. Since she had previously had considerable inflation treatment with no apparent benefit, and the only treatment administered in this instance was the pilocarpine solution by mouth, it seems quite obvious that the latter induced the improvement.

11 EAST FORTY-EIGHTH STREET.

### ASPHYXIATION—RESPIRATION— CIRCULATION.

By P. A. KANE, M. D.,  
Chicago.

Asphyxiation is defined as suspended animation from a deficiency of oxygen in the blood. To this I do not fully agree and will state my reasons later in this article.

The modern method of resuscitation, approved by the medical profession, is to place the patient prone on his face. The doctor kneels over the patient, one leg on each side, and facing the head of his subject, places both hands over the short ribs and presses strongly and steadily and then releases pressure. This process is repeated about eighteen times per minute. This position, maintained for a short time, is a good one for a patient who has been suffocated in water. It removes the water from the lungs by drainage and pumping. It also keeps the heavy weight of the lungs and the water in the lungs from impeding the venous circulation. For a man who has been overcome by carbon dioxide or carbon monoxide gas this position is not good. He should be placed in a reclining position with the head thrown back and chin slightly drawn in. The lungs in these cases are usually empty and irritated, causing contraction. The prone attitude permits free contraction of the lung, causing less expansion on release of pressure, permits the heart to turn over on itself, twists its arteries and veins, and thereby impedes its proper functions. On the other hand, in a reclining position, the gravity of the lungs would help to overcome their contraction, and hold the heart in proper position.

I would like to ask any doctor if he were on the point of asphyxiation, or commonly speaking, short of breath, would he lie on his stomach and face and breathe only eighteen times a minute? Does any animal when short of breath take but eighteen respirations per minute? Any person or animal in such a condition will inhale and exhale very quickly about six times and then give one long breath and then start all over again. This one long breath enables the blood to get back into the brain. Animals in general lower the head and let the tongue protrude from the mouth. Men throw the head back in order to obtain the freest passage of air to the lungs. Men never lie face downward, but prefer to lie on the back with the body and shoulders raised. Of course, if this method were used in asphyxiation, an assistant would be needed to hold the patient's tongue from falling backward into the throat. Eighteen respirations per minute is a good method

for the doctor to use, but not for the patient. The heart of the patient beats feebly, but very quickly, about two hundred times per minute. His respirations to correspond to this acceleration should be about fifty, not eighteen, times per minute. To get the blood circulating throughout the body is of as much importance as getting oxygen into it. This can only be done by working in unison with the heart, at a ratio of one to four between respiration and heart rate.

The heart is the pump which forces the blood throughout the body. Normally it beats about seventy-two times per minute. But in childhood, sickness, old age, and exercise, it beats much faster. It beats practically four times during each full respiration.

There are two circulatory systems: the pulmonary or smaller, and the systemic or larger. The right and left auricle, the right and left ventricle are of practically the same size. The right ventricle pumps the same amount of blood into the pulmonary system as the left ventricle does into the systemic system. Any cause that disrupts this equilibrium is sufficient to produce incipient asphyxiation, or so called loss of breath. In looking upon the heart as a pump, which undoubtedly it is, we overlook that other pump, the lungs; that other great pump with a pressure of fifteen pounds to the square inch, which forces oxygen into the blood and compresses the pulmonary veins, forcing the aerated blood into the left auricle. It also compresses all other veins in the thoracic cavity and eventually pumps the venous blood from the head and arms through the innominate veins into the superior vena cava and into the right auricle. By its action of compression and release, it brings the chyle up through the thoracic duct from the abdominal cavity. By the lowering of the diaphragm during inspiration, it produces the following effects: 1. Compression of the kidneys, forcing the venous blood into the portal circulation and the urine from the pelvis into the bladder; 2. compression of the stomach, forcing the blood into the hepatic veins and the food into the intestines; 3. compression of the spleen, adrenals and pancreas, forcing the blood and secretions into the circulation and on toward the liver, forcibly contracting the liver, compressing the small veins of that organ, and forcing the venous blood up through the inferior vena cava and on into the right auricle. Morris, in his book on anatomy says: "As the inferior vena cava passes through the diaphragm, the walls are attached to the tendinous margins of the caval opening and are then held apart when that muscle contracts."

There are no valves in any of the veins of the thoracic or abdominal cavities. As the veins are so constructed they would not or could not withstand the enormous pressure of fifteen pounds to the square inch. Not speaking of the added strain during coughing, emesis, defecation, urination, and child birth. The blood in those veins, without doubt, moves in two directions during respiration; this excepts, of course, the arterial blood in the pulmonary veins that moves toward the left auricle. The venous blood in the superior vena cava coming from the head and upper extremities, moves in two directions

during the inspiration; some of it is forced into the right auricle, and some of it regurgitates, chiefly into the internal jugular veins. These are the largest and most direct, practically receiving the force of the inspiring blow. "The internal jugular vein," says Morris, "has two enlargements; one called the superior bulb, just external to the jugular foramen, and an inferior bulb, about one inch from its termination. One inch above its termination it contains a pair of imperfect valves, below which a second dilation usually occurs." These, no doubt, in the fetus were perfect valves, but as soon as breathing occurred, the force of the regurgitation expanded the vein and they became imperfect, and later through disease, became atrophied to some extent. Now, the force of the blow occurred further up where it met the weight of all the returning blood from the veins and sinuses of the cerebral cavity, just external to that cavity. These two bulbous enlargements receive the force of the regurgitated blood, in a similar manner to the air chamber used by a plumber. There are no bulbous conditions in the abdominal veins. The regurgitation from the liver is practically infinitesimal compared to all its avenues of escape. First, the whole of the liver is not thoroughly compressed on inspiration; second, the mesenteric, renal, portal veins, etc., leave plenty of room for regurgitation; third, if the systemic venous blood only equals the pulmonary circulation, then the arterial blood from the left ventricle divides into the head and upper extremities, the azygos arteries, renal, mesenteric, hepatic, lower extremities, etc., so that a much smaller amount returns through the portal than through the innominate and superior vena cava. The thoracic duct has two perfect valves in its upper extremity; this, says Morris, "stops venous blood from entering therein." The walls of this duct, like those of the arteries, are built to withstand fifteen pounds of pressure. The suction force exerted to pull the chyle up from the receptaculum chyli comes from the vein into which it flows.

If I breathe rapidly, say about sixty times a minute, and keep up that rate sufficiently long, I become dizzy. This proves that the blood is pumped out of the brain faster than the heart refills. This condition removes the natural pressure about the brain, permits it to expand, thereby disarranging its equilibrium, and vertigo is the result. Another proof that the blood is taken from the head and face faster than it is replaced by the heart is that almost as soon as I resume regular breathing, a warm feeling comes to my face, showing that blood is quickly refilling the depleted arteries and veins of the head. If I inflate my lungs to repletion and hold them in that manner as long as possible, my face becomes crimson and I become dizzy. This proves that the heart is forcing blood into my head without any return flow. The arteries and veins of my face and brain become full and expand, the brain cavity becomes congested, and causes an attack of vertigo. Even the vessels of the eye become congested and I see red. Now if I exhale fully and hold my breath for a while, a dragging down sensation is felt, at the root and bottom of the lungs near the region of the heart. The lungs



seem to have attained great weight, the dragging down feeling becomes so strong that it fairly forces me to open my mouth with a gasp, in order to inflate the lungs. This implies that the lungs are contracted while the heart keeps regularly pumping blood into the pulmonary arteries and veins and arterioles. The surrounding pressure being removed from these vessels, the blood not being forced out of them by breathing, they naturally expand, become full and heavy with blood. The specific gravity of that weight forces me to take in breath with a gasp. The sensitive nerve filaments in the alveolar tissue act on the brain centre and force me to gasp for breath.

The vessels in which the blood circulates, the arteries, arterioles, veins, and sinuses, are always filled with it, full at all times and under pressure, heart beat pressure. But in the complete circulation, there are two vacuums. There is always a vacuum in the two auricles or ventricles. If these cavities are filled at the same time, it is but momentarily during the beginning of the systole. While breathing normally, two heart beats occur during inspiration; one during expiration and one during rest. While I am inspiring and forcing the aerated blood into the left auricle, the heart empties that chamber twice into the systemic circulation. But the heart at the same time is emptying the right auricle the same number of times through the right ventricle, into the pulmonary arteries. These arteries are occluded at their termination to a great extent during full inspiration. Men have been trained to hold their breath for two to three minutes at a time. I do not believe this could be kept up continuously for an indefinite period. Their heart beats would continue to beat at the normal rate of seventy-two per minute or faster. The equilibrium between the pulmonary and systemic circulation would become disorganized and this in turn would affect the brain centre.

Pearl divers and sponge fishers have developed this accomplishment to a marked degree. But these men have the advantage of standing on their heads, as it were, and externally are completely enveloped in an area of very high water pressure which without doubt is a great advantage to them. Some years ago I saw a professional water nymph and her assistant stay under water two or three minutes. They did not exert themselves in any manner; they dived to the bottom of the tank of water as slowly and easily as possible. If intense active energy had been used to make the dive, this action would have disturbed the brain centre of the heart, causing its acceleration, disturbing its balance, and forcing the divers to obtain oxygen sooner, which would have spoiled their act. Men inhaling pure oxygen, after some practice, have been able to retain their breath for seven to nine minutes. Though I have never seen this experiment, I am positive they could not keep this up for twenty-four hours, nor could they exert themselves violently by exercises or labor, mental or physical. Dr. Ben Morgan who holds the chair of anesthesia in the Chicago College of Medicine and Surgery, assures me you cannot move or think while holding pure oxygen in the lungs for ten

minutes. One must lie perfectly still and try to sleep.

The heart pumps the blood into the arteries, and by such action, creates a vacuum in the auricles. The lungs, by their expansion and contraction, force the blood out of the veins into the auricles. The newly born infant as soon as it inhales, exerts this same air pressure, fifteen pounds to the square inch. This pressure forces the arterial blood out of the pulmonary venous capillaries into the left auricle. At the same instant, it forces the venous blood out of the superior and inferior venæ cavæ into the right auricle. This equalizes the pressure on each side of the septum of the auricles, and stops the flow of blood from the right auricle into the left auricle. This enables or forces the valve at this opening to close; and eventually one solid septum is formed.

The human body is like a clock. All the parts are there and coordinate but useless, until the pendulum is started to swing, when everything works in unison. So it is with the human body; all the organs are present, coordinate, but useless until that great pendulum, the lungs, begins to work, when the whole body starts and continues to function. The ticking of the clock is caused by the swing of the pendulum. The beating of the heart is a result of breathing. The reverse in either case is nonsense.

The human body is like a locomotive, the breathing of the cylinder heads with its accompanying exhaust, forces the piston rods—the heart—to perform their duty.

#### CONCLUSIONS.

These are summed up under three heads: Asphyxiation, the pumping power of the lungs, and the closure of the foramen ovale.

First: The asphyxiated patient should be in a reclining position, except while pumping liquid out of the lungs and air passages. This overcomes the irritated contraction of the lungs and holds the heart in place. The head should be thrown back and chin drawn in. This gives the freest passage for air to enter the lungs. The doctor should give five or six quick superficial pressures and releases and one long, deep pressure and release; this full respiration should occur about twelve times per minute.

Second: The pumping power of the lungs. Air pressure in the lungs squeezes all the blood out of the veins of the thorax and liver; forces oxygen into the blood; squeezes the gall bladder and forces the bile on into the intestines, helps to force the food out of the stomach into the duodenum, down into the intestines, and on into the colon, and finally assists in its propulsion during defecation; squeezes the hilus of the kidney, forcing the urine into the ureters and on into the bladder, and finally assists in the last act, urination. All these acts except the eliminating ones are performed involuntarily.

Third: The closure of the foramen ovale. This equalization of pressure on each side is paralleled in the triple valve of an air brake. This pressure is understood by every experienced railroad employee.

1926 CONGRESS STREET.

# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.

BY CHARLES GREENE CUMSTON, M. D.,  
Geneva, Switzerland.

Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine, London, etc.

### WOUNDS OF THE LOWER JAW IN WARFARE.

This paper sets forth some data on wounds of the lower jaw in warfare, obtained from the surgical department of the Royal Reserve Hospital, No. 6, at Budapest, which is under the direction of Dr. Johann von Ertl. How these notes came into my possession it is not necessary to state. The Huns and their Allies have jealously guarded the exit from Germany or Austria of all medical and surgical journals and books pertaining to the surgery of warfare, fearing lest they should be of value to the Entente Allies in the treatment of their wounded. I would add, however, that their fears are groundless, because their contributions to medicine and surgery during this war have been astonishingly meagre and mediocre, and they have adopted a large amount of the teachings of the medical and surgical corps of the French, English, and Italians, in most instances giving the reader the impression that they have originated with them. This, of course, is only what might be expected from a race of Vandals.

Wounds of the lower jaw in warfare offer, like other bone lesions, many varieties according to the nature of the missile and its momentum. The Austrian Army has suffered greatly from wounds of the lower jaw, from simple fracture to the total removal of the bone and all intermediary lesions between these extremes. The surgical treatment varies according to the degree and nature of the damage inflicted, and also in cases coming under observation during an acute phase of the injury or with cicatrices of the soft parts or chronic lesions of the bone.

From the viewpoint of this special surgical work, which has been greatly developed during the war, wounds of the lower jaw may be divided into two groups: 1. Those which recover spontaneously by a conservative buccal treatment; and 2, cases in which conservative treatment is useless and therefore requires a combined stomatological and surgical treatment.

In cases which show a tendency to spontaneous cure, the principal factor in treatment is fixation. Modern stomatology has numerous apparatus at its disposal for obtaining absolutely irreproachable functional results. In the special department of Royal Reserve Hospital, No. 6, various fixation systems of Surgeon Major Gadany and Doctor Landgraf have been employed, partly in their original forms, partly with variations. The recovery of the patients, who offer a spontaneous tendency to consolidation, can be readily explained. The bone fragments which are found in the track of the missile retain their vitality because they are still united to the periosteum and soft structures and these splinters become united and consolidated by simple fixation of the jaw, just as in other cases of

fracture. The cure is to be aided by a palliative treatment of the wound and in these cases the most important therapeutic factor is fixation which, in the case of the lower jaw, can be best attained with the teeth still existing.

Stomatology comprises the use of apparatus of fixation of the highest type, as well as orthodontic

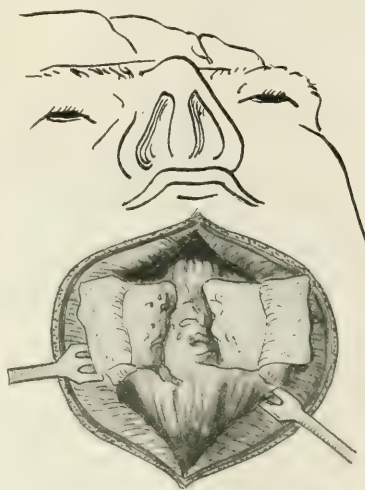


FIG. 1.—Exposure of track of missile.

procedures. Therefore, it is manifest that stomatology, which in the cases under consideration gives absolutely good results, is the branch of surgery to which they should be confided.

In a large number of cases in which the bone lesion is, it is true, of small importance, conservative treatment may, however, not result in consolidation on account of the special pathological condition and the anatomical relations of the wound track. In these cases spontaneous consolidation does not occur, because the missile has destroyed the periosteum, while the sequestra become interposed between the fractured ends, thus spreading them apart. In these cases a cure can be obtained, according to Doctor von Ertl, by resorting to his osteoperiosteal plastic operation, because by this technic healing is aided by removing the dead sequestra, while the track of the missile is covered by very vivacious periosteum taken from the bone fragments or, still better, from the osseous lamellæ, so that the bone fragments can be brought and held in contact. By the same procedure, the relations of the bone fragments and living soft structures are reestablished, and thus is created the possibility of consolidation.

Let us now consider Doctor von Ertl's famous technic of osteoperiosteal plastic work. Foremost of all the case must be prepared for the operation by stomatological work. An apparatus is first made



and applied to the existing teeth in order to retain them in good articulation. The operation is carried out under local anesthesia, by producing anesthesia of the third branch of the trigeminus at the foramen ovale; next the cervical plexus and regional branches of the facial nerve are anesthetized, while

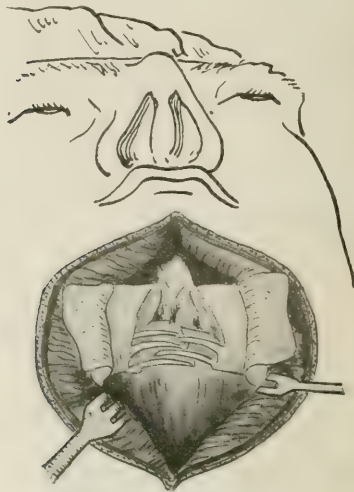


FIG. 2.—Nonplastic vertical bone fragments brought in contact to form horizontal layers, thus supplying loss of bone.

the submaxillary plexus is in turn anesthetized through the buccal cavity.

When the wound is located in the middle of the jaw (chin) a vertical incision is carried down the centre of the chin. When the track of the missile is in the horizontal branch of the jaw the incision is likewise horizontal. If there is a fistulous tract in the field of operation it is comprised in the incision. After incising the skin and fat they are sufficiently dissected off, and then the trajectory of the missile is laid open and the granulating periosteum exposed to view, and this is then dissected off on each side to the end of the fracture. After this dissection of the periosteum the track of the missile is exposed (see Fig. 1). In cleansing the track Doctor von Ertl attaches great importance to the removal of all small sequestra existing between the soft structures, and if along the track of the missile some bone splinters are still united to the periosteum or bone, an attempt is then made to preserve them by uniting them in the form of a mosaic, and by this means the two bone fragments are brought into contact. If, on the contrary, no viable sequestra are discovered in the track of the missile and if this track is more than one and a half or two centimetres, or if the bone fragments are not of an aplastic nature, von Ertl is inclined to bring the bone fragments in contact by forming with the chisel vertical bone lamellæ which are brought over in two or three horizontal layers which thus fill in the loss of bone (see Fig. 2).

Next by way of the buccal cavity the track of the missile is followed up by working with the curette,

enlarging the orifice of the track which opens into the buccal cavity and removing the granulation tissue. When the track has been cleaned out it is plugged with iodoform gauze, at the same time taking care that the gauze can be easily withdrawn by way of the mouth. Following this the bits of periosteum are placed in their original position and sutured together in the middle line, reinforcing them above and below by catgut sutures (Fig. 3). By this procedure the track of the missile is completely closed below. Then the skin incision is closed with interrupted sutures and, the operative work being finished, the bone fragments are splinted with the apparatus made beforehand.

The success of this operative procedure depends almost entirely on the aftertreatment. On the third day the iodoform gauze is removed through the mouth and renewed every day. During the packing one must especially pay attention that the cavity is completely filled with the gauze by exercising a slight pressure on the walls of the cavity. In this way the process of hypergranulation is avoided, which would otherwise compromise the ultimate success of the operative work. If the cavity is not sufficiently packed the rapidly growing hyperplastic granulations will soon choke up the cavity, and since they do not contract in the form of connective tissue they offer no framework for the periosteal apposition over the bone. Following the ultimate cicatrization of the granulation tissue the bone fragments become separated by cicatricial tissue and

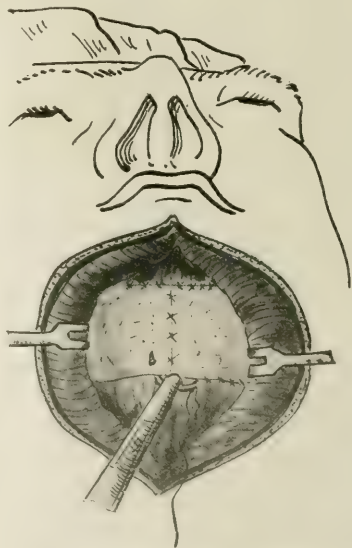


FIG. 3.—Replacing and suturing bits of periosteum in original position.

consequently, in spite of the operation, a pseudarthrosis results.

For this reason great attention must be given to the aftertreatment and particularly to tight packing of the track of the missile, in order to prevent the

process of hypergranulation from taking place. The result is that the contraction of the connective tissue of the granulations and the periosteal apposition of the bone fragments proceed simultaneously. The cavity fills in until by the end of the sixth week only a small depression indicates the site of the track. Complete bone union will also have taken place in from six to eight weeks. Radiograms of these cases show that the bone fragments are united by bone callus, which is very distinctly seen on the plates and which may be considered as a production of the periosteum. Therefore, it must be admitted that the débris of destroyed periosteum which still remain also regenerate by metaplasia of the surrounding congenous tissue and that they can utilize completely their osteoplastic energy.

Doctor von Ertl maintains that, by his osteoperiosteal plastic work, he has succeeded in curing cases of osteomyelitis with fistula which had been present for years and he resorts to this operation in these cases and "always with complete success."

In wounds of warfare this operation will be successful only when the regenerated periosteum is still sufficiently vascularized and when ultimately, after cicatrization has taken place, it is not atrophied. For this reason he resorts to this technic only after the first six to eight weeks following the receipt of the wound and when, during this time, the cases offer no tendency to consolidation after conservative treatment has been essayed.

If these considerations are overlooked the operation will fail and a permanent cure can then only be obtained by transplantation. In my next letter I shall discuss in detail Doctor von Ertl's views on this aspect of the question and his procedures.

## THE NEW SURGEON GENERAL OF THE UNITED STATES ARMY.

Merritte W. Ireland, late chief surgeon of the American Expeditionary Forces, has been nominated Surgeon General of the United States Army, to succeed General Gorgas, who retires. He was born at Columbia City, Indiana, May 31, 1867. He was graduated from the Detroit College of Medicine, March 20, 1890, and served as house physician at St. Mary's Hospital, Detroit, from December 20, 1889, to September 25, 1890. He then entered Jefferson Medical College, Philadelphia, and was graduated April 15, 1891. He had long had an ambition to enter the medical service of the Army, and he passed the examination for the

service and was appointed assistant surgeon with the rank of first lieutenant May 4, 1891. On the 27th of the same month he was sent to Jefferson Barracks, Missouri, continuing there until October 22d. After serving at various posts, including Fort Apache, Arizona territory, 1894, he reached the grade of captain, May 4, 1896.

In the Spanish-American War he served with the Fifth Army Corps, rendering important service which won the commendation of his superiors, especially in his capacity as executive officer of the hospital at Siboney, Cuba. Returning to the United States, he was stationed at Camp Wyckoff, New York. He became a surgeon with the rank of major, with the Forty-fifth United States Infantry, August 17, 1899, going with his command to the Philippines. He served in the Cavite campaign



MAJOR GENERAL MERRITTE W. IRELAND,  
Surgeon General, U. S. A., Formerly Chief Surgeon,  
American Expeditionary Forces.

and in the campaign in the Camarines in 1900, participating in ten engagements and being officially commended by the chief surgeon. On April 20, 1900, he took charge of the medical supply depot, Division of the Philippines, in Manila. He was appointed surgeon with the rank of major (U. S. Volunteers) June 30, 1900, and received his honorable discharge from the volunteer service June 30, 1901. Late in 1902 he was attached to the office of Surgeon General Robert M. O'Reilly, in Washington, and served also under Surgeon General George H. Torney. While in the Surgeon General's Office Major Ireland was in charge of the personnel division.

While at the Presidio, San Francisco, California, September 29, 1906, he was ordered to proceed to Cuba in connection with the expedition to quiet the unrest which was showing itself on the island at that time. Being again attached to the Office of the Surgeon General, he reached the grade of lieutenant colonel, May 1, 1911. Leaving the Office of the Surgeon General, April 29, 1912, he again went to the Philippines, being stationed as post surgeon at Fort William McKinley. Returning to the United States he had charge of the base hospital at Fort Sam Houston in 1916. He left for France with General Pershing.

Examinations will be held, commencing October 30th, of candidates for permanent appointment to the Medical Corps of the Navy. The examination will be open only to present temporary members of the Medical Corps and members of the Medical Corps of the Naval Reserve, between the ages of twenty-one and thirty-two years inclusive. There are about 325 vacancies to be filled.



## HEALTH AND SANITATION WORK IN THE SHIPYARDS.

*Increased Efficiency, Decreased Labor Turnover, and Contentment Among the Workers Seen as the Direct Result of Improving Conditions Around Shipbuilding Plants.*

The Department of Health and Sanitation of the Emergency Fleet Corporation, directed by Lieut. Col. P. S. Doane, is bringing the condition of the shipyards up to the highest point of health efficiency. The health movement is comparatively new in shipyards because until recently they have been part of a backward industry sufficient only for the needs of peace times. The results of the efforts of the department are increased efficiency, more con-

tions. Of course, some of the big shipyards of the country had already made some advance in caring for their employees' welfare, notably the Detroit Shipbuilding Company and the McDowell-Duluth plant. The latter has built a model village, with an auditorium and an athletic club. But the basis of the successful operation of any welfare department is the elimination of sickness from the ranks of the employees and the prevention of accidents.

The health department is concerned not only with the conditions in the yards, but conditions surrounding them as well. Swamps, which are the breeding places of mosquitoes that carry dangerous maladies, either must be filled or the breeding of the mosquitoes in them in some way prevented.



Staff and employees of Emergency Hospital, Hog Island, Pa., Shipyard.  
Surgeons, lower row, left to right, 1, Dr. Asprey; 3, Dr. Rose; 4, Dr. Holmes; 5, Dr. Reiley;  
6, Dr. McCleary; 7, Dr. Rappoport.

genial conditions, thousands of happier men and families, and increased tonnage.

The principal task of the department is in overcoming the difficulties that have arisen through the expansion of old yards to meet the demands of speed production, and the education of the workmen to the values of more modern ideas and to higher standards of health protection. The work is largely educational, especially among the men in the yards. Attractive posters displayed conspicuously about the yards and plants are an essential part of the program.

The big argument that the department has to make to the yard management for its work is the increased production that results from having every man on the job every day, feeling at his best, doing more than he possibly could under the old condi-

A supply of pure drinking water has also to be obtained. Civil authorities in the community are encouraged to cooperate with the department to rid the community of any factor that may be regarded as a peril to health.

Within the yards the department is concerned especially with adequate toilet facilities, and the disposal of sewage and garbage. It is interested in having provision made for first aid of the most approved kind. In yards employing 1,000 or more men a competent physician should be either in constant attendance or subject to immediate call. Most of the yards that are acquiescing in the department's plans require physical examination of applicants for positions.

At the Hog Island, Pa., Emergency Hospital, since January 1st, 20,875 employees have been

treated. In March, of the men who reported to the surgical department for treatment of injuries only 7.7 per cent. lost time. Everything that modern science can suggest for relief and cure by surgical care is included in the equipment of the hospital at this big plant. The operating room and ward and the first aid rooms are equipped with the latest surgical appliances used in the war hospitals abroad.

The hospital has a dental department where the employees can, at any hour of the day or night, receive first aid treatment and thereby save the trip to surrounding towns, with a consequent loss of time.

The x ray department has the latest and most modern type of machine—the type that is being sent

## MEDICAL NEWS FROM WASHINGTON.

*Promotions in Medical Corps of Navy.—Appointment of Commander Howard F. Strine, Medical Corps of Navy, to Important Duties at Washington.—Proposed Bill Granting Pay to Army and Navy Nurse Corps During Captivity by Enemy.—Proposed Legislation Providing Additional Hospital and Sanatorium Facilities in Connection with Government War Risk Insurance.*

WASHINGTON, D. C. September 30, 1918.

The Board of Medical Officers that convened on September 3d to select members of the Medical Corps of the Navy for permanent and temporary promotion has made its report, and the list of officers selected for promotion has been approved by the President.

Medical Directors Albert M. D. McCormick and



Dressing and first aid room, Emergency Hospital, Hog Island, Pa., Shipyard.

abroad to the battle fields. The first aid service will be installed at the shipways, together with three ambulances for both day and night service. Training school students, guards and firemen will be trained in first aid. There will be submersion and heat stations for the treatment of accidents along the waterfront and the treatment of heat cases.

The hospital staff consists of three operating surgeons, three first aid surgeons, four nurses, two first aid men, and three orderlies.

The names of the six surgeons are as follows: Doctors Asprey, Rose, Holmes, Reiley, McCleary, and Rappoport. Since the establishment of the hospital the employees of the American International Shipbuilding Corporation have been practically free from contagious diseases, and the percentage of infected wounds has been reduced to one half of one per cent.

Robert M. Kennedy were selected for temporary promotion to the rank of rear admiral.

The following were selected for permanent promotion to the rank of captain: Medical Directors Charles E. Riggs and Ammen Farenholt, and Medical Inspectors Middleton S. Elliott, Frank L. Pleadwell, Dudley N. Carpenter, James C. Pryor, and Washington B. Grove.

The following were selected for temporary promotion to the rank of captain: Medical Inspectors Raymond Spear, John B. Dennis, Eugene J. Grow, Frank E. McCullough, Granville L. Angeny, William H. Bell, Holton C. Curl, Edward G. Parker, Henry E. Odell, James S. Taylor, Joseph A. Murphy, Charles N. Fiske, George F. Freeman, Charles St. J. Butler, and John M. Brister.

The following were selected for permanent promotion to the rank of commander: Medical In-



spectors John T. Kennedy, Archibald M. Fauntleroy, Joseph P. Traynor, John L. Nielson, Charles C. Grieve, John D. Manchester, and James S. Woodward, and Surgeons James A. Randall, Allen D. McLean, Robert G. Heiner, Benjamin H. Dorsey, Harry F. Hull, Lewis H. Wheeler, Owen J. Mink, and Harold W. Smith.

The following were selected for temporary promotion to the rank of commander: Surgeons Frederick G. Abeken, Winfield S. Pugh, Jr., James E. Gill, Isaac S. K. Reeves, Robert E. Stoops, William J. Zalesky, Henry A. May, William A. Augwin, Frederick E. Porter, Paul T. Dessez, Norman T. McLean, Wray G. Farwell, David C. Cather, Addison B. Clifford, Richard A. Warner, Paul R. Stalnaker, Curtis B. Munger, John B. Mears,

him for these important duties is a fitting recognition of his professional ability.

\* \* \* \* \*

The Secretary of the Treasury has sent to Congress a tentative draft of proposed legislation calling for an appropriation of \$10,500,000 to provide suitable additional hospital and sanatorium facilities for the care and treatment of soldiers and sailors and others entitled to treatment by the Public Health Service. Such facilities are needed to take care of men discharged from the military and naval forces that are beneficiaries of the government war risk insurance.

\* \* \* \* \*

Under the provisions of the laws defining the duties of the Bureau of War Risk Insurance, sick



Ward of Emergency Hospital, Hog Island, Pa. Shipyard.

George S. Hathaway, Frank E. Sellers, Edward H. H. Old, Edward C. White, Thurlow W. Reed, Edward U. Reed, Edgar L. Woods, Robert C. Ransdell, Edwin L. Jones, Condie K. Winn, John B. Kaufman, James P. Haynes, Thomas W. Raison, James M. Minter, Renier J. Straeten, Reynolds Hayden, Edward V. Valz, Montgomery A. Stuart, Frank X. Koltes, Herbert L. Kelley, Julian T. Miller, George B. Trible, and Henry A. Garrison.

\* \* \* \* \*

Commander Howard F. Strine, of the Medical Corps of the Navy, has been appointed associate professor of the principles and practice of surgery at the Medical School of Georgetown University, Washington, and also as acting chief of the Department of Surgery at the University Hospital.

Commander Strine has won a reputation, both in the navy and in civil life, as an eminent surgeon, and the action of the university authorities in appointing

and injured beneficiaries are to be furnished by the United States such reasonable government medical, surgical, and hospital services, and with such supplies, including artificial limbs, trusses, and similar appliances, as may be determined to be useful and reasonably necessary.

\* \* \* \* \*

The attention of the War Department has been called to a pending bill granting to members of the Army Nurse Corps (female) and the Navy Nurse Corps (female) pay and allowances during any period of captivity by the enemy. While as yet there has been no report received that any members of the Female Nurse Corps have been captured by the enemy, such a condition might arise.

Legislation in regard to pay is necessary, in view of the fact that the accounting officers of the treasury have held that under the present laws the women nurses would not be entitled to pay and allowances during captivity.



Officers of field hospital section, 117th Sanitary Train, Rainbow Division, rear rank, left to right: Lieutenant Earl B. Erskine, 166th (Nebraska); Lieutenant Claude A. Selby, 166th (Nebraska); Lieutenant Charles Frost, 167th (Oregon); Lieutenant Roy D. Bryson, 166th (Nebraska); Lieutenant Eldred B. Waffle, 167th (Oregon); Lieutenant Jasper W. Cogblan, M. R. C., assistant director (Newark, N. J.); Lieutenant Arthur L. Murray, 165th (District of Columbia); Lieutenant Thomas H. Powick, 165th (District of Columbia); Lieutenant James D. Plamondon, 167th (Oregon); Captain Henry F. Sawtelle, 165th (District of Columbia); Lieutenant G. W. Bancroft, 168th (Colorado); Lieutenant Joseph F. Snedec, 168th (Colorado); Lieutenant Jeffrey N. Elder, 167th (Oregon). Front rank: Lieutenant Carl O. Reed, 166th (Nebraska); Major John F. Spelman, commanding 166th (Nebraska); Major Charles O. Boswell, director, commanding field hospital section (New York); Major Edwin W. Lazell, commander 163th (Colorado); Major Herbert C. Bryson, commander 165th (District of Columbia); Major James P. Graham, commander 167th (Oregon); Captain Alfred J. Campbell, 168th (Colorado); Mascot Jim, 166th (Lincoln, Neb.). (From the NEW YORK MEDICAL JOURNAL for October 20, 1917.)

### RAINBOW DIVISION COMMENDED.

*Major General Commanding Recites History of Its First Year—Commended in General Orders and Complimented by the Corps Commander.*

Major General Charles T. Mencher, commanding the Forty-second (Rainbow) Division, addressed a general order to the officers and men of the division on August 13, reciting its history for the past year and congratulating them upon the admirable record made. The division entered the trenches in Lorraine on February 21st, being the first American troops to hold a divisional sector. During the crit-

ical days from July 14th to 18th, this was the only American division in General Gouraud's army on the Champagne front. It joined the battle front before Chalons and captured great stores of arms and munitions. It forced the crossing of the Ourcq, took Hill 212, Sergy, Meurcy Ferme, and Seringes by assault, driving the Imperial Guard Division for a depth of fifteen kilometres. The division has been formally commended by the corps and army commanders for its services in Lorraine, in Champagne, and on the Ourcq. The accompanying photographs were taken when the division sailed for France, and published in the NEW YORK MEDICAL JOURNAL.



Officers ambulance company section, 117th Sanitary Train, Rainbow Division. Rear rank: Second Lieutenant O. E. McKim, V. R. C. (New York); Lieutenant M. J. Ferguson, 167th (Oklahoma); Lieutenant James D. Bick, 168th (Michigan); Lieutenant Carl Hanna, 168th (Michigan); Lieutenant Lindsay W. Newland, 166th (Tennessee); Lieutenant John R. Drake, 166th (Tennessee); Lieutenant Arlington Lechlidey, 168th (Michigan); Lieutenant John E. Capps, 167th (Oklahoma); Lieutenant Henry A. Wallhauser, 165th (New Jersey); Lieutenant Harry B. Chalfonte, 165th (New Jersey). Front rank: Captain Percy A. Perkins, commander 166th (Tennessee); Captain H. G. Larueau, commander 167th (Oklahoma); Captain Peter P. Rafferty, commander 165th (New Jersey); Captain Dunning S. Wilson, director, commanding ambulance section (Kentucky); Captain Robert J. Baskerville, commander 168th (Michigan); Captain C. A. McAtee, 168th (Michigan); Lieutenant L. Bowne, 166th (Tennessee). (From the NEW YORK MEDICAL JOURNAL for October 20, 1917.)



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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and the Medical News  
*A Weekly Review of Medicine*

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### AFTER THE WAR.

In an admirable and thoughtful address delivered at the opening exercises of the College of Physicians and Surgeons, Columbia University, which was published in our Liberty Loan Number, Dr. Frederick Tilney hails America as the Mecca of medical education after the war. In surgery, America has long since taken the lead. The diagnostic clinic or group idea in diagnosis, under which it is possible to enlist the services of a group of expert specialists in diagnosis, is essentially an American conception through which great progress is possible in the practice of medicine. The financial and commercial exhaustion of the European nations caused by the war will make it necessary for them to expend all their energies in material rehabilitation, to the neglect of the higher fields of education and scientific study. America, therefore, will be called upon to become the Mecca for medical students from all over the world, and if our educators bring to the task which will confront them the broad vision

which characterizes Doctor Tilney's address, America can discharge its obligations to the world in the matter of medical education in such a manner as to justify his claims to being the Mecca of medical education.

In more material things, as well as in education, America must also take the lead after the war. During the last week of September the fourth annual exposition of chemical industries, which was held at the Grand Central Palace in New York city, brought together groups of men and material which gave convincing evidence that in the field of applied chemistry the United States is rapidly becoming, if it has not already become, independent of the remainder of the world. While the exhibition itself presented much that was interesting and instructive, its most useful purpose was in offering the occasion for a series of addresses which gave a most illuminating insight into the problems which confronted the chemists of America at the outbreak of the European war and the rapidity and thoroughness with which those problems have been met and overcome. So many of our modern therapeutic agents have been made from the coal tar derivatives, that the physician will be especially impressed by the wonderful development which has occurred in the United States in the chemistry of the coal tar derivatives, including both dyestuffs and medicines. While separate figures are not available to show the precise measure of growth of the production and export of medicinal chemicals, some idea of that growth may be divined from the increase in the exports of dyes, dyestuffs, etc. In the fiscal year ending July 1, 1914, our export of these was valued at \$357,000. For the year ending July 1, 1918, our exports amounted to \$17,000,000. With such a startling record of growth before us, we may confidently expect the United States to become a leader in the field of applied chemistry after the war, just as we look to its becoming a leader in the field of medical instruction, taking the place of predominance in both these fields hitherto held by Germany.

### GLOBULINS AND ANTIBODIES.

Is immunization dependent upon the serum proteins, and is such dependence indicated by the increase in globulins observed during the production of immune bodies? Such are the questions which form the subject of experiments reported by Esther Skolfield Schmidt and Carl L. A. Schmidt [On the Noninfluence of Injections of

Pure Proteins upon the Proportions of Globulin and Albumin in Blood Serum: *Journal of Immunology*, June, 1917]. The tendency has been to associate the globulin fraction of the blood serum with immune bodies because of its increase when these bodies were being produced, and because antibodies have generally been found in the globulin fraction of immune serum examined. The possible relation between these two factors has been therefore submitted to a series of tests.

The investigators chose pure proteins or protein derivatives for their work and those which should represent respectively different factors which might be at work. Thus it should be revealed whether the production of immune bodies was due to the increase of globulin or some other agent. Therefore the substances selected represented all possible combinations which might be responsible: antigenic and nontoxic; nonantigenic and toxic; nonantigenic and nontoxic of a complex composition; and nonantigenic and nontoxic in very simple composition. Rabbits upon which the tests were made were kept under constant conditions, and error was carefully guarded against.

The serum proteins in normal rabbits proved to be decidedly variable, the quantity of globulin being no exception. These fluctuations are probably metabolic in character, influenced by feeding, amount of food eaten, surrounding temperature, etc. The normal leucocyte counts also vary with different animals. The injection of antigenic and nonantigenic proteins apparently makes no change in the serum protein of these animals within the ordinary limits of variation. This accords with the view to which previous observations have led—that an increase in the globulin fraction of blood serum is not necessary for the production of immunity. The injection of pure proteins was shown to effect a decided change in the leucocyte count, but it was also made apparent that there was no parallelism between the leucocyte count and the percentage of serum globulins. By inducing an extreme leucopenia through the injection of benzol there was a decrease in the percentage of blood serum proteins, but no material change in the protein quotient. The latter is altered after infection, but the former percentage is not increased. The decrease in the protein quotient further indicates the nondependence of immunity upon globulin increase. The injection of benzol produces a condition very unfavorable for the production of immune bodies, and yet the rabbits so treated re-

sponded to the infection by an increase in the serum globulins.

The writers therefore summarize their results by stating again that, while the quantity of serum proteins in normal rabbits shows a fair degree of constancy, the protein ratio shows considerable variability. The injection of proteins did not produce any decided change in the protein quotient; the injection of benzol produced a decrease of serum, but no change in the protein quotient. A rise of globulins is not essential for immune body production. A well regulated dosage of antigen in rabbits produces immunity without giving rise to an increase of globulins.

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#### AFTER VACCINATION.

Recent thorough investigations establish the fact that the unintended results following vaccination are due, not to the contamination of the vaccine, but either to carelessness in its use or want of care of the site of inoculation afterward.

Not only does this apply to the vaccination done by the physician in private practice, but to the wholesale vaccination carried on in public schools, dispensaries, and armies. Vaccination is usually carefully done in these institutions, but there is no aftercare in most of them. Perhaps it is because we feel that the poor will make little public disturbance over any complications that may arise, or because we think that, as they have paid nothing, they deserve to run any risks.

It is just such children as are vaccinated at public expense that most need to be looked after, for they are likely to offer a good soil for all manner of infections, and they have ample opportunity, from home conditions, to become the victims of such infection. Also it is the poor (or those who get their vaccination done without expense to themselves) who make the greatest outcry over any untoward results with which it may be accompanied.

The physician has discharged his duty in private practice when he has warned the parents that a vaccination wound should be carefully looked after. If this is not done, he is not to blame. It is incumbent on the department of health, however, not only to vaccinate, but to take care of the vaccination wound; and this it must do through its nurses if it would fulfill its whole duty. Such thoroughness will do much to allay the fears of parents and to soothe the antivaccinationists, who grasp at any incident which will give them material for making a clamor.



## VITAMINES OR ACCESSORY FACTORS AND WAR DIETARY PROBLEMS.

The entrance of this country into the war has not only called for extraordinary efforts to supply men, war material, and so forth, but has also demanded from the civil population an almost radical regulation of their diet. The staple foods in the United States have been meat and wheat. However, war conditions insist that wheat and meat in the largest possible quantities should be exported for the use of our fighting forces in Europe and for our allies, at any rate, for our British allies. This being so, it is incumbent upon our civilian inhabitants that, as far as possible, they shall forego the consumption of wheat and meat and use as their staple diet more perishable foods, such as milk and fresh vegetables. Moreover, in place of eating wheat bread they should confine themselves to corn or oat bread, or in any event to a bread which contains little or no wheat.

Now it has been proved scientifically and conclusively that milk is not only an excellent substitute for meat, but that it is even more than this, it is in almost all respects more nutritious than meat, and that in combination with fresh vegetables and corn bread, a most nourishing diet can be procured.

Yet, and this is an important point, a radical change of diet, unless vigorously regulated, will be accompanied by metabolic disturbances. The vitamine content of a diet must be carefully considered. The new foods must possess a vitamine content sufficient to balance the diet equal to the original. In *American Medicine*, June, 1918, Dr. A. Bruce Macallum discusses the relative vitamine content of foods, showing those which are rich in antineurotic properties and those rich in antiscorbutic properties, and vice versa. Fresh vegetables and fresh fruits are the chief antiscorbutics, of which the potato is that principally used by the people of Europe. Incidentally it may be said that Harriette Chick has suggested that the onion is the ideal antiscorbutic, especially for troops, as it stands the conditions of transport better than other vegetables. The antineuritic vitamine, contained in the germ and aleuron granules of the pericarp of all cereal grains and seeds, is the most resistant of all the vitamins to variations in temperature, moisture, and storage conditions. While its main source is in the pericarp of grains and seeds, it is also found in fresh meats, fresh and dried vegetables, and in fresh milk and eggs.

Over and above the vitamins, there is an ac-

cessory present in butter, fats, and codliver oils which Osborne and Mendel have shown is essential for the maintenance of health, and which, if absent in the substitutes provided to take the place of the fats and of course, especially of the butter fats, must be supplied in one form or another. The consumption of fat by human beings cannot be entirely dispensed with, and this fat should also contain the aforementioned fat solute accessory.

The consequence of eating food not containing a sufficiency of antiscorbutic and antineuritic vitamins and fats deficient in the fat accessory and of diminution in the quantity of fat ration have evidenced themselves, since restricted rations have come into vogue, in the occurrence of scurvy, beriberi, and xerophthalmia, as well as by diminution in the growth of young children. It is evident that in order to prosecute the war successfully, steps must be taken to supply the Allies with all wheat and meat possible, and to effect this object, the people at home must consume the more perishable articles of food. A diet as nutritious as that to which the population has been accustomed can be obtained from these more perishable foods, but at the same time such a diet must be well balanced and in particular must contain a sufficiency of vitamins and fats and fat accessories.

The problem, so far as its ultimate solution is concerned, resolves itself into a question of cost. Foods abundant in or containing a sufficiency of vitamins are, generally speaking, the most expensive. As the price of food rises, the poor naturally buy the cheapest kind and suffer from avitaminoses accordingly. Therefore, it is necessary for the well being of the community at large, and for the successful conduct of the war, that information be spread widecast and in a manner calculated to reach all sorts and conditions of men and women, as to the relative value of foodstuffs. In addition, the really essential articles of food must be retailed at a price within the means of all. Otherwise information with regard to food values would be of little use to a large proportion of the people. If fat and proteins must be decreased in amount and carbohydrates increased, the vitamine content must be also increased, or deficiency diseases will be the result. The vitamine content of food used instead of wheat and meat must be well kept up, instruction must be given on a wide scale with respect to food values, and the cost of foodstuffs must be restrained within reasonable bounds but the vitamine values must not be lost sight of.

## THE INFLUENZA SITUATION.

The number of new cases of influenza reported continues to grow in those sections of the United States where it has made its appearance and it has been reported for the first time in many cities in the eastern portion of the country. In the city of New York 903 new cases were reported during the twenty-four hours ending at ten o'clock on Wednesday morning. There were fifty-eight deaths from influenza and fifty-eight from pneumonia reported during that period. Up to Tuesday 88,000 cases had been reported in the army camps, and 6,759 cases of pneumonia. Fourteen thousand new cases were reported in the army on Monday, an increase of 3,600 over the previous day. So far there has been 492 deaths reported in Camp Dix. In many of the camps and cantonments in this vicinity both soldiers and civilians are required to wear an anti-septic gauze mask. In this city a number of arrests have been made for spitting.

Dr. William H. Park, Chief of the Department of Laboratories of the Health Department of the City of New York, has prepared a vaccine from the bacilli of influenza which, it is hoped, will safeguard the person inoculated with it from attack. The serum is being tried out on volunteers, but sufficient time has not yet elapsed to arrive at any definite conclusion regarding its efficacy.

## THE GREAT AMERICAN GUM.

Of all the varied means of masticatory stimulation which have been resorted to by man in all climes and ages, the great American gum seems least harmful and most helpful. That there is a physiological demand for some masticatory stimulant, is shown by the universality of the practice of chewing, whether it be the tobacco of the American Indian, the betel nut of the East, the coca leaves of South America, the slippery elm bark, the tamarack, and the spruce gum of the down east Yankee, the sweet gum of the Gulf States, the chicle of the Mexicans, which, in its American adaptation, becomes the great American chewing gum, man has always felt the necessity of chewing something more than his meals. That there is a practically useful side for this habit is evidenced by the orders placed by the Quartermaster of the United States Army for 2,300,000 packages of this standard American dainty. We learn from the War Department that the commanding officer of a field artillery regiment, about to embark, stated that 250 pounds of chewing gum would take the place of hundreds of gallons of drinking water when water was most needed and least readily obtainable. On long marches, the chewing of gum would go far toward quenching the thirst of the troops when water is not accessible. It is true, as Mrs. Gertrude Atherton complains, that the chewing of gum is not a particularly esthetic practice, but there is no question that a supply of chewing gum is a great comfort to the hot and tired soldiers, famishing for water, either in the trenches or on the march. The American Red Cross recently cabled an order for chewing gum for use in the reconquered territory where the wells had been poisoned by the retreating Germans.

As Ellis Parker Butler has aptly said, "If our boys over there to rip the hides off the Germans, want to chew gum, let 'em chew. If they want ten tons of gum, send them eleven tons." However much the chewing of gum may be condemned from an esthetic point of view, its practical utility is so great as to quite counterbalance the esthetic objection. The gum chewing youths of our American Army, may corrupt the good manners of the poilu and make the French a nation of gum chewers, but if they do so they will probably improve the condition of the teeth of the people so greatly as to quite counterbalance any esthetic objections which may be raised.

## News Items.

**Asiatic Cholera in Vienna.**—According to official reports received in Madrid, Spain, several cases of Asiatic cholera have been discovered in Vienna and deaths from this disease have occurred there.

**Personal.**—Major Joseph B. Bissell, surgical director of the Radium Sanatorium of New York (Radium Institute), has been assigned to active duty in Maryland. Dr. C. Everett Field, medical director of the institute, still remains in charge of the routine work.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, October 7th, Blockley Medical Society, Clinical Association; Tuesday, October 8th, Pediatric Society; Wednesday, October 9th, County Medical Society, Aid Association of the County Medical Society; Friday, October 11th, Atlantic County Medical Society, Northern Medical Association.

**Veneral Disease Control in South Carolina.**—At a meeting of the Bar Association of South Carolina, held at Spartanburg, on August 2d, resolutions were adopted regarding regulations of the State Board of Health of South Carolina providing for the segregation and treatment of persons having or suspected of having communicable venereal disease, that is, syphilis, gonorrhea, and chancroid.

**Major Perkins Quits Red Cross.**—Major James H. Perkins, commissioner general of the American Red Cross for Europe, has resigned to accept a staff appointment in the American Expeditionary Forces in France. The duties of the commissioner general for Europe will henceforth be assumed by a commission composed of commissioners for France, Great Britain, Italy, and Switzerland, and Major Ralph J. Preston, deputy commissioner for Europe.

**Medical Society of the State of Pennsylvania.**—At the annual meeting of the society, held in Philadelphia during the past week, the following officers were elected: President, Dr. Cyrus L. Stevens, of Athens; first vice-president, Dr. William Duffield Robinson, of Philadelphia; secretary, Dr. W. F. Donaldson, of Pittsburgh; assistant secretary, Dr. C. B. Longenecker, of Philadelphia; treasurer, Dr. George W. Wagoner, of Johnstown. Next year's meeting will be held in Harrisburg.

**Additional War Hospitals.**—Camp Snelling, Minn., Camp Sheridan, Ill., and Camp Benjamin Harrison, Ind., are to be converted into general hospitals for the reception of wounded soldiers returned from abroad. Like all the general hospitals, they will be reconstruction hospitals to the extent of caring for the wounded so as to fit them for vocational instruction. Each of these hospitals will accommodate 1,000 patients and extensions will be added as required. Each hospital calls for a personnel of thirty-five medical officers, ten nurses, and 300 enlisted men.

**American Hospital Association.**—At the annual meeting of the association, held in Atlantic City, Monday, September 30th, the following officers were elected: President, Dr. A. R. Warner, of Cleveland; vice-presidents, Dr. Joseph S. Howland, of Boston; A. B. Tipping, of New Orleans; and Sister Ermentine, of St. Louis; executive secretary, Harold Wright, of Cleveland; treasurer, Asa Bacon, of Chicago; and trustee, Dr. Robert J. Wilson, of New York. Next year's meeting will be held in Cincinnati. An important feature of the proceedings was the endorsement of the plans of the government regarding hospitals.



**Volunteer Medical Service Corps in Pennsylvania.**

The Pennsylvania State Executive Committee of the Volunteer Medical Service Corps is composed of the following members: Dr. J. J. Buchanan, of Pittsburgh, chairman; Dr. Julius H. Comroe, of York; secretary, Dr. G. Franklin Bell, of Williamsport; Dr. Edward P. Davis, of Philadelphia; Dr. W. S. Foster, of Pittsburgh; Dr. Spencer M. Free, of DuBois; Dr. E. A. Krusen, of Norristown; Dr. Melvin J. Locke, of Bellefonte; Dr. John B. McAllister, of Harrisburg; Dr. Hiram McGowan, of Harrisburg; Dr. E. E. Montgomery, of Philadelphia; Dr. W. A. Pearson, of Philadelphia; Dr. William Duffield Robinson, of Philadelphia, and Dr. Lewis H. Taylor, of Wilkes-Barre.

**Spanish Influenza in Canada.**—Cases of Spanish influenza are now being reported from many eastern Canadian cities, but the percentage of deaths remains low, and it is said by medical authorities in Toronto that the epidemic is not likely to assume such proportions as in the United States. The situation in several military camps in Ontario and Quebec, however, is causing some concern. In St. Johns, Quebec, 580 cases and nine deaths have been reported in the engineers' barracks, while eighty cases have been reported among soldiers quartered in Montreal. Most of the Ontario cases have been discovered in the Royal Air Force camps at Toronto and at Hamilton. The Royal Air Force has stopped all leave to the United States.

**Captain Lucius P. Brown.**—Lucius P. Brown, who has been director of the Bureau of Food and Drugs of the Health Department of the City of New York for the past three years, has accepted a commission as captain in the Sanitary Corps of the Medical Department of the Army and has been given leave of absence, without salary, for the period of the war. He will serve in the Division of Food and Nutrition. Shortly after Dr. Royal S. Copeland was appointed commissioner of health charges of inefficiency and improper conduct of his office were brought against Mr. Brown by the chairman of the Civil Service Commission. As a result of these charges he was suspended for several months, but when brought to trial he was acquitted and reinstated in office. His salary in the health department was \$5,000 a year; as a captain in the Sanitary Corps his salary will be \$2,400.

**North Atlantic Tuberculosis Conference.**—This conference, which represents the States of Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia, will be held in Pittsburgh, Pa., October 17th and 18th, under the auspices of the National Tuberculosis Association. The general topic for discussion will be Tuberculosis and the War. On Thursday the subjects discussed will be Health Education of the Civilian Population in War Time, the Need of Adequate Tuberculosis Programs in War Time, and the Adequate Care of the Tuberculous Soldier. Friday morning will be devoted to round table discussions of public health nursing and the modern health crusade, and in the afternoon Dr. Thomas McCrae, professor of medicine in the Jefferson Medical College, Philadelphia, and president of the National Tuberculosis Association, will deliver an address on the Tuberculous Soldier, Asset or Liability, and Dr. S. Adolphus Knopf, of New York, will deliver an address on the Prevention of Relapses in Cases of Arrested Tuberculosis Among Soldiers.

**Railway Surgeons to Meet in New York.**—The twenty-eighth annual meeting of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York, Monday, October 21st, under the presidency of Dr. J. S. Hill, of Bellows Falls, Vt. The program for the morning session includes a symposium on the modern treatment of infected wounds and the annual address of the president. In the afternoon, Dr. Joseph C. Bloodgood, of Johns Hopkins University, will deliver the address in surgery, his subject being Hernia as an Industrial or Military Problem. Other papers to be read at the afternoon session are Unusual and Interesting Fractures and Dislocations, by Dr. C. W. Hopkins, of Chicago; Modern Treatment of Burns, by Dr. William Senger, of Pueblo, Colo.; Corneal Ulcer, a Surgical Disease, by Dr. F. Park Lewis, of Buffalo; Shock, by Dr. A. H. Harriman, of Laconia, N. H.; Dr. George Chaffee, of Little Meadows, Pa., is corresponding secretary of the association, and will be glad to furnish programs and full information regarding the meeting, to all who are interested.

**Clinical Congress of American College of Surgeons.**

—The ninth annual session of the congress will be held in New York, October 21st to 26th, under the presidency of Dr. William J. Mayo, of Rochester, Minn. The programme includes clinics in the principal hospitals of New York, on general surgery, gynecology, orthopedic surgery, urology, ophthalmology, laryngology, and otology, and in Brooklyn there will be clinics on general surgery, orthopedics, and urology, gynecology, and surgery of the eye, ear, nose, and throat. Dr. Franklin H. Martin, of Chicago, is secretary general of the congress and Dr. J. Bentley Squier, 49 East Forty-ninth Street, New York, is chairman of the committee on arrangements.

**Coming Meetings of Medical Societies.**—The following medical societies will meet in New York during the coming week:

*Monday, October 21st.*—Clinical Society of the New York Polyclinic Medical School and Hospital; Brooklyn Hospital Club.

*Tuesday, October 22nd.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Manhattan Dermatological Society; New York Obstetrical Society.

*Wednesday, October 23rd.*—Medical Society of the Borough of the Bronx; New York Pathological Society; New York Surgical Society; Alumni Society of the Norwegian Hospital.

*Thursday, October 24th.*—New York Academy of Medicine (Section in Pediatrics); West End Clinical Society; Brooklyn Pathological Society.

*Friday, October 25th.*—New York Academy of Medicine (Section in Otolaryngology); Clinical Society of the Lenox Hill Hospital and Dispensary; Eastern Medical Society of the City of New York; Flatbush Medical Society.

**American Public Health Association.**—The forty-sixth annual meeting of the association will be held in Chicago, October 14th to 17th, under the presidency of Dr. Charles J. Hastings, of Toronto, Canada. The program of the first general session, to be held Monday evening, October 14th, includes the presidential address of Doctor Hastings and addresses by Dr. W. A. Pusey, president of the Chicago Medical Society; Dr. Arthur Dean Bevan, president of the American Medical Association, and Dr. E. W. Fiegenbaum, president of the Illinois Medical Society, followed by a reception. Tuesday morning, Surgeon General Gorgas will deliver an address, and at the afternoon session Colonel Victor C. Vaughan, Medical Reserve Corps, will read a paper on The Health of the Civil Population in War Time; Major William H. Welch, Medical Reserve Corps, Public Health Problems and Opportunities Created by the War; Maintenance of Balance Between Civil and Military Health Protection, by Dr. W. A. Evans, of Chicago. On Wednesday morning, Dr. George E. Vincent, president of the Rockefeller Foundation, will read a paper on Team Play for Public Health; Dr. Lee K. Frankel, of New York, will read a paper on the Future of the Public Health Association. Thursday afternoon's programme includes the following papers: War Time Importance of Narcotic Drug Addiction, by Dr. Ernest S. Bishop; National Programme for Physical Education, by Dr. W. S. Small, of Washington, D. C., and The Need of a Section of School Hygiene of the American Public Health Association, by Surgeon J. A. Nydegger, U. S. P. H. S. There are the seven sections, as follows: Public Health Administration, Dr. Oscar W. Dooling, chairman; Laboratory Section, Dr. G. W. McCoy, of Washington, D. C., chairman; Sociological Section, Lieutenant William F. Snow, M. R. C., chairman; Section in Industrial Hygiene, Dr. G. M. Price, of New York, chairman; Section in Vital Statistics, Dr. John W. Trask, of Washington, D. C., chairman; Section in Food and Drugs, Dr. Lucius P. Brown, of New York, chairman; Section in Sanitary Engineering, George S. Webster, of Philadelphia, chairman. The United States Public Health Service is asking Congress for a ten million dollar deficiency appropriation for war time health purposes. The efforts of the Service are to be concentrated in communities congested by war preparations such as industrial centers, various surrounding cantonnments, shipyards, etc. The passage of Senate Resolution 63 is advocated. This proposes to establish a Sanitary Reserve Corps and the commissioning in the Public Health Service of men of national repute in the various phases of health administration. Full-time health officers for all states is urged and also for municipalities. It contemplates a thorough supervision of all war industries and communities surrounding them; railway sanitation for the benefit of both employees and the traveling public; supervision of milk, water, and food supplies, etc.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SOME NOTES ON DRUGS AND TREATMENT.

#### *A Review of Recent Progress in Therapeutics.*

BY MARK SADLER, M. D.,  
Montreux, Switzerland.

#### V.

#### THE PHYSIOLOGICAL ACTION AND THERAPEUTIC INDICATIONS OF DIGITALIN.

As François Franck long since demonstrated, digitalin acts on the myocardium, nervous system, and the bloodvessels, but besides the cardiac and circulatory action, which is the most important, the alkaloid also influences the urinary secretion and the gastrointestinal tract, its action on the digestive apparatus being of a toxic order. Under the influence of digitalin a reduction in the heart's action is noted and is synchronous in both ventricles, the consequence being an increase in the force of contraction. If a cardiac arrhythmia exists it will disappear under the action of this drug, the beats becoming regular, but if the therapeutic action is carried too far or the exhibition too much prolonged, the untoward effects of accumulation are observed in the form of a toxic acceleration occurring simultaneously in both ventricles. When intoxication is pronounced, there are alternate phases of acceleration and slowing of the pulsations, after which appears the phase of digitalic arrhythmia, during which valvular anasynchronism is noted, this being characterized by a simple pulsation to two cardiac beats. Digitalin accumulates very easily in the organism, so that it is not uncommon to meet with a bigeminous or trigeminous pulse which is symptomatic of drug saturation if the doses given have been too large. If the administration of the alkaloid is then stopped or given within the limits of therapeutic doses, the accidents are avoided.

Another good effect of digitalin is the increase in energy of the ventricular systole and this reinforcement is so constant that if a toxic dose has been reached, the cardiac beat ceases in a tonic spasm. In his admirable researches François Franck brings into relief this action and remarks that, in the reinforcement of the ventricular systole, the synchronism is absolute but the synergy is only relative, and this can be explained because the left ventricle has to struggle against a much greater pressure than the right ventricle, so that its effort in the resistance to be overcome is proportionate. The cardiotonic action of digitalin is manifest in both the normal and pathological heart, but on the condition that in the latter the organ is not functionally bankrupt. If the viscus is the seat of sclerosis or fatty degeneration, digitalin has no effect, as the heart is refractory to the drug, and this takes place in the terminal stages of the various cardiopathies.

There are even some cases in which digitalin is not even a regulator, but may produce death. These cases are instances of certain allorhythmias which

digitalin itself can produce in arterial cardiopathies. However, such accidents are exceptional and the heart, being "a valiant organ," is susceptible to reaction even when sclerosed. It is just in such cases that the physician meets with real resurrections; the precordial shock becomes more energetic and limited, like a hammer beat, announcing a real awakening of the organ. The cardiotonic action is otherwise favored by the action of digitalin on the vascular system. It causes an intense vasoconstriction from its influence on the contractile elements of the bloodvessels and also from its exciting action on the vasomotor centre. The peripheral vascular action plays a considerable part in the increase of arterial tension and an increase of the energy of the myocardium results. The increase of the arterial tension partly explains the slowing of the cardiac action (Marey) and brings about a diminution of the rapidity of the flow of blood (Kaufmann). Sphygmographic tracings taken in patients undergoing treatment with digitalin show a more rounded apex and a more oblique line of descent than in a normal subject.

To François Franck is due the honor of having brought into relief the action of digitalin on the insufficient heart by restoring to it its former energy. The drug acts directly on the central organ of the circulation by impressing the cardiac muscle itself, and indirectly by exciting the cardiac nerves and ganglia. By irritating the pneumogastric and ramifications of the sympathetics the effects of digitalin are reproduced with perfect exactitude. The drug produces a slowing effect on the heart by its action on the pneumogastric and its reinforcement by its action on the sympathetics. The results of physiological experiments are sustained by clinical observation. In a subject with cardiac degeneration there is no response to the tonic action of digitalin on the sympathetic nerve, but the drug will act on the pneumogastric, resulting in slowing the cardiac action but not reinforcing it. In another case in which the tenth pair was paralyzed by pressure from enlarged mediastinal lymph nodes, digitalin reinforced the beats because there was integrity of the sympathetic filaments, but it could not produce a decrease in the beats. The physiological effects of the alkaloid on the heart and circulation, namely, regularization, increase of the energy of the myocardium, and increase of the blood pressure, explain the sure diuretic action of digitalin in cardiac edema. The heart empties itself more thoroughly during systole, whose energy is increased, while on the contrary, it is more distended during diastole. This results in the penetration of a greater quantity of blood and an acceleration in the rapidity regardless of the high blood pressure. Now, it is a well known fact that the acceleration of the rapidity of a liquid in a porous tube increases the intensity of the phenomena of endosmosis and this is what takes place in digitalic diuresis. Therefore, digitalin possesses an indirect diuretic action by causing the



liquid of edema and hydropsy to enter the general circulation, after which it is eliminated by the renal gland.

Sodium chloride, so essential to life, by the action of its molecules which, in a healthy body, traverse the living membranes and unceasingly assure the osmotic equilibrium, becomes a cause of disturbance in a cardiac patient. The salt is not eliminated in normal amount, and accumulating in the tissues, it attracts the water necessary for its solution, from which arises chloride retention and edema. It has been thoroughly proved that there is a considerable increase in the elimination of the chloride in digitalic diuresis; there is in fact a polychloruria, and it is not at all uncommon for the chlorides to reach twenty, thirty, forty, or even fifty grams in twenty-four hours after the exhibition of digitalin and these chlorides can only be derived from the liquid of the edema. The diuresis is often considerable, reaching five to six litres in twenty-four hours, but it is only temporary. When the edema and the other fluid collections have been eliminated, the daily quantity of urine returns to normal and from this time on the digitalin has no more influence on the elimination of the chlorides. The action of the alkaloid as a diuretic is clearly *nil* when the myocardium is thoroughly degenerated or when there are advanced pathological changes in the kidney. Independently of its cardiotonic action and diuretic action, digitalin influences the respiration, and in therapeutic doses the number of respirations is diminished. In toxic doses the respiration is accelerated. The drug also decreases metabolism, lowers the body temperature slightly, and has a tetanic action on the muscular system.

The action of the drug on the central nervous system is variable, according to the doses given. A therapeutic dose is sedative, while on the contrary, a toxic dose gives rise to phenomena of intolerance, such as vertigo, headache, tinnitus aurium, obscurity of vision, diplopia, and sometimes even to digitalic delirium. When large doses are given at once or the exhibition of the drug is too prolonged, the gastrointestinal tract reacts in its turn. Digitalin has an emetocathartic action and gives rise to nausea and vomiting with violent epigastric pain. Anorexia, dryness of the throat, colic, and diarrhea have also been noted.

Most of the cases in which we have employed this alkaloid have been hypostolic myocarditis. The treatment consisted of digitalin with caffeine and a milk diet as succedaneums. In all the elderly subjects the pulse became slower and regular. As to the urine, I have been surprised that the diuresis has never been so sudden or continuous as the textbooks would lead one to believe. In only one case did the diuresis amount to three litres in twenty-four hours, and two days later it decreased to one litre and a half in twenty-four hours and then remained stationary.

Sometimes it did not appear until the drug had been given for four days and even then it was never marked as the quantity of urine voided averaged between 1,500 and 2,000 grams, soon falling to an amount often inferior to the normal. All this goes to show how greatly a drug varies in effect according to the greater or less integrity of the

viscera. Perhaps the diuretic effect of digitalin was interfered with in those cases presenting arteriosclerosis and evidently the possessors of an interstitial nephritis. Or perhaps the heart was not sufficiently toned up to give the blood wave the rapidity and hypertension requisite for a proper filtration. What is certain is that the diuresis was not very accentuated. As to the polychloruria, it was very remarkable in some instances, reaching from twenty-one to thirty-six grams in twenty-four hours, but as soon as the edema had disappeared the hyperchloruria ceased. In two cases the elimination of NaCl fell to eight grams and in another to twelve grams. In all the elimination remained permanent as long as the heart and vessels retained their tonicity, but as soon as cardiovascular asthenia returned the chloride retention with its edema and dyspnea reappeared. When the results of the analyses of the urine made during various paroxysms were examined, I noted that each time there was a hypochloruria coinciding with the commencement of the paroxysm. But under the treatment with digitalin elimination of the chlorides took place and the attacks disappeared. Between the paroxysms the patient could absorb salt without any inconvenience. In a cardiac subject, when the cardiovascular asthenia has disappeared and the circulation has resumed the normal, NaCl is no longer attracted to the infiltrated fluid by a contrary osmotic current.

In all my cases the relation between polyuria and polychloruria produced by digitalin was constant. An interesting point to mention is that in nearly all the quantity of albumin was proportional to the chloride retention. The albumin diminished quickly after the systemic elimination of NaCl and in one instance it disappeared. Taking all things into consideration the results of treatment with digitalin were satisfactory and, in some cases, even most remarkable. A male, seventy-five years old, who had an old mitral insufficiency and an enormous liver recovered from three attacks of asystolia. Some of the patients had sclerotic lesions of the aorta, but we know that in the period of hypostolia the question of the orifice involved is of very secondary importance as far as the indication of the drug to be employed is concerned. We have usually employed the digitalin prepared by Nativelle, in the dose of one half milligram twice daily.

#### Quick Type Determination of Meningococci.—

A. S. Gordon Bell and I. M. Harmer (*Lancet*, July 13, 1918) state that under the most favorable circumstances from forty-eight to seventy-two hours are required for a positive type diagnosis by the agglutination method, and they have therefore sought to make use of complement fixation on the patient's serum for such determination. Using either suspensions of stock cocci, or dissolved antigens prepared by Thomson's method, they determined the complement fixing power of the serum for each type of organism, the serum having been used in dilutions of 1-50, 1-100 and 1-200. While the results were not clear cut, they agreed with the results of agglutination in every case where this could be carried out.

**The Present Status of Immunization in Hay Fever.**—J. L. Goodale (*Boston Medical and Surgical Journal*, August 29, 1918) thinks it important that sufficient account of the variation of the seasons be taken in regard to the pollen produced, also of the individual and temporary alterations in the physical states of the patients, and presents a study of a relatively small number of patients (330), where the treatment has been carried out for not less than two years. His remarks on the seasonal variations appear to be of great importance, but can hardly be abstracted. The diagnosis of the special exciting cause is made by application of the pollen suspected to a superficial scratch on the skin of the arm in the usual manner. One grass pollen will suffice for all grasses, one rose pollen for all members of the rose family, and ragweed pollen for all of the compositae. Pollen is obtained in the way described by Wodehouse. One gram is soaked in a small amount of normal salt solution for forty-eight hours and filtered. The filtrate which contains albumin, proteose, and other proteids is treated with sufficient alcohol to bring the alcohol content up to twenty per cent., by which albumin is thrown down as a flocculent precipitate. To this fluid enough twenty per cent. alcohol is added to make a volume of 500 c. c. Dilutions of this are made in the proportion of 1-2,000, 1-5,000, and 1-50,000. When the injections are started several weeks before the expected attacks, the treatment is called prophylactic; when after symptoms have appeared, abortive. He advises patients to report, if possible, ten weeks before the expected onset of their attacks, although a shorter period is usually sufficient. The ordinary course of procedure is to inject from one to three minims of the 1-50,000 dilution. This causes in nearly all cases subcutaneous swelling ranging from one to three centimetres in transverse diameter, lasting from one to three days. This material as above made with coagulated albumin produces a different effect than does the injection of material of equal strength, where the albumin is in solution. In the first instance the local reaction is not immediately as marked, and requires a longer time for its disappearance. Second, the coagulated material has not caused any of the general anaphylactic disturbances of which a few had been previously seen in using the dissolved albumin. After the reaction from the first injection has subsided, one may then double the amount, and a few days later give twice the amount of the second injection. The next higher strength of 1-5,000 is taken, and three injections of this are given, ranging from three to seven or eight minims. Next a similar quantity in three doses is given of the 1-2,000, and finally the full strength of 1-500, in doses ranging from five to ten minims. The number of injections required during the first year has ranged from six to fifteen, depending upon the rapidity with which the dose can be increased. If the patient reports at the beginning of his hay fever, he is given small daily injections without awaiting the subsidence of the reactions. So many patients have had their symptoms disappear in the course of a week that he considers this the best method of affording relief. A relatively high degree of resistance to pollen may

be assumed as present at the close of the season, but with the omission of treatment this slowly recedes, until at the beginning of the following season skin tests show the same intensity as at first. The following results were obtained in 123 of the 330 cases. They received desensitizing treatment for two years or more. 1. No improvement noted, seven cases. 2. Improvement as compared with previous years, but showing, nevertheless, troublesome symptoms for a short time, forty-six cases. These patients in general may be considered as only moderately well satisfied with results, and, in the author's opinion, not materially better than most cases treated in previous years by cauterization and general hygienic measures. 3. Very definite improvement, apparently beyond criticism, was observed in fifty-nine cases. These include patients with a previous history of severe attacks, who, under treatment, exhibited only slight symptoms, causing not more than moderate annoyance. Here are included patients with a previous history of hay asthma, who were able to go through two or more summers without asthmatic symptoms. 4. Five patients showed no hay fever for two or more years. By this is meant complete absence of subjective or objective vasomotor disturbance, in spite of full exposure to pollen.

**Treatment of Asthma by Peptone.**—A. G. Auld (*British Medical Journal*, July 20, 1918) cites the experiments of Weil to show that the injection of peptone exhausts the anaphylactic mechanism and leads to desensitization irrespective of the nature of the sensitizing antigen. Since the desensitization is quite nonspecific, skin tests for the causative specific antigen are not required. The desensitization can be accomplished by a single large dose, but the effects are relatively short lived and better results can be secured by small and increasing doses extending over a considerable period of time. In some cases the large initial dose may be required, followed by smaller and decreasing doses, but it is not the plan to be recommended. The dose of peptone stops the attacks for periods roughly proportional to their previous frequency; thus if the attacks occurred weekly the remission should last from six weeks to two months, while freedom for three or four months should follow if the attacks occurred at intervals of three weeks. The only peptones to be used are Witte's or Armour's "ordinary" peptone, since these are the ones which contain sufficient of the primary proteoses. A two per cent. solution of Witte's or a five per cent. solution of Armour's are the most convenient for use. The peptone should be dissolved as far as possible in three quarters of the desired volume of normal saline by agitation and warming to 37° C. Then one mil of a two per cent. solution of sodium carbonate should be added for each 0.33 gram of peptone to secure the requisite fineness of the suspension. The whole is then brought up to the desired volume with normal saline, adding phenol to 0.25 per cent. The initial dose should be about three decimils which should be increased by about two decimils every fifth day until six doses have been given, when the dose then reached should be continued for three or four more injections. Injections should not be given during attacks.



**Duodenojejunostomy, Its Indications and Technic.**—James MacKenty (*Canadian Medical Association Journal*, July, 1918) concludes: 1. Duodenojejunostomy is not more difficult to perform than posterior gastroenterostomy and its mortality should not be greater. In chronic gastrosesenteric ileus it is the operation of choice, and in the acute form, if any operation is advisable, it should be given a trial. Gastroenterostomy has no place in the treatment of this condition. 2. Cases of slight dilatation of the duodenum due to partial obstruction by the root of the mesentery, in which the pull of the prolapsed cecum can be demonstrated, should have the cecum and colon suspended, as there is ground for expecting that a fair proportion of them will thereby be permanently relieved and avoid the necessity of either a shortcircuiting operation or a resection of the colon. 3. In the absence of pathological changes in the cecum and colon demanding their removal, their resection for the relief of chronic gastrosesenteric ileus is not necessary nor advisable, as the same effect can be attained by less dangerous means. 4. Chronic gastrosesenteric ileus is probably a more common condition than has been suspected. Staveland says, "a fair proportion of cases now classed gastrosesenteroses" are due to "incomplete obstruction by the root of the mesentery." In every case of "chronic dyspepsia" it should be kept in mind as a possible cause, and in every exploration of the upper abdomen the condition of the duodenum and root of the mesentery should be examined. Inasmuch as the presence of partial obstruction here predisposes to postoperative, acute dilatation of the stomach, the knowledge gained will be valuable even if no operation for the relief of the obstruction is undertaken. By this means also, a question regarding which there exists much difference of opinion, may, by the records of a large number of observers, be finally settled.

**The Chemotherapy of Leprosy and Tuberculosis.**—T. Sugai (*American Journal of the Medical Sciences*, July, 1918) employs a combination of two parts potassium cyanide and one part of cuprous cyanide, which he calls potassium cuprocyanide. It is in the form of small, white, needle shaped crystals which are soluble in water and alcohol. The lethal dose for a rabbit is five mg. per kilogram of body weight. The dose is an injection of a 0.1 to 1 per cent. aqueous solution every ten days, the amount injected being equivalent to 0.25 to 0.3 mg. per kilogram of body weight. In leprosy he says that after one to three injections the nodes gradually become soft or begin to bleed, after which they diminish in size, in time disappearing completely. The leprosy ulcers heal and form scars, which lose their characteristic color eventually. Sensory disturbances are overcome when the swollen nerves have had time to shrink to their normal size. Frequently the growth of hair is stimulated in areas where it has fallen out. In tuberculosis, animal experiments gave favorable results. When used in tuberculous patients the results of treatment were: A few days after the injection the lung symptoms became aggravated, the quantity of sputum raised was increased, a rise of temperature of about one degree frequently occurred, and in many cases the patient felt weak and tired for

a period of two to four days. Then conditions usually showed marked improvement, the temperature falling gradually and the appetite being restored. For three to six days after injection, hemorrhages may be frequent. The sputum is greatly reduced in quantity, even in severe cases, but frequently contains larger numbers of bacilli for a long period. The bacilli are apt not to wholly disappear from the sputum until ten to twenty injections have been administered. Patients in the first and second stages of the disease often feel well after five to ten injections. The following is a summary of the paper: 1. Potassium cuprocyanide when injected intravenously has an extremely beneficial effect in leprosy. It is probable that a cure might be effected if the treatment were continued for from six months to a year. 2. A completely therapeutic effect in tuberculosis in animals has been demonstrated. The animals which received intravenous injections of potassium cuprocyanide lived longer than those which had no treatment. After eight to ten injections the animals were completely cured. 3. Potassium cuprocyanide had a favorable effect on tuberculosis in man, including the pulmonary form.

#### Restoration of Part or All of the Lower Jaw.

H. R. Allen (*Journal of the Indiana State Medical Association*, June 15, 1918) suggests this rather formidable procedure: On one or both sides (according to requirements of the case) an incision two or more inches below and about parallel with the clavicle is made. It is sufficiently long to secure an appropriate amount of skin and soft tissues to accompany the superior and anterior section of the upper half of the clavicle which is removed from the lower and posterior remaining portion of the clavicle. It is not necessary, except in unusual cases, to remove the entire upper half of the clavicle. Ordinarily, the articular ends and a considerable area near them need not be touched. The lower skin incision may be carried directly across or pointed upward toward the median line. At the ends of the horizontal incision, vertical incisions free the flaps accompanying appropriate lengths of the superior portions of the clavicles on both sides, provided both sides require restoration. This bone carrying flap, with its circulation impaired though not cut off, is drawn upward and sutured to the denuded face and raw tissues above. The lower flap of skin and fascia may be used to cover the raw surfaces of the portions of clavicles accompanying them or extend across to form a floor for the mouth, or serve both purposes. The proximal ends of the clavicle segments may be united now or subsequently. The clavicle segments may be fractured at an appropriate time to form angles for one or both sides of the jaw, making the chin. After securing the flaps in place, the muscle attachments released in removing the superior clavicular segments are now united above and below by fascial flaps. The denuded area is closed by plastic methods or by skin grafting, or by both procedures. A drainage may be employed. The head should be well flexed forward and secured in this position. By this method living bone may be transplanted—a procedure having many advantages over any system of bone grafting in which the graft is cut off from its blood supply. The function of the shoulder girdle is unimpaired.

**Value of Kidney Drainage with the Ureteral Catheter, of Pelvic Lavage, and of Intraureteral Manipulation.**—H. G. Bugbee (*American Journal of Obstetrics*, May, 1918) reports the case of a woman of thirty-four, with a history of obstinate constipation and with abnormal mobility of the right kidney. During pregnancy pain in the right side of the abdomen and back was experienced, and an oxalate calculus removed by operation from the right ureter at the level of the pelvic brim. A ureteral fistula persisted, and a diverticulum formed at the point where the ureter had been opened, because of traumatism of the ureter. A second calculus, lower down, had not been removed at the operation. A bilateral kidney infection existed. Under continuous kidney drainage with retained ureteral catheters, the ureteral fistula rapidly closed and the patient's condition improved. Calculi formed, however, in the ureteral diverticulum. The possibility of removing these by intraureteral manipulations of the catheter, even in the case of a calculus over three centimetres long, was demonstrated. Upon twisting the inserted catheter in the fingers it coiled about the calculus; traction brought on colic, the catheter was loosened by uncoiling, and within an hour the calculus was passed. Complete cure of the infection and cessation of calculus formation was secured in this case by attention to the general condition, care of the bowels, abdominal support, and local treatment of the kidneys by lavage.

**Clinical Experience with Koga's Cyanocuprol.**—T. I. Matsuda and T. K. Matsuda (*American Journal of the Medical Sciences*, July, 1918) detail their experience in the treatment of tuberculosis with a compound salt of potassium cyanide with copper, called cyanocuprol. (Possibly the same as that described by Sugai in the same journal as potassium cuprocyanide.) They say that cyanocuprol is very effective in all cases of the first stage and in the majority of the second stage. With patients in the third stage it may manifest its effect to a certain extent, if favorable cases are selected and proper doses are given. Its effect cannot be called strictly chemotherapeutic; in some respects it shows a strong resemblance to tuberculin. The essentials of the treatment lie in finding the proper dose for each patient. If the individualization, which is especially important, is properly carried out its value is remarkable, surpassing all other remedies ever tried. The combination of calcium prevents violent reactions and does not affect the efficacy of the drug. The combination of immune therapy and sanatorium treatment is necessary. The question of duration of treatment is an important one. According to their experience, if the patient is not improved after two or three injections, or is weakened, the dose should be reduced or the interval extended. If this brings no improvement, the treatment must be given up. Even in favorable cases, when the results are good after each injection, the treatment is best interrupted between the fifth and sixth, and eleventh and twelfth injections, for at these times the condition is most improved. If treatment is continued in such cases there will be no benefit from it; instead there may be a return of previous symptoms and the patient's condition may become hopeless.

**Intrarectal Administration of Arsphenamin.**—Augusto S. Boyd and Morris Joseph (*Journal A. M. A.*, August 17, 1918) recommend, on the basis of their own experiences, the intrarectal administration of arsphenamin or neoarsphenamin in those cases in which the intravenous method is not possible or requires the exposure of a vein by incision. The drug is prepared just as for intravenous injection, but only twenty-five to fifty mils of fluid are used for neoarsphenamin and about 100 mils for arsphenamin. The patient is put to bed and the solution is run into the rectum slowly, over a period of about ten minutes. The patient is encouraged to retain the injection, and the hips may be elevated or the foot of the bed raised to facilitate retention, especially in children. A cleansing enema may be given before the injection, but it is not always necessary. The injections can be given every three days, the full dose of 0.9 gram of neoarsphenamin and 0.6 gram of arsphenamin being used for adults and one of 0.1 gram for each twenty-five pounds of body weight for children. The method seems to have certain advantages over intravenous injection, aside from those mentioned before; namely, it provides slower absorption, and hence more prolonged action of each dose, and there is no risk of abscess formation from the accidental escape into the tissues of some of the solution, or of the systemic toxic effects seen after the rapid intravenous injection of the drug.

**Removal of Ureteral Calculi Without Operation.**—A. J. Crowell and S. R. Thompson (*Journal A. M. A.*, August 10, 1918) have employed their method of nonoperative removal of ureteral calculi in thirty-one cases during the past three years and have been compelled to operate upon only two of the patients. They express the belief that practically all recently impacted stones can be removed if the treatment be carried out properly and persisted in sufficiently long. If there has been complete obstruction of the ureter without infection for as long as three months, the secretory power of the kidney will have been lost and the treatment cannot be applied. If there be infection the condition is surgical. The treatment as described consists in first passing a No. 5 bismuth catheter into the ureter until it meets resistance. A roentgenogram then will show the location and size of the stone. Then two mils of a two per cent. solution of cocaine are injected slowly at the site of the impaction and three or four minutes later the catheter is passed beyond the stone and ten mils of sterile oil are injected. If the catheter cannot be passed beyond the stone the oil is injected with some force to dislodge the stone and lubricate the way for its passage. The patient is then kept well under the influence of morphine, is put to bed and is given water to drink freely to assist in expelling the stone, while hexamethylenamine should be given in large amounts to prevent infection. The urine is filtered through gauze to catch the stone, or the stone may be discovered in the bladder by cystoscopy. The treatment is repeated every second or third day until the stone is expelled, a larger catheter being used each time to dilate the ureter. The number of treatments required for expulsion varied from one to eight.



# Miscellany from Home and Foreign Journals

**Pulmonary Compression Signs in Acute Fibrinous Pericarditis.**—Henry A. Christian (*Journal A. M. A.*, August 10, 1918) says that attention is frequently called to dullness and bronchial breathing over a portion of the left back, near and below the angle of the scapula, as an accompaniment of pericardial effusion. The authors describing such signs lay emphasis on the presence of a considerable amount of fluid in the pericardium, but such signs are often encountered in cases of acute fibrinous pericarditis with to and fro friction and little evidence of effusion. Of fifty-three patients with acute pericarditis and friction rubs, observed by the author, thirty-nine, or 73.5 per cent., showed abnormal signs in the left lower chest behind. In none of these cases was there evidence of any considerable amount of fluid in the pericardium, a fact confirmed in many by aspiration or at necropsy. The signs found included dullness of varying extent, bronchial breathing, and bronchophony. From a study of these cases the conclusion was reached that these physical signs were probably due to compression atelectasis of a portion of the left lower lobe. This compression seemed to be due to the heart and pericardium, to some pleural exudate, or to both. It was also possible that there might have been some intrapulmonary inflammatory changes, but this was not proved. The pulmonary signs did not seem to be of any significance with reference to the course or the prognosis of the pericarditis.

**Tinel's Sign in Peripheral Nerve Lesions.**—W. M. Macdonald (*British Medical Journal*, July 6, 1918) agrees with Deperine that the electrical reaction of the muscles supplied by an injured nerve are neither in themselves a guide to the nature and extent of the lesion, nor a measure of its severity. Much more satisfactory is Tinel's sign of distal tingling on percussion, which depends upon the fact that the percussion of young axis cylinders leads to tingling in the skin areas corresponding to their ultimate distribution. The formation of new axis cylinders in the proximal end of a divided nerve becomes evident by the above sign in from four to six weeks. If these new axis cylinders are arrested in their distal growth or are turned back to form a neuroma, Tinel's sign can be elicited over an area not exceeding two to three centimetres, and located at the site of the lesion. If the new axis cylinders, however, grow down the trunk, or if the nerve has merely been contused, the level at which Tinel's sign can be elicited will descend and its determination permits one to follow the progress of regeneration. The growth of the axis cylinders amounts to one or two millimetres daily and when they have developed their functions completely the sign disappears. This usually takes about 100 days so that the cylinder will then have traveled about ten centimetres down the trunk and the site of the lesion will begin to lose its reaction to percussion. In another 100 days the ten centimetres just below the lesion will have ceased to respond to Tinel's test, while the next ten centimetres will do so. Since this sign always precedes by some considerable time

the return of muscle tonus, voluntary movement, and normal electrical reactions, its discovery constitutes an indication of great value after operation for nerve restoration or in spontaneous regeneration. The sign is also of great value in indicating which of a number of wounds in an extremity is responsible for the nerve injury. The sign is also present in neuritic irritation, but it is then found along the entire course of the nerve and the percussion causes both tingling and pain at the point to which it is applied. The sign is found somewhat modified in form after concussion, compression, or contusion sufficient to cause paralysis after the elapse of about a month. In such cases its presence for more than ten centimetres below the site of the lesion by the end of the second month predicates perfect recovery in a few months. In eliciting the sign the percussion must always be begun distal to the lesion and slowly carried upward until the tingling is produced. Nerve operations should be more largely restricted to cases requiring resection and suture and should be delayed until after the end of the third month following injury.

**New Gonococcus Antigen.**—David Thomson (*Lancet*, July 13, 1918) discovered that weak alkalies rapidly dissolved the gonococcus and applied this to the preparation of a new antigen. A concentrated emulsion of freshly grown gonococci is prepared and one half is diluted to such strength that there are 1,000 million organisms per mil. To the other half in a test tube there are added a few mils of decinormal sodium hydrate to dissolve the organisms. The clear alkaline solution thus obtained is made just neutral to litmus with decinormal HCl, when physiological saline containing half of one per cent. of phenol is added to bring the total volume up to that of the first half. The antigen thus represents 1,000 million organisms per mil. This antigen keeps well on ice and constitutes the stock. It is then employed in the complement fixation test according to a new method. The serum to be tested is inactivated before dilution by heating for ten minutes at 55° C. The complement is standardized by titration against the stock antigen diluted to one to ten with saline in the following way: One tenth of a mil of the guineapig serum is placed in each of twelve Wassermann tubes in serial dilution as follows:

Tube.....	1	2	3	12
Dilution.....	1/10	1/20	1/30 etc.,	to 1/120

To each there is then added, one tenth mil of the diluted antigen and an equal amount of saline. The tubes are shaken and placed in the ice chest for an hour and then in a water bath at 37° C. for half an hour. Then one tenth mil of a three per cent. suspension of sensitized sheep corpuscles is added to each, the tray returned to the bath, and readings made in fifteen minutes. One minimum hemolytic dose of the complement is represented by the highest dilution, which produces complete hemolysis. The complement fixation test is then performed with three tubes—A, B, and C. To A and B one tenth mil of the inactivated serum diluted to one in twenty

is added, to C one tenth mil of saline. To A one tenth mil containing three minimum hemolytic doses of complement is added, while two hemolytic doses in a similar volume are added to B and C. The tubes are then kept on ice over night, incubated for fifteen minutes the following morning at 37° C., and read. C should show total hemolysis; hemolysis in both A and B is a negative reaction; no hemolysis in either A or B is strongly positive; and hemolysis in A alone is weak positive. This antigen, when made to represent a number of strains of gonococci, gives better results than other forms of antigen, having yielded nineteen positives out of twenty cases, while it was always negative in normal sera.

**Absence of Bacillus Influenzæ in Recent Epidemic.**—T. R. Little, C. J. Garofalo and P. A. Williams (*Lancet*, July 13, 1918) have investigated the epidemic disease which has recently been widespread in Europe, studying both the clinical aspects and especially the bacteriology of the exudate from the upper respiratory tract. They came to the conclusion that the epidemic was not one of influenza for several reasons. First, although its clinical course resembled influenza the disease was of very short duration, and relapses, recurrences, and complications have been absent. Second, the disease was not characterized by a sharp leucocytosis and polynucleosis, but rather by a very slight leucocytosis with a small mononuclear lymphocytosis. Finally, the *Bacillus influenzae* was invariably absent from the secretions and exudates from the upper respiratory passages, and in its place there was always a Gram positive diplococcus.

**Differentiation of Hemorrhagic Pulmonary Spirochetosis.**—F. Barbary (*Bulletin de l'Académie de médecine*, June 25, 1918) alludes to the view of A. Pettit, after examining a series of cases of supposed icterohemorrhagic spirochetosis encountered at Lorient in July, 1917, that the causative organism in these cases was different from that of the latter disease. The Lorient cases were characterized by an abundance of spirochetes in the urine, by immunity of guineapigs to inoculation, by a rare incidence of jaundice, and by such unusual manifestations—unknown in true icterohemorrhagic spirochetosis—as rheumatism, erythema nodosum, pleuropneumonia, etc. Trench fever and trench nephritis have been ascribed to spirochetes. Recently the author has had under observation two cases of hemorrhagic pulmonary spirochetosis, both in Indochinese natives. The one presented harsh breathing and friction sounds at the right apex, harsh breathing and prolonged expiration at the left apex, bloody sputum, slight evening rise of temperature, and general asthenia. The other had mucous sputum without trace of hemorrhage but with evidences of a former congestion of the left lung. Later both patients showed slight but continuous hemoptysis. The x rays revealed little else than enlarged lymph nodes on both sides—a finding unfavorable to the diagnosis of pulmonary tuberculosis. The sputum in both cases showed many spirochetes, but none were found in the blood. The Wassermann reaction was positive in one case, negative in the other. There were no spirochetes in the urine. Of three inoculated guineapigs, two suc-

cumbed with congestion and hemorrhage in internal organs. Barbary concludes that in cases suspected of pulmonary tuberculosis, clinical diagnostic procedures should henceforth include examinations of the urine, blood, and sputum for spirochetes. Bronchopulmonary spirochetosis must now be classed as a pseudotuberculosis, apt to lead to confusion in the diagnosis of cases of closed tuberculosis. The examination of the sputum for spirochetes is easily carried out with either methylene blue or carbol thionin. The diagnosis having been positively made, isolation is necessary, the disease being extremely contagious. Apart from the direct infection observed at Lorient among physicians, orderlies, and laboratory workers, transmission readily occurs from dried sputum. Sputum cups should be used and the patient's mouth washed with peroxide or chloral hydrate.

**Site of the Murmur of Aortic Insufficiency.**—Trémolières and Causade (*Presse médicale*, July 11, 1918) find that the diastolic murmur of aortic regurgitation is situated much oftener to the left than to the right of the sternum. Combined etiologic, clinical, and x ray studies of these cases led to a definite grouping into three classes, distinct not only at the time but also with regard to prognosis. First, in the recent aortic lesion, there is a murmur at the left of the sternum, and the x rays show a simple hypertrophy of the left ventricle with a vertical aorta. Secondly, in more advanced aortic lesions, the diastolic murmur is mediasternal or xyphoid in situation, and the x rays show notable hypertrophy of the left ventricle with the aorta beginning to incline to the right. Finally, in old aortic lesions, the diastolic murmur is at the right of the sternum and the x rays show not only hypertrophy of the left ventricle, but also dilatation of the chambers in the right half of the heart and deflection of the aorta from above downward and from left to right.

**Alimentary Renal Glycosuria.**—Kingo Goto (*Archives of Internal Medicine*, July, 1918) asserts that in renal glycosuria the elimination of sugar occurs in spite of the fact that the blood sugar is within the physiological limit of alimentary hyperglycemia, viz., 0.16 to 0.17 per cent. There is no disturbance of carbohydrate metabolism and there are no diabetic symptoms. The term "renal diabetes" is therefore a misnomer. The urinary glucose in these cases may or may not have some relationship to the carbohydrate in the diet, according to the permeability of the kidneys. In a mild case, sugar disappears from the urine during a carbohydrate free diet. The morbid condition does not progress; thus, in a case Goto reports, the carbohydrate tolerance has remained the same for five years and the subject is in good health. In differentiating renal glycosuria from diabetes, examination of the blood sugar is required not only once after fasting, but also at least twice every hour after a certain carbohydrate diet with resultant glycosuria. The renal threshold of the subject must simultaneously be studied. Differentiation between disturbance of carbohydrate metabolism and increased permeability of the kidneys for sugar is thus accomplished. The glucose test, consisting in study of



the blood and urine following ingestion of 100 grams of glucose with 250 to 300 grams of water, after an overnight fast, is also carried out, to ascertain the condition of carbohydrate assimilation of the individual. Possibly some of the cases of mild diabetes in practice are actually cases of renal glycosuria, for most of them are diagnosed only by examination for sugar in the urine, or at most, by a single determination of blood sugar without reference to the preceding meal. While it is now believed useless to keep to a strict diet in renal glycosuria, the harmlessness of giving carbohydrate in large amounts to persons with lowered kidney thresholds has not been established; there is a chance that the depression might thereby be increased.

**Ear Disturbances in Military Aviators.**—A. Castex (*Bulletin de l'Académie de médecine*, June 25, 1918) notes that combats between aviators generally occur at altitudes between 4,000 and 5,000 metres, with the barometer at 47 to 41. The temperature descends by 1° C. for every rise of 110 metres at the lower altitudes and for every 200 metres at high altitudes. During an ascent general lassitude may be experienced as a result of the reduction in atmospheric pressure. In full flight, at about 5,000 metres, the aviator may experience pain in the ears, heaviness of the head, somnolence, general fatigue, and apathy. During the descent there may be renewed pain in the ears and tinnitus. Upon alighting there may be temporary deafness and at times a staggering gait. Otoscopy then shows congestion of the entire auditory apparatus. In a number of aviators one notes a progressive diminution of labyrinthine perception. At times the men have latent changes in the upper respiratory passages which are adjuvant causes of their deafness. The ear disturbances are due in particular to differences in atmospheric pressure. Hence the relief secured during ascent by Valsalva's method, and during descent, by that of Toynbee.

**Sanguineous Bronchitis.**—H. Violle (*Presse médicale*, July 11, 1918) prefers this appellation to that of bronchial spirochetosis, the bloody expectoration being the most prominent clinical feature of the disease, and having been present in all cases he has seen. The diagnosis of sanguineous bronchitis should be made in all instances of mild pulmonary involvement, especially at the apices, accompanied by mucohemorrhagic expectoration, of the color of currant juice, and with the general condition remaining good, without fever or loss of weight or appetite. A sputum smear stained with silver nitrate will confirm the diagnosis by revealing the spirocheta bronchialis in large numbers. Probably many cases of closed tuberculosis have been wrongly diagnosed of late, being actually cases of sanguineous bronchitis. This is a matter of considerable significance in military practice; for in the French army, patients clinically tuberculous are allowed to leave the service even in the absence of bacteriological confirmation, while if actually instances of sanguineous bronchitis, many of them could be retained. The duration of the latter disease, which is relatively mild, has ranged, in Violle's experience, from a few days to two months, with an average

of one month. Relapses seem to be very frequent, occurring after cessation of all bloody, mucopurulent, or even mucous sputum and after the spirochetes have seemingly disappeared; they may occur even after intervals of several years. According to Castellani the disease may be chronic, the local symptoms being then more pronounced, and permanent lesions of the lung parenchyma established. Pneumonia, bronchopneumonia, and tuberculosis are possible complications of the disease when acute. On the other hand, the bronchitis may itself occur as a complication in anemic or exhausted subjects, and during attacks of typhoid fever, mumps, malaria, or advanced lung tuberculosis. Isolation is indicated for protection of both the patient himself and those around him. Open air life, rest, and a generous diet, hasten recovery. Arsenicals may be used as tonics, and later, dry cupping and tincture of iodine used to ward off complications, opium for painful cough, and calcium chloride and ice applications for the bloody expectoration.

**The Need of Systematic Instruction for Hospital Interns.**—Edward H. Bradford (*Boston Medical and Surgical Journal*, August 15, 1918) thus summarizes his paper: The government needs well qualified young physicians and demands a year of hospital service. This secures to the hospital a certain supply of young medical officers. In return, the hospital should arrange that residents receive systematic instruction during their year of service. To provide for this the following requisites must be secured: 1. Systematic instruction from the hospital authorities and staffs. 2. Authorized conferences on hospital cases. 3. Condensed and systematic case records. 4. An arrangement of hours of work permitting time for study. 5. Cooperation on the part of hospital authorities with medical educators, and supervision by state licensing boards of medical education to secure proper hospital standardization. The demands of the community for properly trained medical practitioners require practical hospital training in addition to adequate medical school instruction. This throws upon hospitals an added responsibility; that is, the maximum of hospital educational opportunity.

**Nasopharyngeal Conditions in Meningococcus Carriers.**—F. J. Cleminson (*British Medical Journal*, July 20, 1918) sought the explanation of the varying resistance to local treatment encountered in meningococcus carriers in the conditions present in the nasopharyngeal structures, and to this end examined forty-seven carriers. From this examination he suggests that the genesis of carriers may be favored by the presence of adenoids and by firm mucous contact between the middle turbinate of the nose with the septum or the outer nasal wall. An existing infection of the nasal accessory sinuses seems to be unfavorable to the genesis of the carrier state. Resistance to treatment seems to be favored by the presence of pyorrhoea alveolaris, by firm mucous contact of the middle turbinate, and by existing infection of the accessory sinuses. Apparently the accessory sinuses are the main sites of infection in meningococcus carriers, and since it is very difficult to disinfect them they can repeatedly infect the other portions of the nasopharynx.

# Proceedings of National and Local Societies

## THE AMERICAN PEDIATRIC SOCIETY.

*Thirtieth Annual Meeting, Held at the Curtis Hotel, Lenox, Mass., May 27, 28, and 29, 1918.*

*(Continued from page 574.)*

**Appeal of the Medical Reserve Corps to the American Pediatric Society.**—Major FROTHINGHAM, of Boston, said that the government needed medical men and the community needed medical men and it was a question where the line was to be drawn. If, a year ago, he had been asked whether the Government wanted obstetricians and pediatricians his answer would have been "No," but at that time Major Frothingham said he was examining recruits. Since then he had had experience at Fort Benjamin Harrison and had found that there was a great deal to do in the Medical Department of the Army which had not the least thing to do with the profession itself. He wished to say that it was quite worth while to go into the army to do things not professional in the strict sense of the word. At the present time the Medical Department of the Army was standing the strain of a terrific expansion and was standing it well. There were very few physicians in the army who did not have specialties before entering the service, but a man might do something for which he had not been trained and might fill a very important position. Major Frothingham described the duties of the medical men from the time wounded men were brought to the first dressing station until they had reached a base hospital, showing that there were many duties for the medical man aside from surgery. All the transportation of the men had to be done under the supervision of medical men. Even on the firing line a few medical men were needed, for there they had an outpatient department and if a man became sick he was sent back. Big problems of hygiene and the health of thousands of men depended upon the men who ran the outpatient department. Much of the work at the front the pediatrician could do quite as well as any other medical man. At the base hospital there were problems of acute infection and empyema. The problems of acute infection were those of the contagious diseases of childhood and not those of chronic disease, and no one was better fitted to handle them than the pediatrician. At the cantonments they had chest examiners and heart examiners and there the pediatrician would be perfectly capable. If the Government did not need the pediatrician he should give his name to the Red Cross. There was another side to this matter which was worth while considering. In the first place it was great fun to be in the game and to be taking part in this big scheme of organization and to be doing what every one thought was the right thing to do. But if one did not go because he felt it his duty to go, he should go because it was a splendid way to improve his medical knowledge. This was particularly true of the acute infectious diseases, which were not seen in private practice to anything like the extent that they were seen in the army.

**Hemorrhage after Scarlet Fever.**—Dr. JOHN HOWLAND, Baltimore, presented the following case: The child, five and one-half years of age, became ill on December 1, 1917, and two days later a membrane appeared on the tonsils. The child developed no characteristic eruption. Cultures from the throat were sent to the State Department of Health. Subsequently albumin was found in the urine, and it was thought that the child had a postdiphtheritic nephritis. Twenty-three days after the onset the child became very ill, the temperature rising to 99° F. A necrosis of the right tonsil with a very foul secretion was found and a perfectly characteristic scarlet fever desquamation. There was a mass the size of an egg in the right side of the neck, which was opened and about two ounces of pus evacuated, but no blood. In the middle of the night the child was found exsanguinated and in a pool of blood. The child was given 300 c. c. of salt solution subcutaneously and transfused with the mother's blood, 250 c. c. being given intravenously. The hemorrhage stopped for a few hours and then began again and the child again received a transfusion of the same amount of the mother's blood. The child was then given morphine and an attempt was made to examine the abscess cavity, when there was a gush of blood apparently from the external carotid or the lingual. These vessels were ligated and the hemorrhage controlled by pressure on the internal jugular. Another transfusion was given and after that the child improved and there was no further hemorrhage until two weeks later, when another hemorrhage occurred as the result of sloughing of the suture on the external carotid. After this the child improved quite rapidly though the convalescence was complicated by a psychosis. The anemia cleared up rapidly and the child made a perfect recovery. While hemorrhage after scarlet fever was found in about fifty cases on record, the most were from the internal jugular and such cases ended fatally.

Dr. HOWARD C. CARPENTER, of Philadelphia, said that in the hospital with which he was connected they had a case of cervical adenitis that seemed to be progressing satisfactorily. While the intern was in one of the wards the child had a sudden hemorrhage, apparently from the carotid, and within two minutes was dead.

**A Case of Hirschsprung's Disease.**—Dr. WALTER LESTER CARR, of New York, stated that his patient was six years of age, of Italian parentage, and was brought to the City Hospital in an ambulance without a history except that she had been constipated for five years, and had vomited for twenty-four hours. She was in a condition of shock, the temperature was 97.5, pulse 120; the thirst was intense. The abdomen was greatly distended and there was constant involuntary discharge of feces. Colonic irrigations of normal saline were given, with stimulation, heat, etc. The child died eleven hours after admission. A partial necropsy showed a marked distention of the intestines; this was particularly evident in the sigmoid colon, which was



bent upon itself. The wall of the upper part of the rectum and the lower part of the colon was slightly calcified, and the lining mucous membrane was very granular. There was hyperplasia of the mesenteric lymph nodes. The anatomical diagnosis was idiopathic dilatation of the sigmoid colon, Hirschsprung's disease, with secondary calcification of the upper part of the rectum and lower part of the sigmoid. A microscopic examination of the tissue from this specimen showed a complete loss of mucous membrane, and in its place a vascularized round cell proliferation of the submucosa. There was a corresponding hypertrophy of the inner and outer muscular coats.

Dr. HENRY KOPLIK, of New York, said that some of these patients died very early. He had a case in a child only a few weeks old who died of obstruction and the condition was confirmed as being Hirschsprung's disease. On the other hand, in some cases of obstruction supposed to be Hirschsprung's disease it was found that the child only had a large abdomen. Sometimes these obstructions were relieved by nature, by diet, and by enemata, and sometimes they went on to complete obstruction, the patients were operated upon and died. The prognosis was very bad if an artificial anus was made. Doctor Koplik stated that one point he wished to make was that some of these cases went on to adolescence with the condition. He had published such a case. In this instance the boy went on until he was fourteen years of age and then died from obstruction. The condition might be rapidly fatal or it might go along quite normally for a long time. Usually they did not operate in these cases until they had tried medical means and sometimes the patients would go on to recovery.

Dr. F. B. TALBOT, of Boston, emphasized the point that when this condition was dignified by the name of Hirschsprung's disease, it was later in the disease, when the bowel had come to the point of dilatation. The time to treat the condition was before the dilatation had occurred. There were many patients with Hirschsprung's disease walking around today; some would reach the stage of dilatation when the condition would be recognized.

Dr. CHARLES GILMORE KERLEY, of New York, called attention to a paper that he had presented before the American Medical Association two years ago in which he reported and showed x ray plates of about twenty cases of elongated sigmoid. He said that these cases were fairly common, and that the condition known as Hirschsprung's disease was identical with these cases of elongated sigmoid that folded upon themselves and became sacculated and dilated and that were accompanied by constipation and later constriction. The condition was very common and it was only the severe cases that went on to the formation of gross lesions.

Dr. HENRY HEIMAN, of New York, stated that the first stage of this condition was what was known as megacolon and constipation and later it was Hirschsprung's disease and obstruction.

Dr. LANGLEY PORTER, of San Francisco, took issue with what had been said, stating that congenital megacolon was found at birth and in the fetus before birth. He had placed on record a number of such cases.

Dr. HENRY KOPLIK, of New York, said that Hirschsprung thoroughly described this as a congenital condition or an anomaly, and he himself had pictures of the new born baby in which both the x ray and the autopsy showed most marked Hirschsprung's disease.

Dr. CHARLES HUNTER DUNN, of Boston, agreed with Doctor Porter and Doctor Koplik that the condition might be congenital. He stated that he had seen two cases in the first week of life in which the condition could not have been produced by prolonged constipation and must have been congenital.

**Congenital Stricture of the Duodenum.**—Dr. H. M. McCLANAHAN, of Omaha, stated that the patient was born on December 9, 1917, and had a history of vomiting from the third day after birth. There was intermittent loss of weight and the stool increased in frequency and became green at times. X ray plates taken after the administration of barium in milk revealed a large shadow over the stomach and a distinct shadow down to the colon, showing that the pylorus was pervious. At no time was there any visible peristaltic wave, nor was a mass palpable at any time. At operation, on January 10th, an incision was made through the median line through which the stomach crowded itself on account of its great distention. The pylorus was moderately constricted, by a distinct circular induration. The duodenum was greatly distended, and following this down to the point where it passed through the transverse colon, a very marked constriction was encountered. All the distention was above the mesocolon. On examining the mesentery, a constricting band was found compressing the duodenum about eight inches beyond the pylorus. This band belonged to the mesentery and not to the intestine. The band was divided and the distention in the duodenum was relieved at once. A posterior gastroenterostomy was performed on account of the distinct pyloric constriction. The child died suddenly in the night. The fact that at times the gain in weight and the stools were normal indicated that the band did not constrict all the time.

Dr. F. B. TALBOT, of Boston, described a somewhat similar case under his observation that came to autopsy. In this instance there was a constricting band over the duodenum and there was obstructive vomiting only a part of the time. After observing the child for about a week it was found that most of its time was spent in the knee-chest position. When in that position it did not vomit. The constriction was reduced by that position so that the food could pass through.

Dr. LANGLEY PORTER, of San Francisco, cited two similar cases in which the symptoms presented resembled those of pyloric stenosis.

Dr. L. E. LA FETRA said he had seen two of these cases, one at autopsy and the other during life, and the symptoms were very much like those of hypertrophic pyloric stenosis.

**Cardiospasm Followed by Hypertrophy, Dilatation, and Stricture of the Esophagus.**—Dr. E. GRAHAM, of Philadelphia, stated that the patient, a boy, four years and ten months of age, had vomited when first put to the breast and had vomited ever since. He usually regurgitated or vomited im-

mediately after eating. He suffered from habitual constipation. There was no abdominal distention. The diagnosis of cardiospasm was made and the presence of stricture of the esophagus was verified by the x ray plates. A diagnosis of ulcerative esophagitis was also made; this was done by direct inspection with the eye, the esophagoscope having been passed by Dr. Chevalier Jackson, and the ulcerative area being clearly seen. The patient was treated by gastrostomy, feeding the child through the tube for several weeks, nothing being allowed by mouth except small quantities of water. Finally the stricture of the esophagus was treated by dilatation by sight, and not by touch, the esophagus being passed with small bougies at first, and then gradually with larger and larger ones. A second child in the Jefferson Hospital with a stricture of the esophagus caused by swallowing lye was being treated in the same way.

**A Case of Balantidium Coli.**—Dr. LAURENCE R. DE BUYS, New Orleans, said Balantidium infection was rare in man, less than 150 cases having been reported, and very rare in childhood, there being but three instances. The age of the patient whose case was reported was five years, next to the youngest case of Balantidium coli infection on record. This patient was a boy who helped in rounding up pigs and ate his food at times in the pig pen. He gave a history of having been ill for nearly a year with diarrhea. There were periods of improvement followed by recurring attacks, each attack more pronounced than the preceding. The stools resembled those of amebic dysentery, containing blood and mucus. The rectal tube was passed and the organism identified. The patient was poorly nourished, his skin dry. There was a catarrhal stomatitis; otherwise the physical examination was negative, with the exception of some pain over the lower abdomen. Doctor De Buys described and then reviewed the history of the organism, referred to the literature on the subject, and discussed the pathology, symptomatology, diagnosis, prophylaxis, and treatment of Balantidium coli infection. He advised the use of emetine, since, because of the resemblance of the infection to that of amebic dysentery, 1, in the invasion and location of the organism in the tissues; 2, in the histological pathology; and, 3, in its clinical manifestations, it was hardly to be expected that local flushings would be of any avail, after the infection was established.

**Cribbing with Dilated Stomach and Spasm of Diaphragm.**—Dr. PERCIVAL J. EATON, of Pittsburgh, said that he was called to see a three weeks' old baby that had lost considerably over a pound since birth. The baby sucked its fists, tongue, and a nipple and always vomited a good deal. The stomach was dilated, the outline being easily made out. The wave motion was quite visible, and somewhat exaggerated. There was much tympany of the stomach and little of the intestine. By attention to posture, prevention of unnatural sucking, massage, properly modified food, and absolute regularity of feeding, the trouble was corrected. An occasional dose of strontium bromide was given and the child also had phosphorated oil in codliver oil, and an abundance of fresh air and sunlight con-

stantly. The remarkable thing was that this child's sister, now three years of age, was also a cribber.

Dr. CHARLES HERRMAN, of New York, recommended the use of atropine in cases of this kind. His colleague had been using atropine and the results were sometimes very favorable.

Dr. D. N. COWIE, of Ann Arbor, said these cases were sometimes very difficult to handle. He had found that one way of breaking the habit was to tie a spool in the mouth.

**A Case of Kala Azar.**—Dr. F. B. TALBOT, of Boston, reported this case. He stated that the child was born in Greece and presumably became infected before coming to this country. The onset of the disease was insidious—a characteristic feature. The symptoms were pallor, weakness, and enlargement of the abdomen. The spleen was removed and the diagnosis made from a smear of the splenic pulp. The secretion was later obtained from the inguinal glands and this also showed the presence of the organism. Splenectomy apparently affected the course of the disease favorably. Later there was a relapse and atoxyl was then used intravenously without any effect. Tartar emetic was then used in two per cent. solution, beginning with one c. c. and working up to four c. c. This eventually caused symptoms of salivation and was omitted. The child improved rapidly, became normal, and has remained so ever since.

**A Case of Intussusception.**—Dr. FRANK X. WALLS, of Chicago, stated that the patient, a boy, was taken with a sudden attack of pain in the abdomen, vomiting, restlessness, and drowsiness. A normal saline enema was followed by the discharge of blood stained mucus. Five hours after the onset of the illness examination revealed a soft tumor mass about two by three inches in the upper right quadrant of the abdomen, with its long axis transverse. Fluoroscopic examination after an enema of barium buttermilk from a height of eighteen inches showed the barium entering the bowel, filling it from below upward until the mass reached the middle of the transverse colon. Here the ascending barium halted a moment and then a small stream of barium trickled from the heavy column along the periphery of the colon for a distance of about an inch, and after this the column did not advance or alter its position. The arrested barium then looked like a solid mass with a very decided concave, U shaped termination. The boy was operated on immediately and an ileocolic intussusception about three inches long was found and reduced. A long appendix which was engaged in the tumor mass was removed. Recovery was prompt. The illustration presented and the wet specimen which was exhibited showed the loose approximation of the external and middle layers of the intussusception. If barium enemata had been observed under the screen in a case of intussusception the mass would have been observed filling up the bowel until arrested by the intussusception, and a small amount would have passed for a longer or shorter distance between the intussusceptum and the intussusciens. The shadow made by the thin layer would have been appreciably different from that made by the dense mass and the end of the column would have been S shaped.



Dr. DEWITT H. SHERMAN, of Buffalo, stated that he had shown x ray pictures at the annual meeting of the Medical Society of New York State, one of which was a subacute intussusception, and the same state was shown as Doctor Wall had described. The lumen through the intussusception was very narrow and operation was advised. This the mother refused, and the interesting feature in this case was that the child passed part of the contents of the bowel in a week or ten days after leaving the hospital. The child had since progressed normally.

Dr. LANGLEY PORTER, of San Francisco, suggested that it might be a good procedure to give a child suspected of having an intussusception a barium enema and place it under the fluoroscope and then with hydrostatic pressure, with the hips well raised, to attempt to reduce the intussusception by the original Hirschsprung technic. So far as he knew this had not been done and might be tried before resorting to operation.

**Congenital Cardiac Disease.**—Dr. CHARLES HUNTER DUNN, of Boston, reported these cases. He stated that the first case occurred in a baby, two months old, showing a symptom complex of systolic murmur, thrill, and cyanosis. No enlargement of the heart was revealed by percussion or by the x ray. The x ray plate showed but one ventricular cavity and one auricular, ventricular orifice. The large vessels opened into this one ventricle. Search was made for the aortic valve, which was found above and in the wall of the ventricle. A rudimentary ventricle was found in the wall of the large ventricle.

The second patient was a baby three months of age. In this instance there was a systolic murmur, but no palpable thrill and no evidence of enlargement. The lips showed cyanosis but there was not a proportionate cyanosis of the extremities. No accurate diagnosis was made. At autopsy an anomaly of the great vessels was found—a complete transposition. This was not an extremely uncommon condition. In this instance the aorta divided into two branches and the pulmonary artery into three branches.

Dr. WILLIAM P. NORTHRUP, of New York, stated that forty years ago he had presented a case of transposition of the trunks of the great vessels and he would now like to call attention to a case that he had followed for many years. It was not often that one had the opportunity of following a congenital heart condition until the patient was graduated from high school. The case was a typical one with a narrowed pulmonary orifice and incomplete ventricular septum. Doctor Northrup said that he had performed many autopsies and always found a narrowed pulmonary orifice with this condition. The girl died from a condition not connected with the heart anomaly, and at autopsy, aside from the narrowed pulmonary orifice and the incomplete ventricular septum, there was no abnormal condition in the heart.

**Tuberculous Meningitis.**—Dr. DE WITT H. SHERMAN, of Buffalo, reported a case of tuberculous meningitis in a breast fed infant ten weeks of age. He said that his patient had been normal until its last illness. The child had never been on

the street and the family history was negative as to tuberculosis. The child had never received any food but breast milk and the little water it was given was boiled. The illness began with mild convulsions, resembling hiccoughs, and lasting about a half a minute. On the third day the child developed ptosis of the right eye, which was not constant. When the writer saw the child on the third day of its illness, the pupil of the ptosed eye was larger than that of the left eye and the pupillary reaction of both was sluggish. There was some bulging of the anterior fontanelle, slight rigidity of the neck, doubtfully exaggerated patellar reflexes, and the child could be aroused but made no further response. All the other signs and symptoms of meningitis were wanting. Lumbar puncture was done and three guineapigs were inoculated. The findings in the three animals were practically the same, showing extensive tuberculous involvement of all the visceral organs. The guineapigs all died in from six to less than nine weeks after the inoculation. From the extent of the tuberculous infection of these pigs the fluid must have contained great numbers of bacilli.

**Vaccination Case with Vascular, Joint, Muscle, and Skin Disturbances.**—Dr. RICHARD M. SMITH, of Boston, reported this case, which occurred in a child four years and a half of age. The family and personal history were negative. After vaccination against smallpox the child had a very violent reaction. A few days after the reaction subsided, the face became swollen and red, and she complained of stiffness when she bent her knees. These symptoms progressed until the joints in the body were involved, including the spine. The muscles felt as if they were in a clonic state of contraction. There had been conjunctival hemorrhages and the mucous membrane about the teeth was red, edematous, and in spots hemorrhagic. The skin almost everywhere on the body showed blotchy erythema, resembling Raynaud's disease, and a brawny induration. In some portions there was slight edema. The lesions of every kind were absolutely symmetrical, even to the erythematous blotches on the finger tips. The hair was rather coarse and abundant even on the upper portion of the back and arms. The child before the onset of symptoms was cheerful and happy, but since the reaction had begun she had become very tearful and quiet. The x ray had revealed in the subcutaneous tissues a curious irregular striation unlike anything with which the writer was familiar. The etiology of this condition was extremely doubtful. The writer was inclined to think that the vaccination had nothing to do with it, and in this opinion the mother concurred, a fact worthy of note. Possibly some toxic agent had affected the glands of internal secretion. No focus of infection had been found. The skin condition might be primary and everything else secondary to it. The most probable diagnosis seemed to be diffuse scleroderma. No treatments had modified the course of the disease in any way.

Dr. HENRY KOPLIK, of New York, reported a case, exactly similar to the one just reported by Doctor Smith, that had occurred in his service at the Mount Sinai Hospital. Some doctors who saw

the case thought it was a diffuse scleroderma, but it was found to be a condition described by Doctor Oppenheimer as a neurodermomyositis. The condition was very rare. The general disease was not a skin disease, but the skin was affected in common with other structures. In this case there was general atrophy of the muscles and a marked eosinophilia.

Dr. A. H. BEIFELD, of Chicago, asked if these patients had itching of the fingers, edema of the distal phalanges of the fingers and toes with desquamation, alopecia or photophobia. He said he had seen six cases of a similar condition, but they had been still more severe. Doctor Smith, in reply to the questions, said that the child had no great amount of itching and no desquamation except under the arm and on the extreme finger tips and the tips of the toes. There was no eosinophilia. There must be some toxic agent at work, but it was a question whether it acted directly or whether it affected the various structures of the body by acting through the glandular system. Glandular extracts, especially pituitary, had been tried.

**Preliminary Report on the Use of Vegetable Milk.**—Dr. HENRY DWIGHT CHAPIN and Dr. LUDWIG KAST, of New York, presented a preliminary study of a milk prepared from almonds which they stated had certain advantages from both theoretical and practical standpoints. Its theoretical advantages were: 1. It fermented much less readily than ordinary cow's milk. 2. It had a higher fat ration in the form of almond oil, which was sufficiently emulsified to render it easily digestible. 3. The proteins contained in this milk were much less apt to undergo putrefaction than the casein of cow's milk. 4. Almond milk contained a large amount of phosphorus and a small quantity of sodium chloride, which would suggest its favorable employment in such conditions as rickets and nephritis. From its low carbohydrate content it could be readily seen that it would be useful in various sugar fermentations. On the practical side it had been tried on more than 1,000 adults by Doctor Kast, and while some disliked it, actual disturbances had never been caused by it. So far, no patient had shown an idiosyncrasy to it. Patients kept on almond milk alone maintained their equilibrium of metabolism and usually gained in weight. It was particularly well taken in the following conditions, and served a good purpose: nephritis, typhoid fever, intestinal putrefaction, malnutrition, and secondary anemia. This preparation was rich in vitamins. While they did not recommend its permanent use, it was desirable as a temporary substitute.

**A Child with Transposition of Viscera.**—Dr. HOWARD C. CARPENTER reported this case, which was that of a seven months, premature infant, whose birth weight was estimated at three pounds. He had had pertussis and measles, and an operation for hypertrophied tonsils and adenoids. Since the age of five years his nutrition had been subnormal. He was at present eight and one half years of age and weighed fifty-five and one half pounds. The left side of the chest anteriorly was more prominent than the right. The apex beat was visible in the sixth interspace in the midclavicular line. Cardiac dullness extended 7.5 cm. to the right of the mid-

sternal line and four cm. to the left, and began above in the second interspace. The muscular quality of the first sound was good. A faint blowing systolic murmur was heard all over the heart area, but loudest at the apex. The pulse averaged 100 to 110, and after exercise, 140. The liver was on the left side, the upper border being at the sixth rib in the left midclavicular line, and the lower border extending one cm. below the edge of the ribs on the same side. The spleen was on the right side. The x ray after a test meal showed the stomach on the right side.

**The Energy Metabolism in Amaurotic Family Idiocy.**—Dr. FRITZ B. TALBOT, of Boston, stated that the diagnosis of amaurotic family idiocy was made by finding the cherry red spot in the eye both by the ophthalmoscope and at post mortem. The child was two years and four months old. Its metabolism was obtained in the apparatus of the nutritional laboratory of the Carnegie Institution of Washington in Boston, under the direction of Dr. G. E. Benedict. The basal metabolism was found to be very low in comparison with that of a much younger, although normal, infant of the same weight. The metabolism was also compared with that of normal infants of the same age, and was found extremely low.

(To be continued.)

## Letters to the Editors.

### PRODUCTION OF ANTIEMBRYONIC BODIES AS A CURE FOR CANCER.

CUMBERLAND VALLEY, PA., August 19, 1918.

To the Editors:

I want to thank you for publication of my article on the thyroid gland in the number appearing August 17, 1918. I was also much interested in a review appearing under Modern Treatment and Preventive Medicine entitled Serum of the Normal Pregnant Woman in Treatment of Pernicious Vomiting, recounting successful experiments of Romulo Melgar (*La Cronica Med.*, Lima, Peru, March, 1918).

These results absolutely confirm my theory of eclampsia. In *Medical Record*, New York, February 24, 1917, p. 336, under the caption, Is Eclampsia an Anaphylactic Phenomenon? I made the statement that "the mother's failure to form antibodies for the toxic excretions of the fetus is causative of the trouble." Where, I ask, could she get these antibodies? From a normal pregnant woman, of course.

To further quote from my article: "Abderhalden has proved in his test for pregnancy that an antiembryonic reaction is present. If this antiembryonic body fails to be formed, we have an intoxication. In the metamorphoses of the fetus there results a dissociation of embryonic cells as well as their formation; these excretory products are toxic, and the mother must be protected by alexins or form an antibody to these products. When these antibodies are not formed the result is eclampsia. Alexins will take care of her perhaps for a time, but she must sooner or later form antibodies."

With regard to this theory, J. Whitridge Williams, who has done so much work upon eclampsia and, I believe, first called attention to the ammonia coefficient and urea content of the urine of eclamptics, wrote me:

"I was much interested in your theory and will bear same in mind upon suitable occasions."

Doctor Melgar has now practically proved this theory correct. Because undoubtedly many cases of pernicious vomiting are but mild evidences of eclampsia. I have seen the tugging of a Falloppian tube upon an adherent appendix (as the womb enlarged) cause intractable vomiting during pregnancy, and there may be many other causes;



but true pernicious vomiting, according to my theory and Doctor Melgar's work, are cases of anaphylaxis—lack of protection against toxins of the fetus—embryotoxins.

Another theory of mine, the Endocrinopathic Embryotoxic Anaphylactic Theory of Malignancy, read before the Medical and Chirurgical Faculty of Baltimore and published in the *Virginia Medical Semimonthly*, September 24, 1914, embraces practically the same claim. "Waning of internal secretions, or disturbance of their normal balance, lessens the power of holding in control embryonic tissue. The lack of power to form antiembryonic bodies permits intoxication (cachexia) and permits disordered cell multiplication, these cells in many cases being atypical or atavistic, and therefore abnormal and toxic."

The Abderhalden test proves that in cancer an antiembryonic body is present (because cancer and pregnancy are fallacies). This is certainly plain. But I contend that this is only during the first or operative stage of malignancy. These antibodies help to complete the work of the surgeon and radiographer. Later on no antibodies are formed; then we have anaphylaxis and hopeless, inoperable malignancy. Cancer, eclampsia, and pernicious vomiting of pregnancy, are all embryonic intoxications for which no antitoxin is formed. Malignancy is a more gradual process than eclampsia. The symptoms therefore are not as acute.

In suggesting a cure for cancer (*Medical Council*, January, 1918, and *Medical Council*, March, 1918) I gave two methods: 1. By stimulation of antitoxic formation during first stage. 2. By furnishing, during second stage, antibodies from another host in whom antitoxin formation had been stimulated. In the latter treatment for hopeless malignancy two methods were mentioned: 1. Using the blood of a normal pregnant woman. 2. Injecting into the person of some volunteer desiccated placental tissue; drawing off the blood after the antibodies had formed and injecting it into the cancer case.

Cary, of Chicago, was able to dry up the living ova in the womb of animals by injecting placental tissue (desiccated). He also was looking for a treatment for pernicious vomiting of pregnancy. His experiments proved that he must use, as I suggested in the case of cancer, some other person in whom to generate his antibodies. If he injects desiccated placenta into one already overpowered by embryotoxins he would simply increase the toxemia. The fact that he dried up the living ova in the womb in normal pregnancy shows that he simply stimulated overproduction of antiembryonic bodies to such a degree that no embryonic tissue could survive.

Herein lies the secret of a cure for cancer.

L. J. SIMONTON, M. D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Invertebrate Zoölogy.* By GILMAN A. DREW, Ph. D., Assistant Director of the Marine Biological Laboratory, Woods Hole, Mass. With the aid of former and present members of the Zoölogical Staff of Instructors. Second Edition, Revised. Philadelphia and London: W. B. Saunders Company, 1918. Pp. x-214.

A second edition of this practical short manual of invertebrate zoölogy has been demanded and there are many reasons why this is so. It is short, it is authoritative, it deals with the best known types of lower animals and presents an excellent scheme for their systematic study. It must be recalled that it is a laboratory manual and not a text book, nor yet an authoritative monographic presentation of this branch of zoölogy, but a practical series of exercises and suggestions on how to study these groups of animals.

*The Hospital as a Social Agent in the Community.* By LUCY CORNELIA CATLIN, R. N., Director of Social Service Work and Executive Director of the Out-Patient Department, Youngstown Hospital, Ohio. Illustrated. Philadelphia and London: W. B. Saunders Company, 1918. Pp. 113.

Apparently some are not fully convinced of the efficacy and necessity of social service in the hospital. To these Miss Catlin addresses her book. Her material is well arranged and logically presented and her case histories are telling. The book rings with the enthusiasm and faith that actual experience and success give. She has successfully and convincingly demonstrated the medical and social relation and the intricacy and interdependence of hospital work and charity, the law, industry, public health, etc. Miss Catlin has a clear and intelligent conception of the place of social service in the hospital and in general writes pleasingly. A good feature is the multiplicity of examples to prove almost every point she makes; this leaves doubting Thomas without a leg to stand on. Who can refuse the evidence of Rosie and Josie and Jackie and Jakie, of their actual intimate histories with portraits on the facing page? The book is slightly contaminated with piety and sentimentality; we can almost detect an evangelical self-satisfaction. "Human interest" oozes a little from the pages. There is no doubt that the author is a successful social service worker; at times we suspected that she was more successful as a worker than as a writer.

## Births, Marriages, and Deaths.

### Died.

BUCKLEY.—In South Boston, Mass., on Thursday, September 19th, Dr. Philip Townsend Buckley, aged sixty-five years.

CANNON.—In Poultney, Vt., on Saturday, September 21st, Dr. Mott D. Cannon, of New York, aged sixty years.

HENDRYX.—In Allentown, Pa., on Saturday, September 21st, Dr. William A. Hendryx, aged sixty-nine years.

HOERMANN.—In Milwaukee, Wis., on Sunday, September 15th, Dr. Ferdinand Bernard Hoermann, aged seventy-four years.

HOLMES.—In Allerton, Mass., on Thursday, September 19th, Dr. Edgar Miller Holmes, of Boston, aged fifty years.

KALETSKY.—At Fort Hamilton, New York, on Saturday, September 28, 1918, Lieutenant C. Myron Kaletsky, M. R. C., U. S. Army, aged twenty-seven years.

KINNIER.—In Dubuque, Ia., on Monday, September 8th, Dr. William H. Kinnier, aged seventy-four years.

LEWIS.—In France, on Wednesday, August 28th, First Lieutenant Sidney Pearson Lewis, Field Ambulance Corps, U. S. Army, of Jersey City, N. J.

MARVIN.—In Washington, D. C., on Thursday, September 26th, Dr. Arthur Marvin, aged forty-five years.

MATHEWSON.—In Plainfield, N. J., on Sunday, September 22d, Dr. Charles B. Mathewson, aged sixty-five years.

ORDWAY.—In Everett, Mass., on Tuesday, September 24th, Dr. Charles A. Ordway, aged forty-four years.

RYDER.—In Newton, Mass., on Tuesday, September 24th, Dr. Walter I. Ryder, aged twenty-nine years.

STEVENS.—In Marlboro, Mass., on Wednesday, September 18th, Dr. Ralph Emerson Stevens, aged forty-eight years.

TUCK.—In Roxbury, Mass., on Thursday, September 19th, Dr. Lucy W. Tuck, aged ninety years.

WARE.—In New York, N. Y., on Sunday, September 29th, Dr. Edward J. Ware, aged sixty years.

WHIDDEN.—In Boston, Mass., on Wednesday, September 25th, Captain Rae W. Whidden, M. R. C., U. S. Army, aged thirty-three years.

# New York Medical Journal

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## Original Communications

### BACTERIOLOGY AND POSSIBILITY OF ANTIINFLUENZA VACCINE AS A PROPHYLACTIC.

By WILLIAM H. PARK, M. D.,

New York.

Director of Laboratories, Department of Health of the City of  
New York.

At the first, when we realized the presence of the so called Spanish influenza among us, the question which arose in the minds of all investigators was whether it was due to a new and virulent strain of Pfeiffer's bacillus, or whether some unknown organism, perhaps a filterable virus, was the infecting agent which first started the disease and paved the way by lowering resistance and by the changes it produced in the mucous membrane for later complicating infections due to the influenza bacilli, various strains of streptococci, and various types of pneumococci.

As the investigations have proceeded in Boston, New York, and elsewhere, it has become more and more probable that the primary cause of the disease is the influenza bacilli and that the complicating infections, due to the streptococci and pneumococci, are superimposed. It is fair to assume that the strain of the influenza bacillus responsible for this epidemic is an especially virulent one differing somewhat from the strains previously in our midst. The streptococci and pneumococci may be communicated from the sick with the influenza bacilli or they may have been present for some time before the attack.

With our present technic we have found the influenza bacilli in almost every case of clear cut infectious influenza. In the complicating pneumonias, we have found them associated with either the streptococci or pneumococci. In one case the bronchopneumonia was due entirely to the influenza bacillus. Our results, in fact, have closely agreed with those reported from the United States Naval Hospital at Chelsea, Mass., by Dr. J. J. Keegan, in the *Journal of the American Medical Association*, September 28, 1918.

The cultural work in the Health Department Laboratory has been carried out by Dr. Anna W. Williams and her assistants.

The fact that the disease seems to be primarily due to the influenza bacillus, and that this is known to develop antibodies in infected animals suggested the use of a vaccine. In an epidemic only one strain of the specific bacteria is usually met with. This fact suggested the use of an influenza vaccine made

from a strain from the present cases. This is prepared in the usual way from cultures by washing the bacilli off in salt solution and subjecting the fluid to a moderate heat so as to kill at the lowest possible temperature. We are trying to test this vaccine out in a large way by giving it to only a limited number of persons in corporations employing many workers and among the troops in several camps, so that we may soon be able to tell whether protection is given or not. Undoubtedly, others are also attempting to test similar vaccines in different parts of the country. We should, therefore, in a very few weeks have on hand sufficient information to form some decision as to the protection afforded by the vaccine.

At present, the dose is being given in three injections at two day intervals in quantities of one half billion, one billion and two billions. The local and general reactions are usually very slight. The Health Department Laboratory is furnishing the vaccine in New York city free to those physicians who will promise to give information in writing as to the number of persons injected and their later history so far as this concerns influenza. As the pneumonia seems to be only a complicating infection it seems best to test out a pure influenza vaccine rather than one of a mixture of cocci and bacilli. It is not probable that any appreciable immunity will develop in a period of less than five days and probably not much before ten to fourteen days. If cases of suspected influenza develop in those who have taken the vaccine it would be very interesting to have cultures made to discover whether influenza bacilli are present. The cultures should be made by swabbing the nasopharynx and tonsils.

### A NOTE ON THE PATHOLOGY OF THE PREVAILING PANDEMIC INFLUENZA.

By DOUGLAS SYMMERS, M. D.,

New York.

Professor of Pathology in the University and Bellevue Hospital  
Medical College, Director of Laboratories, Bellevue  
and Allied Hospitals.

The naked eye and microscopic changes in the several organs of persons dead of the so called Spanish influenza combine to form a picture which merits the attention of the pathologist as differing in certain particulars from that encountered in the commoner acute infections of the respiratory tract in this climate. Most strikingly is this true of the lungs, in which the changes produced by the pre-



vailing pandemic influenza are not only different from those of the septic pneumonias as familiarly revealed by postmortem examination, but they constitute a composite which, in a certain group of cases at least, is constant and characteristic. Whether the same changes in the lungs are present in all cases of influenzal pneumonia must be determined by more extensive observations. The pathological changes to be described in this note are based on the naked eye and microscopic study of fifteen cases investigated post mortem at the Willard Parker and Bellevue Hospitals.

All of the fifteen subjects were well nourished and the excellent muscular development invariably occasioned astonishment that those so sturdily endowed should succumb so rapidly to infection. Moreover, all were between twelve and thirty years of age. Two were negroes. Four of the seven male subjects presented the bodily configuration of status lymphaticus—narrow waisted with arching thighs, beardless face, small axillary fat pads with scanty hair upon them, pubic hairs sharply defined in a transverse direction and skin of almost matchless delicacy—together with which there were confirmatory signs of hyperplasia in the lymphoid depots of the deeper parts, notably in the follicles of the spleen. Six of the fifteen subjects were distinctly although not deeply jaundiced.

On opening the body one's attention was immediately fixed by the raspberry red color of the skeletal muscles and their unusual dryness. In two cases the rectus muscles were the seat of Zenker's degeneration. In another case there was a large nontraumatic extravasation of blood into the intercostal muscles. With the exception of two cases the pleural cavities were free from pathological accumulation of fluid and the pleural membranes were devoid of all suggestion of exudate. The lungs, as a rule, met or even overlapped in the middle line in such fashion as partially or completely to obscure the precordial area. The naked eye appearance of the lungs was distinctive, so much so that, in one case investigated by Dr. Benjamin Schwartz, of the medical examiner's office, the diagnosis of confluent influenzal lobular pneumonia was made on the naked eye appearance alone, and it was later ascertained that the clinical features had been those of a typical attack of Spanish influenza. In all of the fifteen cases both lungs were involved, the lower lobe to a much greater extent than the upper. In fact, one can scarcely evade the conviction that in the pneumonia of so called Spanish influenza the sequence of events is that the infective microorganisms, acting first and practically simultaneously upon the lower lobes of both lungs, cause a rapidly confluent variety of lobular exudative pneumonia attended by changes in the vascular structures marked by the escape into the alveoli of variable numbers of red cells and quantities of blood serum, either independently of one another or in combination. For some reason fibrin is not deposited in the alveoli and only rarely, in my experience, on the pleural surfaces. The lower lobes are a characteristic deep slate blue color and are almost completely consolidated, the edges as a rule escaping solidification only to undergo compensatory em-

physematous changes. Here and there hemorrhages are visible, either in the pleura or in the substance of the lung, and they lend contrast to the surrounding tissues. In the pleura the hemorrhages are usually small and petechial. In the pulmonary substance the hemorrhages vary from the size of one's thumb nail to extravasations of considerable dimensions. The surface of the lung is further mottled by scattered numbers of slightly elevated pinkish patches in which emphysematous air vesicles are discernible as minute beadlike bodies. The cut surface presents a deep bluish appearance and is remarkably smooth, not a trace of fibrin revealing itself by touch or sight to mar the velvety quality of the solidified pulmonary tissues. Close inspection, however, often reveals innumerable minute grayish specks which, upon microscopic examination, are found to correspond to alveoli filled by polynuclear leucocytes. Occasionally are to be seen larger or pinhead sized, grayish bodies corresponding, microscopically, to milary abscesses. The consolidated tissues are easily lacerated, and pressure releases huge quantities of blood tinged, frothy serum, or even semipurulent fluid. The cut ends of the smaller bronchi may be distinguished by the escape from them of droplets of pus or of air bubbles suspended in serum. The mucosa of the trachea and of the larger bronchi is richly bathed in frothy serum, and is swollen, deep bluish or bluish red in color, and velvety in appearance. In some instances semidetached flecks of grayish pseudomembrane are to be seen lying on the bronchial mucosa. Microscopic examination of the larger bronchi shows marked congestion of the wall and occasional collections of polynuclear leucocytes, and desquamated epithelium, with or without an admixture of red cells, lying on the mucosal surface. The lymph nodes at the hilum of the lung are grouped to form clumps of considerable size. On section each node presents a swollen, opaque, bluish red surface. Microscopic examination of the lymph nodes shows intense hyperemia and edema.

The upper lobe of the lung presents a somewhat different phase of the same process. The upper half or third is made up of pinkish tissue showing a surprising degree of emphysematous dilatation of the air vesicles. For example, in one case emphysema of the upper reaches of both upper lobes was so marked that a crackling sensation was imparted to the palpating finger through the skin covering both supraclavicular spaces. I am told that this phenomenon is not uncommonly observed during life. The lowermost portions of the upper lobe, on the other hand, are occupied by large and small, bluish or bluish red patches corresponding in every essential to the consolidated lower lobes as already described. These patches, however, lie in immediate proximity to feathery areas of emphysema or to slightly firmer, pinkish, or reddish foci which correspond, microscopically, to air vesicles containing coagulated blood serum or a mixture of red cells, polynuclear leucocytes and serum, or even pure blood. In other words, the process of solidification can be followed in the upper lobes step by step, since it is here that the pneumonic changes are least advanced.

From this description it has been made evident, I

think, that the pneumonic process in this group of fatal cases of Spanish influenza is by no means identical with the pneumonias of sepsis or with croupous pneumonia. That variations of type will be developed by further experience is to be expected. The bilateral distribution of the lesion as thus far observed, the early and almost complete involvement of both lower lobes, the almost unvarying absence of pleural exudate, the characteristic deep blue slate color of the older areas of consolidation, the patches of acute emphysema, the presence of numerous hemorrhages, the smooth, almost velvety appearance of the cut surface of the consolidated portions, and the total absence of fibrin in the alveoli bespeak a variety of pneumonia which is foreign to the commoner findings of the autopsy room. The difference is furthermore emphasized by the physical signs which, I am told, in the pandemic influenza now prevailing, are subject to exceedingly rapid mutations, first manifesting themselves as scattered patches of consolidation followed in a comparatively few hours by signs of diffuse involvement of the entire lobe—clinical findings which are readily and with complete satisfaction explained by the nature and distribution of the anatomical changes in the lungs.

The heart muscle is apparently well preserved, except for congestion. In most cases, however, the right side, more especially the auricle, is distended by deep bluish black fluid and clotted blood.

The kidneys are increased in size, reddish or bluish in color, the capsule is tense and strips easily, leaving a somewhat lustreless, injected surface, the substance bulging noticeably beyond the cut edge of the capsule. The renal parenchyma is easily lacerable. Cortex and medulla are well differentiated and well proportioned, although the cortex appears to be somewhat broadened. The cortical markings are distinct, particularly the glomeruli, which stand out as a profuse sprinkling of reddish, sandlike bodies. Microscopic examination of the kidney shows the presence of widespread cloudy swelling of the epithelium, most noticeable in the convoluted tubules. The cells are swollen and granular and their nuclei obscured. The lumina of the larger tubules are invariably occupied by granular debris. The capillaries are universally and deeply injected. The glomeruli are enlarged and intensely hyperemic. The cells lining Bowman's capsule show swelling and granular disintegration with obscuration of the nuclei and exfoliation of structureless debris into the interval between capsule and tuft.

Whether the degenerative changes in the kidney precede or follow the pulmonary lesions is, of course, impossible to determine on anatomical grounds. However, in view of the urinary changes so commonly encountered in influenza patients who pass through the disease without evincing pneumonic signs, it would appear that the alterations in renal structure are to be ascribed primarily to the toxemia of the influenzal infection rather than to the effect of secondary factors as represented by the pneumonia. Since the changes in the kidney are those with which every pathologist is familiar as revealing degenerative processes consequent upon the elimination of toxic products, therapeutic measures should

be adopted, first, to facilitate the uninterrupted passage of blood through the kidney, and, second, to sweep the tubules free of debris resulting from the destruction of the lining cells. In this connection it may be remarked that, in the prevailing epidemic of influenza, delirium is a frequent symptom and that postmortem examination shows widespread edema and congestion of the leptomeninges—changes which are comparable to the autopsy findings in certain other delirious states. I think it not unreasonable to hope that any therapeutic measure which would promote the excretion of toxic products through the kidneys would also tend favorably to influence the meningeal changes and in this way to combat delirium. However fanciful this conception, certain it is that the renal changes in pandemic influenza should not be ignored in the treatment.

In a small percentage of all cases of pneumococcal lobar pneumonia a slight degree of icterus is to be noted. In some cases the jaundice is so slight as to be overlooked during life, becoming apparent only upon inspection of the heart valves at the time of autopsy, more especially in the pulmonary leaflets. In other cases icterus is manifested by slight greenish yellow discoloration of the conjunctivæ. In still other cases the skin of the face, neck, and upper portions of the chest are discolored. In the present epidemic of influenza in New York city jaundice was noted in six of the fifteen subjects encountered post mortem at the Willard Parker and Bellevue Hospitals. Investigation of this feature has shown that the mucous membrane of the duodenum is deeply congested and swollen and that the exit of bile through the papilla of Vater is impeded to an extent sufficient, in part at least, to account for its retention in the bile capillaries and liver cells. Moreover, microscopic examination has shown that the liver cells are in such an advanced state of cloudy swelling that the bile capillaries are obstructed, the bile accumulating in the cells as greenish particles.

In five of the fifteen cases of fatal influenza the spleen was normal in size, in seven cases it was slightly increased, and in the three remaining instances it was distinctly enlarged, once to the extent of 320 gm. In most of the cases the organ was deep slate blue in color; there was, in fact, a strong resemblance between the color of the spleen as viewed through the capsule and that of the lung as seen through the pleura. On section the substance of the spleen was plentiful and deep bluish red in color, friable rather than grumous—in which regard the consistence differed markedly from the spleen of sepsis as commonly observed—and the follicles were unusually small but numerous. In two cases the follicles were not only numerous but greatly enlarged, some of them fusing to form bodies the size of a split pea. Microscopically, the blood sinuses were found to be universally engorged.

Finally, it may be noted that, in two of the fifteen cases, the mucous membrane of the intestine was intensely injected. Doubtless changes of this sort, followed by the diapedesis of red cells, are responsible for the blood which is occasionally to be found in the feces during life.



## CLINICAL ASPECTS OF INFLUENZA.

*Clinical and Therapeutic Observations of Cases of the Prevailing Epidemic at the Willard Parker Hospital.*

By HENRY W. BERG, M. D.,  
New York,

Attending Physician to the Willard Parker Hospital,

and JESSE G. M. BULLOWA, M. D.,  
New York,

Associate Attending Physician to the Willard Parker Hospital.

We have treated and had under our medical observation in the hospital over 500 cases of influenza, known in this epidemic as Spanish influenza. While the records at our disposal, owing to the lack of a sufficient number of medical interns, have not been as ample as is desirable, yet the cases have been well observed by the attending and medical resident staffs, and sufficient facts have been gathered to enable us to formulate many of the essential characteristics of the cases in this epidemic as distinguished from previous epidemic and endemic cases of influenza which we have observed. Almost all of our cases have been in young naval men, mostly sailors under thirty years of age. They were of exceptionally good physique and suffering from no other maladies except influenza and its complications. Most of these patients entered the institution about three days after the onset of the disease and some few were earlier, so that we were able to make observations in the early stage.

It will facilitate the description of the bedside symptoms to classify the cases from a purely clinical standpoint into three groups: 1, the cases of predominating inflammatory disturbance of the upper respiratory tract; 2, those with predominating preliminary symptoms; and, 3, those in which the constitutional toxic symptoms are the predominating factors.

Toxic manifestations were in fact present in the first and second groups also to a greater or less extent, but the third class is intended to include those in which toxic manifestations out of all proportion to the throat or lung symptoms existed, so that these toxic constitutional symptoms presented the most obvious and serious clinical features.

There are, of course, in this pandemic disease, symptoms that are present in all the cases to a greater or lesser extent. These symptoms are chills or chilly sensations, fever, prostration, pains throughout the body and limbs, headache, rhinitis, conjunctivitis, and cough. These symptoms are present in many cases of influenza and have been present in most cases in this epidemic.

In Spanish influenza, however, the patients have described a peculiar "pain" or feeling of distress below the lower sternum and above the diaphragm. This pain is one that is not increased on external pressure over the xiphoid and yet the maximum severity point of its location is underneath the mid-sternum. The pain is not sharp and cutting but extremely distressing and burning. Deep inspiration does not increase it; the patient moans on account of it; he never fails to mention it. It reminds one of the deep, abdominal pain in Asiatic cholera,

and one of the authors (Berg) has thought that its pathogenesis is probably in the sympathetic nervous system, while the other (Bullowa) is of the opinion that it is due to the congestion of the mucosa of the trachea and bronchi.

All three types of cases which we shall describe have this pain, though with varying severity. The headache is uniformly in the frontal region (forehead) and upper anterior part of the skull. It resembles very much the headache of typhoid fever. The headache and cough are responsible for most of the sleeplessness. The headache is not accounted for by the high temperature, for many patients with only a slight rise of temperature have severe headache. This headache is increased during the act of forcibly flexing the head upon the sternum. The headache is present even when there are few symptoms of catarrhal rhinitis and pharyngitis. The headache may be associated with somnolence or insomnia. In this epidemic a great many patients have very little rhinitis, conjunctivitis or pharyngitis, the catarrhal symptom complex being absent or very slight, and yet severe headache is present.

The fever curve in an uncomplicated case is fairly constant in its general course. For example, in a moderately severe, uncomplicated case of the first group, with predominating inflammatory disturbances of the upper respiratory tract, the temperature on the first day following the chill may attain 103° F. After a slight fall during the night, the second day will show a temperature of 104°, on the third day a drop to 103°, and then resolution by rapid lysis, the temperature on the fifth day falling to the normal figure. Rarely, there is a drop to normal on the third day by crisis or partial crisis; this occurs only in very mild cases.

The complicated cases of bronchopneumonia and lobar with bronchopneumonia show the usual septic curve of that condition. The pulse in adults is relatively slower and fuller than the high temperature would warrant. There is no diroticism. In cases complicated by bronchopneumonia this is also true except that in cases terminating in death the pulse increases remarkably in frequency twenty-four hours before death.

The catarrhal affections of the upper mucous membranes, that is to say, rhinitis, pharyngitis, tonsillitis and laryngitis, are very much less marked than in ordinary endemic influenza or gripe. The tonsils are not affected at all except that the mucous membrane covering them is slightly reddened. Diphtheria we have not observed. The Klebs-Loeffler bacillus is rarely present. The glandular tissue of the tonsil is not thickened or enlarged as a symptom of Spanish influenza, nor have we seen follicular tonsillitis in these patients. The tonsils cannot be felt by external palpation under the angle of the jaws. In cases in which the tonsils have been enlarged and protuberant before the attack of the influenza, there is no increase in the size of the tonsils nor are the usual tonsillar follicular signs present. When the throat in one of these cases of influenza is examined, there is found only redness and slight edema of the uvula and fauces and redness of the surfaces of the soft palate and pharynx. The tonsils will be found buried between the anterior

and posterior faucial pillars. So true is this in these cases that we believe that signs of an active tonsillitis preclude the diagnosis of influenza of the type of the present epidemic. Nevertheless, many cases of ordinary tonsillitis (not diphtheritic) during the present epidemic will be wrongly diagnosed as cases of influenza. The prognosis of ordinary tonsillitis is very much better than that of Spanish influenza. One of the authors (Bullowa) has observed a dew-like appearance of the posterior part of the hard palate and of the soft palate.

Owing to the mildness of the involvement of the nasopharyngeal mucous membrane, these cases in the present epidemic have shown remarkably few complications in the ears, eyes, and the tracts leading to these special organs. We have seen almost no cases of ethmoidal, sphenoidal, frontal or mastoid sinusitis (suppurative), or acute, inflammatory disease in these cases. This is so at variance with the history of cases of other epidemics of influenza or in endemic cases that it is worthy of emphatic remark. The experiences, however, while ample in a number of cases, cover only one month in length of time. It may be that these cases may show complications in the bony sinuses as sequelæ later on. Very few of these cases have a barking or hoarse cough. All the patients cough, but the cough is bronchial, bronchovesicular, or pleuritic. Very rarely is it laryngeal. Of 250 cases in two pavilions at the Willard Parker, but three cases of laryngeal cough with hoarseness were observed.

What we have thus far stated gives the essential features of the first group. The second group of cases, those with predominating pulmonary symptoms, constitute a very important group. From this class comes practically the whole death rate. These have the symptoms of the first class together with those of pulmonary involvement.

It is hardly right to call these pulmonary complications because in many cases the pulmonary infection is present at the very incipency of the disease. It would almost seem as though the infection had occurred in the mucous membrane of the finer bronchi and lining membrane of the air cells, and we have thought that the infection in ordinary grippé locates itself chiefly upon the upper respiratory tract, producing inflammatory disturbances with occasional cases of extension of the inflammation to the lower respiratory tract and organs (bronchopneumonia). In this epidemic it affects but slightly the upper respiratory tract but passes down and infects directly the lining membrane of the capillary bronchi and air cells, producing a more or less disseminated bronchopneumonia. This view of the pathogenesis looks upon the toxic phenomena as secondary to the disseminated inflammation, disturbances in the respiratory tract and pulmonary tissue. The pulmonary involvements are very extensive and correspondingly toxic. There is a disseminated bronchopneumonia, sometimes in isolated patches, in other cases affecting whole lobes. In these pneumonias the pneumococcus, strains III and IV, the bacillus of Pfeiffer and various strains of streptococci are prominent as bacteriopathogenic factors. Pleurisy is very frequent, giving rise to excruciating pains in breathing and aiding the diagnostician and patient

in localizing some of the sites of the pneumonic areas. Wherever the pleura is involved the underlying lung is affected. The pleurisy is occasionally accompanied by effusion which becomes purulent very early in the course of the effusion, as shown by exploratory aspiration. Fortunately, pleural effusions and emphysemas are exceptional. One of the authors believes that there are some cases in which an acute emphysema occurs as a toxic manifestation and shows itself by pseudodyspnea and prolonged expiration. The diagnosis of the pneumonia is principally made by percussion, secondarily aided and confirmed by auscultation. The pulse respiration rate is not of much aid since the pulse is not as rapid as is usual in pneumonia, especially in children. The characteristic percussion signs, however, will rarely leave one in doubt as to the localization of the consolidation. The value of the auscultatory signs is limited, owing to râles being present to a greater or less extent even in nonpneumonic cases. The auscultatory signs are of value to confirm the percussion results of dullness obtained by percussion over the consolidated areas. In pleural effusion, in addition to the flatness and distant or absent respiratory murmur, the occurrence of bronchophony and amphoric breathing are a great aid in the diagnosis of these effusions when considerable in amount.

The location of these pneumonias is generally at the bases of the lungs, rarely at the apices, occasionally at the scapulovertebral space on either side. The posterior surfaces of the lungs are more apt to be involved than the anterior. Entire lobes and even an entire lung may be the seat of consolidation. The temperature curve of these pneumonias is septic in character. The pulse rate is not as rapid as in pneumonia of a similar kind in other conditions. The respirations rarely reach above 30 in the adult, and even in advanced pneumonias the respirations are seldom above 40 to 44. Only cases that are about to terminate in death reach a very high respiration count, due to the extension of the pulmonary edema. There is constant distressing cough, with moist râles. There are herpetic eruptions on both upper and lower lips in many of these influenza pneumonia cases although these also occur occasionally in cases uncomplicated by pneumonia. Delirium is frequent, sometimes alternating with semicoma. There is frequently sleeplessness in other cases alternating with the delirium.

The third class of cases are those with predominating toxic constitutional symptoms and is intended to include a class of foudroyant cases of which we have seen only two. One of these died on the second day after entering the hospital. It was an intensely toxic case with extensive pneumonia. We are disposed to think that most of these cases of influenza are cases of influenza pneumonia at the very onset of the disease. In these cases it is likely to assume that the site of entry of the infectious cause into the body is at the capillary bronchi and the air cells. Cases of influenza in which vomiting and diarrhea are prominent factors are also properly to be classed in this toxic group. This disease, having a predilection for young adults—the kind of patients who do not consider themselves sick until



severely stricken—it is natural that such are profoundly infected by the time the physician is called, and show signs of extensive pneumonia or general toxemia leading to early death.

#### DIFFERENTIAL DIAGNOSIS.

It is necessary to differentiate cases of the first class from those of ordinary follicular tonsillitis and sore throat. We have already spoken of the absence of tonsillar involvement in Spanish influenza. The presence of large acutely inflamed tonsils with follicular patches excludes Spanish influenza.

Some of these cases, on account of the headaches, fever, and low pulse rate, may be mistaken for typhoid fever in the initial stage. All the more so because there is, in both these diseases, when uncomplicated, a low leucocytosis. In influenza the leucocyte count may be from 7,000 to 10,000, with eighty-five to ninety per cent. of polymorphonuclear cells. In typhoid there is leucopenia with a relative lymphocytosis. The spleen in typhoid fever is, of course, large and palpable; in Spanish influenza it cannot be felt. We have seen two cases sent to the hospital as Spanish influenza which, after a few days, were diagnosed as epidemic cerebrospinal meningitis and the latter diagnosis was proved correct by the lumbar puncture yielding a characteristic, cloudy, purulent spinal fluid. Cerebrospinal meningitis may, however, be preceded by influenza in our experience.

#### TREATMENT.

Doctor Park, in his article in this issue of the JOURNAL, discusses the bacteriology of this disease. We may say that the relation of the streptococcus to influenza is about that of this organism to scarlet fever. While the streptococcus in both these diseases is the most important bacterial cause of the mixed infection complications, which cause the death rate, it is not the essential and bacterial cause of either of these diseases. An antiserum to the streptococcus will therefore prove disappointing, while an effective polyvalent antiserum to antagonize all the organisms involved in the mixed infections, including the pneumococcus, has not been produced.

The pneumococcus in these cases belongs to strains III and IV. We believe, therefore, that antibacterial therapy is still the hope of the future and not the realization of the present. Doctor Park will write of the prophylactic vaccine of which we have as yet, only meagre experience. We still rely upon symptomatic therapy.

For the fever, we have not used any of the coal tar products, all of these being heart depressants. Aspirin in moderate doses, we have used only in the first to the third day. In some cases, instead of aspirin we gave salicylate of soda in moderate doses, with double the amount of bicarbonate of soda. In using salicylate of soda the urine should be carefully watched for albumin. After the fourth day, if the fever is an annoying factor, neither of these drugs should be used. We have used hydrotherapy in the form of sponge baths at eighty-five degrees every time the temperature rises above 103.5 degrees, such baths being preceded by a dose of quinine

sulphate or hydrochloride in five grain capsules (Berg). Not more than ten grains of quinine are to be given daily. As stimulants, we use tincture of digitalis by mouth or digalen by veins as indications require. The digitalis should be given frequently in moderate doses. The pulse should be the guide for its use. We are both using adrenalin in moderate doses, three to five minims of one to 1,000 solution by mouth, nostril or needle, as indications may require. On account of its effect on the edematous, mucous membranes, and because of its stimulant cardiac action, Doctor Bullova considers that it has a specific effect. Other indications are met therapeutically as they arise.

The pneumonias in this disease being mostly bronchopneumonias of the "moist" type with a tendency to partial pulmonary edema, we have carefully avoided the use of opiates and morphine. Only in very severe cough are small, infrequent doses of codeine given until the cough is relieved. For the delirium with sleeplessness we rely upon barbitol in proper doses. The patient awakes from sleep with a much clearer mentality.

This rather cursory account of the experience in this epidemic includes no statistical inquiry because of lack of time for the tabulation and classification of histories. Our clinical observations here recounted, are not intended to do much more than call attention to features in the clinical course of these cases in this epidemic which have impressed us most forcibly.

10 EAST SEVENTY-THIRD STREET.  
62 WEST EIGHTY-SEVENTH STREET.

#### THE TREATMENT OF INFLUENZA.

BY WALTER A. BASTEDO, M. D.,  
New York,

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Attending Physician, St. Luke's Hospital, etc.

From the standpoint of treatment, the influenza cases fall into two groups: Those without pneumonia, and those with pneumonia.

#### CASES WITHOUT PNEUMONIA.

In this group the dominating features are pains and bronchitis, and these are treated symptomatically. For the general pains and headaches we use salicylates, acetylsalicylic acid, acetphenetidin, acetanilid, or pyramidon, with or without codeine. There is nothing gained by associating with these antipyretics any drug for the protection of the heart, such as caffeine or camphor, for if there is an idiosyncrasy against one of these drugs of the acetanilid group, there is no other drug known that will protect against it. Worth Hale has shown that caffeine actually increases their toxicity, and many of the cases of collapse have occurred when the drug was accompanied by caffeine.

For the bronchitis, local treatment is external in the form of mustard plasters, turpentine liniment, or hot poultices; or internal, by inhalations of steam containing the compound tincture of benzoin, or oil of pine.

The systemic treatment for the bronchitis consists

essentially of expectorants—one of the best known being a mixture of ammonium chloride with ipecac. The ordinary brown mixture has scarcely any expectorant value, and the popular Stokes's expectorant is more effective in doping the patient with its paretic than in fluidifying the bronchial secretions. The so called bronchial antiseptics, tar, creosote, turpentine, terpin hydrate, cubeb, etc., are of no value as antiseptics, though they may exert a mild analgesic and antipyretic effect.

During the illness, sleep must be ensured, usually by the milder hypnotics, such as barbitol, trional, and chloralamid, and the digestive tract must be kept free from fermentation and putrefaction by a primary dose of castor oil or calomel and subsequent mild laxative or a daily enema. The diet is necessarily light in character and limited in quantity, and water is freely given.

#### CASES WITH PNEUMONIA.

In the pneumonia type the problem is different. From a therapeutic standpoint, the comfort of the patient sinks into insignificance, and the maintenance of the vitality of the patient becomes the need. In the lungs at post mortem we find very extensive involvement, with abscess formation in the alveoli and terminal bronchi, extensive hemorrhages, and gangrene of the mucous membrane in the larger bronchi. We are dealing with a bronchopneumonia and the patient is more or less septic. If the pneumococcus is found in the sputum it should be grouped, and if of Group 1, the patient should receive large doses intravenously of the pneumococcus No. 1 serum. If it is not of Group 1, the serum is useless.

The essential treatment is symptomatic. Although the cold air treatment for pneumonia has not proved an advantage from a mortality point of view, it promotes the comfort of the patient and favors sleep, and may lessen the cough. Therefore have the patient out of doors or in a room with the windows wide open. Because of the cardiac weakness and the frequent development of auricular fibrillation, it is a wise plan to give all patients digitalis in large doses for the first two or three days.

Fear of tympanites demands the lightest kind of diet, such as peptonized milk and broths, and also adequate movements of the bowels, preferably by a daily enema to avoid medication by mouth. The presence of tympanites calls for vigorous treatment by medicated enemas, hot stupes to the abdomen with a rectal tube in the rectum, and a brisk cathartic by mouth, even castor oil, if that can be taken by the patient; or sometimes a hypodermic of one c. c. of pituitary liquid, repeated from time to time. Plenty of water should be given to promote excretion of toxins and to favor sweating.

For the cough, a throat spray or inhalation of medicated steam or, if necessary, repeated doses of codeine, may be employed.

For sleep, use the ordinary hypnotics mentioned above, and if these do not suffice, use paraldehyde. This may be given by rectum in two dram doses dissolved in saline. If there is delirium, or great pleuritic pain not overcome by the ordinary seda-

tives, use morphine. It is a *sine qua non* that the patient must have rest and sleep, yet I would avoid the use of morphine as far as possible, because of its tendency to favor the production of edema of the lungs and tympanites.

If edema of the lungs supervenes, dry cup the chest and administer, hypodermically, five grains of caffeine and sodium benzoate, to stimulate the respiration, repeating this in smaller doses if required. If the edema of the lungs is in the serious stage I would in addition do a venesection, withdrawing ten to fifteen ounces of blood. If digitalis has not been administered, but not otherwise, give strophanthin, 0.5 mg., intravenously. If there is cyanosis, use oxygen freely, preferably with steam to obviate the drying effect of the oxygen.

The whole treatment is symptomatic and there are many other conditions that may arise and demand therapeutic consideration; for example, acidosis, pleurisy, and empyema. I have not yet encountered any cases with empyema.

#### CONVALESCENCE.

In the convalescent stage the care of the patient must be continued, for at this time the vitality persists at a low point. Prolonged rest, fresh air, and bitter appetizing tonics are indicated.

We have said nothing about abortive treatment, though no harm, and possibly good, may come from the usual attempt to cut the disease short, by a brisk cathartic at the onset, a large dose of acetylsalicylic acid, and measures to produce copious sweating.

57 WEST FIFTY-EIGHTH STREET.

### CONCOMITANT BRONCHOSCOPY AND ESOPHAGOSCOPY.\*

BY SAMUEL IGLAUER, B. S., M. D.,  
Cincinnati.

CASE.—November 26, 1917. F. W., a female, age twenty-four, was admitted to the medical service of Dr. M. Brown, at the Cincinnati General Hospital, suffering great distress and agony from the effects of a rather concentrated solution of lye, which she had taken with suicidal intent. In the receiving ward a stomach tube had been passed and about a quart of diluted acetic acid had been used, as an antidote. The patient's lips, mouth, tongue, and pharynx were badly burned. Acute nephritis soon developed.

After several days there was a profuse discharge of bloody fluid from the mouth and throat, due to the "peeling of the escharotic membranes, leaving a raw granulating surface." The voice was thick and husky and there was some occasional difficulty in breathing. At first deglutition was practically impossible, and three nutrient enemas were given daily. These were continued for about four weeks, although some food could be swallowed during the latter half of the month, and by January 20, 1918, the patient could swallow cereals, bread and milk, and fruits.

February 2, 1918. The patient was transferred to the laryngological service. Examination showed a very smooth tongue (papillae destroyed), which could only be slightly protruded, owing to the cicatrices in the floor of the mouth. The pillars of the fauces and soft palate were superficially scarred. At the root of the tongue dense fibrous bands had formed, binding the tongue to the lateral and posterior walls of the pharynx, forming a diaphragm and leaving a roughly triangular opening with cordlike edges which just about admitted the tip of the index finger. The epiglottis was invisible, but a glimpse could

\*Read at the First Annual Meeting of the Association of American Peroral Endoscopists, Philadelphia, May 31, 1918.



be obtained of the arytenoids and the thickened vocal cords. In addition to the faucal obstruction described above, x ray plates (taken somewhat later) "show evidence of incomplete stricture at the beginning of the esophagus opposite the second dorsal vertebra. The length of the stricture is not over an inch and the edges appear smooth." (Doctor Doughty.)

Attempts at passing an esophagoscope all failed because the introduction of the instrument through the cicatricial diaphragm in the fauces completely occluded the aditus laryngis and produced asphyxia.

March 21, 1918. Under local anesthesia some of the cicatricial bands in the fauces were partially severed by blunt and scissor dissection, but in the course of about ten days they formed again. Dilatation of the opening in the diaphragm was then begun by frequent introduction of a long Killian nasal speculum which was spread after its insertion. In this manner slow progress was made. The patient was induced to swallow several yards of silk thread, over which it was possible to pass Sippe's piano wire, but neither Sippe's hollow sound nor Plummer's olive tipped bougies could be passed through the stricture. All manipulations were rendered difficult because the patient was of an exceedingly neurotic disposition and was prone to become hysterical when treated or examined.

April 13, 1918. In order to reach and dilate the esophageal stricture, and at the same time prevent the asphyxia which always threatened when an esophagoscope was introduced, the following procedure was adopted: The patient was anesthetized with chloroform (attended by considerable cyanosis), and with some difficulty in entering the larynx, owing to the cicatrices, an 8.5 mm. Kahler bronchoscope was introduced into the trachea. The handle of the instrument was then detached and the bronchoscope was anchored to the patient's cheek with adhesive plaster. A free airway was thus established and the anesthetic was administered through the tube. A small Jackson esophagoscope was then introduced over the thread (which the patient had previously swallowed). A very narrow cicatricial stricture was found about eight cm. from the incisor teeth. Sippe's piano wire was then threaded onto the string and was passed through the esophagoscope into the stomach. Jackson's flexible tipped esophageal bougies—sizes 2, 4, and 6—were then successively passed alongside the piano wire and through the stricture. The esophagoscope and bronchoscope were then removed.

A few days after this operation, no ill effects having ensued, it was found that small Plummer's olive tipped bougies threaded over the string could be passed into the stomach. Larger and larger tips have since been employed with gradual dilatation of the stricture. At the same time the opening in the pharyngeal diaphragm has been somewhat stretched by repeated introductions of the Killian nasal speculum. Deglutition has gradually improved.

#### COMMENT.

In order to insure an unobstructed airway in the treatment of this case, several methods had to be considered: First, a preliminary tracheotomy might have been performed but was inadvisable, because it would have meant another operation and burden in a highly neurotic patient. Second, insufflation anesthesia was considered but was not employed, because the introduction of an esophagoscope through the pharyngeal diaphragm would have shut off the space for the return flow of air. A double catheter providing for insufflation and exsufflation might perhaps have been tried. Third, the stomach might have been opened and retrograde catheterization without end might have been undertaken; but this procedure would have been an additional surgical risk.

**Conclusions.**—The concomitant introduction of a bronchoscope and esophagoscope solved the difficulties encountered and might be employed advantageously in cases of a similar nature.

SEVENTH AND RACE STREETS.

## DAY PHANTASIES IN A CHILD.

By ADOLPH STERN, M. D.,  
New York.

It is a matter of common knowledge that children normally live in a world of make believe, as evidenced even in their games in which objects symbolize living things, and we know that children revel in fairy stories and things magical. That which I am about to describe, however, is a distinctly pathological phenomenon. For at least two reasons it is pathological, the more important perhaps being that these phantasies occupy the attention of the patient to an extent excluding the possibility or even the desire for a normal interest in his environment. A patient of mine, a seven year old boy, was a typical day dreamer, sitting at times, as the mother told me, for hours, totally oblivious to his surroundings, immersed in his own thoughts. The second reason for considering them pathological is the nature of the phantasies which indicate repressed wishes which the child could not realize in actual life. Unable or unwilling to give them up entirely, the child resorts to his imagination to fulfill these wishes. As we shall see, some of them are reproduced in the phantasies in an undisguised form, while others are painted in a symbolic or disguised state. Furthermore, these phantasies at times remind one very much of tales, being in fact copies of those the child had heard in school and adapted to blend with his unconscious desires.

One can find a reason certainly why fairies stories and tales of magic and great power find such a fertile field in children's minds. Klügel has shown that the same mechanisms at work in the phantasies, dreams, and symptoms of the neurotic enter into the construction of fairy tales and that the writers of fairy tales give life to their own unconscious wishes just as the individual does in his fancies and dreams. Our patient was beset with the same emotional conflicts between "I want" and "I must not have" that confront every individual. Though their real import was not quite clear to the child, yet the tales of magic and power which he had heard gave him just that which he sought. They provided for him a world in which he could live as he wished, and he incorporated into his own life those features of the tales which he lacked on this hard, matter of fact earth. This child, like so many adults also, lived according to the pleasure principle, shutting his eyes to reality as something too harsh; and since he refused to submit to reality, he resorted to his phantasies to give him, without any effort, all that which he vainly sought in his conscious state.<sup>1</sup>

These phantasies emphasize several very interesting and at the same time vital phenomena, which are present in the fabric of all neurotic conditions, or, rather, which lie at the base of every functional neurosis. I refer to the parent complex with its various manifestations.

Another illuminating phase of this study shows

<sup>1</sup>The distinction between conscious and unconscious in this instance is that which Freud has pointed out. The unconscious embraces thought processes of emotional value, the real nature of which for certain, so to speak, purposeful reasons are not known and are not at the time fully recognized by the individual. The reasons for their not being recognized as such lie in the nature of the thought processes, viz., their incompatibility with morality or ethics. The reader is referred to Freud's Interpretation of Dreams for an elucidation of this phase of the subject.

how the individual's attitude to the outside world is merely a reproduction of that which he manifests at home; the tendency to reproduce conditions; to feel "at home" only in conditions which are familiar to the individual. This to some extent explains the inability of the neurotic to adapt himself readily to changes in environment.<sup>2</sup>

This marked tendency to live along certain lines is established very early in life, and that is why we say that an individual's future character is determined very early in life, before the age of five years, and therefore the urgent need of knowledge of the deep psychology of very young children. Let us see what, in this direction we can get from a study of the patient under consideration.

CASE.—I. H., seven years of age, was brought to the Mount Sinai Dispensary in May, 1917, because he stuttered for the past three years, suffered from nocturnal enuresis since birth, never having obtained full control of the urinary sphincter; was obstinate, wilful, quarrelsome; did not play much with other children; was very irritable, and easily became very angry. For two months before he came under observation he sighed a great deal and sat for hours absorbed in thought. While at the clinic, one of my colleagues called my attention to the boy, who sat staring ahead of him, entirely unconscious of what was going on about him. An examination revealed an intelligent, capable looking little fellow, somewhat undersized and undernourished, with a faraway, dreamy look, as if all that which he sought lay in some distant place beyond his reach. At the same time his expression showed dissatisfaction and intense resentment.

The method of procedure in the psychoanalysis of children in nowise differs from that employed in the treatment of adults. Dreams, symbolic acts, symptoms, and phantasies are the means whereby the unconscious processes are made conscious. Free association is employed just as in the case of adults. In the patient under consideration, little recourse was had for interpretation material except to his day phantasies, which were very numerous, in fact almost constantly present and very readily reproduced, except now and then when the patient manifested resistances to the analyst, or because the phantasies or their associa-

tions led to more or less consciously repressed ideas of a very painful nature.

The boy gave but one dream during the entire treatment. This was narrated on his first visit at my request that he tell me a dream he had had. On his second visit, at my request for a dream, the child said he had none, but that he had thoughts in his mind. These I reproduce as his day dreams or phantasies. On succeeding visits, to my requests for dreams, he responded with, "I have no dreams, but I can make them up." He "made them up" very fluently, hesitating only very little in their recital. This gave the boy an outlet for his "make believe" tendencies and an opportunity to put into words his "make believes" in which he passed so many hours all by himself. From the content of these phantasies, as we shall see them, one need not be surprised that the child kept them to himself and that in the main he was quiet, morose, seclusive, and resentful. At first he told these phantasies without any affect of shame or embarrassment, but as through the analysis the significance of their content dawned upon the child, there was manifested more and more effort in telling them, he colored with shame or embarrassment or manifested fear, etc., as determined by the nature of the disclosure at the moment. The dream, given by the patient on his first visit, is here partially reproduced:

"A robber came in and chopped my head off and my hands and my body, and threw me in the river, and I sank to the bottom; and a cop took the robber to the judge and the judge said: 'Take him where he put the boy and make him get the boy, and put the robber in prison, and put him in the electric chair.'" Asked what came to his mind with "robber," he said: "My big brother and a big boy I know—they hit me—I don't like them. Sometimes I hit them."

One can readily see the desire for revenge in this child's mind, as symbolized in the dream. In very young children, and also in neurotics, one can safely translate "I don't like" into a positive "I hate," indicated in this case by "put the robber in prison and put him in the electric chair." The passive cruelty is represented by "chopped my head off and my hands, etc." Similar repressed emotions are present in the day phantasies, one of which I shall now reproduce in part:

"Robbers took me and knocked me in the water, and the cop put the robbers in prison and put them on the electric chair and killed them, and the cop says to him, 'Where is that little boy?', and he said, 'I'll get hold of you and put you in prison.' He died in five hundred months, and the cop said and the judge said, 'You must kill him in prison and kill and try to find that boy every day; you must go out and find him, and if you find him bring him up to me and kill all the robbers.' And he put all the robbers in the electric chair and put 'em in prison and killed them. The cops surrounded the robbers and killed them and brought them to the judge, and all the cops came and then the whole crowd was dead,<sup>4</sup> and then they put him

<sup>2</sup>Freud has said that a neurotic lives in the past—on "reminiscences." While that is true of most people, especially is it true of neurotics in their emotional life. In the case of the child under analysis, I shall point out how his attitude toward me, in the course of the treatment, mirrored that which he maintained to his immediate family—he invests me with all the powers, wealth, and qualities with which he conceives his father to be endowed, and on that account directs to me all the feelings of envy, hate, and jealousy which he manifested toward his father; and just as he wished to displace the latter, so too, he attempted to take my place, and with it, everything he believed me to possess. This is, in brief, what we mean by transference, a process that regularly takes place in the course of an analysis. It is the difficult task of the analyst to detect the various manifestations of the transference, bring them to the conscious attention of the patient, changing thereby the pathological nature of the transference. And since the physician symbolizes the (to the patient unconscious) familiar environment, a healthy attitude to the physician will of necessity bring about a healthy attitude to the family, and incidentally to his environment in general.

<sup>3</sup>In connection with the undernourished appearance, the mother complained of the capriciousness of the child's appetite and that he had to be forced to eat; he wanted only those things which were forbidden. That which his mother told him were healthful—milk, bread and butter, cereals, and the like—he refused to take except when compelled. The child would go for many hours without eating unless reminded or ordered to eat. This condition was present only for the past two or three years; before that the boy ate everything that came his way and at the time was a chubby little fellow. I explain this change purely from a psychic point of view. It is one of the means of getting attention and at the same time showing rebellion and antagonism. The study of the phantasies of the little patient will show sufficient basis for this interpretation. Moreover it is interesting to note that without any drugs whatsoever any efforts especially directed to that end, the child's desire for food increased during the course of the treatment, that he became less capricious in his desires, and gained several pounds in weight.

<sup>4</sup>It was very instructive to watch the changes in the facial expression of the boy, as he unconsciously took the part now of one, now of the other characters of his creations. What joy he expressed as the robber was killed! The severity and the finality of the judge's command to the "cops" to get the robbers and kill them displayed a keen appreciation of a situation in which actual conditions were reversed. How often the child was commanded by his father to do something, and how often he was punished by beating, for minor offenses! In his fancy conditions were reversed, and he took full advantage of the situation against the "tyrant." For many children regard their parents in this light, and justify this as the only way of getting their instances of apparent neglect or unjust treatment on the part of the parent. These are what Freud calls the "cover memories." The roots of the hostility lie deeper and are unconscious.



on the electric chair and chopped him up and then they threw him away in prison, and he sank a thousand and a thousand and a thousand leagues under the sea in the water."

To this phantasy I asked for no associations, since the boy consumed three quarters of an hour in its narration. However, the similarity between the dream and phantasy is quite apparent; the repressed emotions in both showing a marked resemblance in their nature. What follows is a partial reproduction of a "make believe" upon my request for a dream. The patient said he had no dreams, but he could "make one up." We can call this an "artificial" dream: note the close similarity between the natural dream, day phantasy and "artificial" dream.

"There is a robber; he is so bad and he kills all the cops and he kills his own robbers, and he saw all the cops and all the robbers was dead, and he sees blood and he finds out it's his own robbers, and then he says, 'That's my robbers, I forgot,' and then he said, 'All right, I don't care.' The robber gets knocked in the river, and he says, 'I don't care for my robbers and cops.'" At this point patient's phantasy ceased, and I asked him to tell me what came to his mind with "I don't care for my robbers," and he said, after some hesitation, "I want to kill myself. Sometimes I feel so bad I want to stick a knife in my heart. Today I was playing with a knife—about soldiers—I had a gun in my back pocket and a knife in front, and I killed a soldier." (Patient evidently has passed from association of suicidal thoughts and is now again giving vent to his phantasies.) "So the Mexican comes and says, 'Hands up' . . . I know a scheme that I can kill you." Patient looks straight at me, pointing his fingers, gun fashion, straight at me, smiling the while. "I was a sailor, I had a sailor suit on"—patient has a sailor's blouse on—"I said—I must kill you and throw you in the river—then there were more sailors, another had a fight with the Indians and all the sailors were killed except two." Patient again stopped, and I asked him to tell me what came to his mind with "two sailors"—"One is myself; the other, Johnson—a boy—Pete—my friend; he likes a thousand and a thousand and a thousand girls and fifty girls was against him and he knocked every one down—and we took the clothes off the dead sailors"—evidently patient again has returned to his phantasy—"I was there—I hide between the rocks—I killed all the Indians and I take their clothes off—I make out I die—and I shoot the Indian with a small gun. It has a small thing in front"—At this point patient put his right hand over his genitals and pressed his thighs forcibly together. I called his attention to the act, and with much embarrassment and blushing, he took his hand away, disclosing the erect penis visible through his clothing. He then continued his phantasy. "They buried me—I look up and I see I'm under the earth—I dig up—I run away and I said, 'Oh, I was under the earth—I make fun I was dead—Oh, I was not dead'"

The above "artificial" dream with its associations contains valuable information relative to the child's repressed emotional life. Its theme is that which we saw before, viz., intense hostility toward people in authority. In addition thoughts of suicide; a strong sex desire—love—as manifested by "he can like a thousand and a thousand girls"; the "looking" impulse—the desire to see the naked body, its counterpart being exhibitionism, as indicated by "I take their clothes off." Very interesting and graphically described is the birth phantasy, symbolically portrayed, i. e., "They buried me (in the mother's womb) in the (mother) earth—I dig and I run away." I took this to represent a birth phantasy and explained to the child the process of conception, pregnancy and birth. Another very instructive incident is the sex coloring of the cruelty and exhibi-

tion (looking) impulse, as manifested by the erection of the penis as the patient described the killing and the looking at the dead bodies with the clothes off. Further value is attached to the looking impulse, by the phantasy "I make out I am dead—I look up and I see." In answer to a question the child told that he often pretended to sleep and watched his parents and his oldest sister in bed. He frequently slept in the same room as they did.

An extract from a later "artificial" dream explains so called "hard luck," or as this patient put it "he always makes something happen to me." The phantasy follows:

"There was an old man—he was very poor and a soldier was there, and he said, 'Hurry up, you must go or I'll shoot you,' and he ran and he ran and he could not run very fast—he ran slow and the soldier shot him." Asked to tell what occurred to him with "old man," he gave the following associations: "He is a good man—he cannot run fast—he walks slow—my cousin—he died and went up to heaven, to God—he is way, way up in heaven by God, and when I play he makes something happen to me—I can't find the ball—he makes it go away because I play—so I hurt my leg, then I go in the street and play with everybody, so something happens to me—every day—then I cry; then I go upstairs and play and something happens to me—and I cry and never stop crying for a whole day."

These misfortunes following the narration of the killing of the old man by the soldier, we can safely say that they result as an (unconscious?) selfpunishment for the wicked impulse and unconscious criminal acts as depicted in the fancies. I so explained it to the patient, who, we know by this time, readily identifies himself with many of the characters he creates. The following, a short extract from another phantasy, plainly reveals, through a lapsus linguae, the direct object of some of his criminal impulses:

"A boy is burying a man." Asked to associate man, said, "My cousin—I wish I could do that—a man comes and takes it away to heaven—if I could do that—when my f-f-f-cousin died"—at this point patient stopped; I asked him to say what came to his mind with "f-f-f," he hesitated a long time, and then said, "my father—I want to bury my father—I want to kill him—he is bad to me."

The sexual symbolism of "devil" and its symbolism of wickedness are indicated by the following extract from a phantasy:

"There was a man—he was so rich—he kills everybody; he is a devil." Asked to tell what came to his mind with "devil," said, "I am afraid of the devil. I go to my mother's bed and choke the devil; he has horns—he looks wild—he—the devil—is skinny—he goes through the keyhole—like this." The patient indicated what he meant by inserting the extended index finger of his right hand into a ring formed by approximating the tips of the left thumb and index finger. At the same time he caused his cheeks to bulge by forcing his tongue against the inside of the cheeks, and moving it about in a circle.<sup>5</sup> I suggested to the patient that he was sticking his finger into a hole, and, blushing, said he had often inserted his finger into his rectum with pleasurable effect. Freud has called attention to the sexual significance of this anal interest.

What we call the transference is indicated in the following: By transference we mean the various manifestations of the attitude of the patient to the physician, resembling, rather reproducing, in essentials that which the patient bears to his earliest and

<sup>5</sup>A stutterer, a boy of ten, whom I analyzed, and who had a habit of rolling his tongue about in his mouth and sticking it into his cheeks, informed me that boys whom he knew called this "having intercourse" (he used the boys' slang word for the act), the cheek representing the vagina and the tongue the penis.

most intimate environment, *i. e.*, his family. This regularly takes place with all people in their social intercourse with one another. It is necessary to bring the various manifestations of this transference to the consciousness of the patient before real progress toward a cure is made. The attitude of the patient toward his family is one of "overvaluation" in many respects. The boy considers his father very rich, very powerful, tyrannous, creating in the child envy, hate, and rebellion. He shows toward me the same feelings. Witness the following:

"There was a man; he was so rich—he had a thousand million, dillion dollars and a big house and a thousand automobiles." Asked to associate "man," said, "You," and then added, "I own a mountain—bigger than the story mountain." Patient is envious and wishes to make me envious by telling me he is richer than I. He proceeded after a short pause—"He is a poor man—he's a plain man and he writes down everything like a confessor." Patient sees me write down what he says, and unconsciously recognizing the nature of his thoughts considers me a confessor. "I want to be the head of the confessors—you are the real head one now—but I'm going to be higher than you—I'm going to be a dillionaire and make them jealous—I'm going to get a pistol and shoot the whole family, except my big sister."

The following fragment of a fancy and free associations to part of its contents show the connection between sex desire and the act of micturition; also the sexual symbolism of knife, the feelings of envy and rivalry and hostility to the rival, the exhibition impulse, and the feeling of omnipotence. Like the other artificial dream the patient related this one at my request for a dream. He said:

"I had no dream, but I can make it up. There was a poor man; he felt so bad and he wanted to stab himself and he lived all day and then stabbed himself and they brought him to his mother and she cried." Asked to associate "man," said, "That's my father, and I told him he must die, and he stabbed himself—I killed him—I'm God—I can take his knife—I had a real one." Told to tell what comes to his mind with "knife," said: "My sister's boss has a knife—I don't care for my sister's boss—I got his knife—I held it in my hand—I took it out on the street. It's his knife." Asked to associate "sister's boss," said, "He likes my sister—I hate him." He then continued, in words I do not wish to put into print, to inform me that his sister's boss attempted intercourse with her, and also that he, the patient, saw a boy in the park attempting intercourse with a girl, but, "He can't, because there are people around." All this contains so many evidences of sexual interest, *i. e.*, exhibition—"I took it out on the street"—and masturbation—"I held it in my hand," that I ventured to say to the child that he wants to masturbate, but is afraid of detection, *i. e.*, there are people around. To this he replied that when he wishes to masturbate<sup>6</sup> he goes under a table, and added that on several occasions he had intercourse with his oldest sister. I have no verification for this. If the acts did not actually take place, the telling of them by the child as a reality, indicates the intensity of the wish, so that the wish and its fancied realization are synchronous. He described the acts, and his attempts at getting an erection—as he put it, "I try to make mine hard." The child manifested envy of his father because the latter had "such a large one," indicating the size by holding his two hands about a foot apart, palms facing. "His is so big," the boy continued, "It tears his drawers—he can't put it in." At this point the child expressed a sudden and urgent desire to urinate and, after returning from the toilet, said, "You got a knife, like that," indicating paper knife on my desk, "and God said everybody with a knife must die."

An interesting phenomenon manifested in the

above extract is the boy's hostility to men to whom the boy has the same attitude as to his father, showing the tendency to reproduce conditions. The feeling of rivalry toward the father is reproduced in his attitude to his sister's "boss" on account of the fancied love of the "boss" for his sister. On one occasion he expressed hostility toward me because "you got a wife," referring to the female office attendant. He gave evidence of this feeling in an apparently playful manner by saying, "I have a gun to shoot you and bullets," pointing a toy gun at me and smiling. Upon my questioning him why he wants to shoot me, he gave the response above quoted.

I have selected from a mass of material what I think most readily shows the nature of the malady from which our little patient suffered. Immersed in his thought for hours at a stretch, dreaming dreams which could never come true, weaving fancies of whose real nature he was totally unconscious, it is not at all surprising that the boy was seclusive, indifferent, or hostile to his environment. Reality had little to offer him, so he sought what consolation he could, in his own imagination. The sullen and resentful expression on his face, an expression that he constantly bore, is fully explained by the nature of the phantasies.

Though these phantasies are present in this child to an extent rendering him, for the time being at least, unfit to take his proper position in life, namely, that of an emotionally healthy, active, interested little boy, yet they but typically portray the strivings and longings consciously or unconsciously present at one time in all human beings. Therein lies the importance of Freud's teachings. He has repeatedly emphasized the fact that what we find in the neurotic we find also in the normal, except that in the latter an adjustment of these conflicts between "I want" and "I must not desire" has resulted; while in the former psychic ill health is the result of the conflict.

Love, hate, envy, and jealousy are emotions present in all beings. They are superabundant in our little patient, and his inability to adjust himself to these emotions causes the flight from reality to his fancies, in which he gives full vent to all of them. As in the adult neurotic, so in this boy also, we can trace the source of these emotions to the attitude of the individual to his immediate family. Envy and jealousy of the parent on the part of the child because the former possesses so much in material things, in power and privileges denied to the latter are important sources of neuroses. To what an extent the child learns to forego much that he immoderately desires just so much more progress does he make in the direction of cultural development, providing of course that he does not flee to his fancies for the substitute, but finds it in every day childhood activities.

As noted in the report of the case, in places where the associations to selected parts of the fancies or to the fancies themselves warranted it, interpretations were given by me to the patient. It was very in-

<sup>6</sup>In the case of this patient love consists essentially of the different forms of sex curiosity and sex desire as such. He has given sufficient evidence of this. In the text the word "love" is used in its generally accepted sense.

<sup>6</sup>His words were, "When I play with my mickie."



teresting and very satisfactory to watch the change in the facial expression of the patient, when the interpretation was correct. The child, then, gave ready assent. More conclusive, however, on such an occasion was the unconscious, the spontaneous and instantaneous change in his expression—the blushing, confused smile, hanging of the head, all followed by a distinct change for the better in the facial expression, a diminution in the intensity of the generally suspicious and resentful facial expression. Equally important is the fact that when the boy disagreed with my interpretation, he said so, at the same time giving his interpretation.

It was most gratifying to note the gradual improvement in the general demeanor of the boy as the treatment proceeded. At first he kept his eyes averted, very rarely looking me in the face. A smile was in the beginning a very rare occurrence. Now, some six months after I first saw him, he is a cheerful little fellow, with a ready smile, an easy demeanor, and a frank expression.

40 WEST FORTY-EIGHTH STREET.

## SPONTANEOUS PNEUMOTHORAX IN PULMONARY TUBERCULOSIS.

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Reports have frequently been made, showing the beneficial results which occasionally follow spontaneous pneumothorax, occurring as a complication in pulmonary tuberculosis. Arrest of the disease sometimes resulted. This idea was seized upon by Forlanini, and independently by John B. Murphy, and was the origin of the modern treatment of selected cases of hopeless pulmonary tuberculosis, by inducing artificial pneumothorax. The method consists in introducing nitrogen or air into the pleural cavity, following the indications of a water manometer.

The following is the report of a case from my practice of far advanced pulmonary tuberculosis, followed by spontaneous pneumothorax. The condition has resulted in an arrest of the disease. The usual fatal outcome of spontaneous pneumothorax is due to the rush of air into the pleural cavity, followed by sudden displacement of the heart and great blood vessels, and the rest of the mediastinum:

CASE.—J. S., aged twenty-one years. The patient was first seen on October 29, 1917. Illness began nine months ago. Coughs very much, expectorates one half cup of green pus daily. There is occasional bloody expectoration, and fever, night sweats, weakness, great dyspnea. The patient has lost thirty pounds in weight. Pains and paralysis are present in both legs. Physical examination shows moist subcrepitant râles throughout the right lung, and dullness over the same area. Heart and pulse average 130, and temperature averages 102.5° F. Patient is very pale, dyspneic, and emaciated. The legs and feet are very painful and patient is unable to move them. A diagnosis of far advanced tuberculosis of right lung and multiple neuritis was made. The prognosis was very unfavorable.

The treatment prescribed was absolute rest in the open air. I was considering doing an artificial pneumothorax, if the hygienic treatment failed. December 5: Left lung shows a few subcrepitant râles in the left interscapular region. December 26: Much cough. December 28: Much

cough. Bloody expectoration. Morphine was given. December 31: Great pain in right chest and great dyspnea, and shock. Examination showed right chest distended, tympanitic on percussion, with no breath sounds on auscultation, and no râles. A diagnosis of spontaneous pneumothorax was made. The prognosis was unfavorable, but from then on the patient gradually improved in every way. January 24, 1918: Temperature averaged 99.6° F. No breath sounds, and no râles. April 22, 1918: Patient feels fine. No cough. No expectoration. Temperature averages 99.5° F. Left lung: no râles. Right lung: hyperresonance in upper half, dullness in lower quarter. Auscultation showed absence of breath sounds, and absence of râles. May 10, 1918: Condition of legs has greatly improved. When first seen the patient could not walk, but he is now able to walk. May 14, 1918: Still no expectoration. No cough. Gaining weight, feels fine. June 4, 1918: Temperature averages 99.5° F., pulse 84. Legs improving. Right apex, amphoric breathing. Right lung, no breath sounds, no râles. Right lung flat, but no succussion sound. Patient feels well. No cough, no expectoration, and no other symptoms. All the symptoms gone, and the patient is daily improving.

### SUMMARY.

This was a case of complete tuberculous consolidation of the right lung, accompanied by severe symptoms. Spontaneous pneumothorax occurred with rest of the lung and riddance of the pus, completely arresting the disease.

702A HALSEY STREET.

## THE REAL VALUE OF FRESH AIR IN TUBERCULOSIS AND MANY IN- FECTIOUS DISEASES.

*Why Fresh Air, in Itself, Is Not Sufficient as a  
Preventive or Curative Agent for Tubercu-  
lous and Many Other Infectious Diseases.*

*Its Relation to Preventive and Cura-  
tive Medicine.*

By CHARLES GLUCK, M. D.,  
New York.

As an instrument for the prevention and in part the cure of innumerable common diseases, the knowledge which is being rapidly gained in nose and throat work will, no doubt, cause the entire domain of prevention and cure of diseases to be revised entirely in the near future. This will be found true especially as regards the prevention of tuberculous infections of whatever nature; also as regards numerous other infectious diseases.

There are certain selfevident facts of daily occurrence, namely, that in spite of our constant fight for fresh air, cleanliness, and proper foods, we find diseases, poor development, and malnutrition everywhere. There must undoubtedly be an excellent explanation for this state of affairs.

The medical profession will regard the prevention of the more common diseases and, to a great extent, also their cure, from an entirely different standpoint than does the nose and throat specialist, whose view is more mechanical and hence more efficient and far more practical. There is a greater mechanical element involved in the production of most of the common infectious diseases than has heretofore been recognized. It is an old and well recognized principle that many common species of germs themselves cannot produce disease; the pre-

disposing factors must be present. What are the predisposing factors? The question arises, Are there not two sets of such factors? The first, the common factors, are those we all meet with, such as the strain and stress of life, worry, exposure, etc. The second, the nasopharyngeal factors, are the actual means whereby the germs accomplish their work, and they are to be found in the nose and throat.

That we must have the germ to produce the disease is selfevident, but how the germ succeeds in producing the disease is a question. Undoubtedly it is brought about, as far as the writer can see, by a chemico-mechanical method, with great stress to be laid on the side of the mechanical factor. This mechanical factor is of paramount importance when the effect these purely mechanical factors have on inspired air is considered, resulting in such changes or, more properly speaking, absence of changes, in the inspired air, and facilitating growth of germ life in all the nasopharyngeal structures, so as to result in becoming the germ's main leverage in producing disease. That is, these chemico-mechanical factors bring about a state of the body tissue wherein pathological processes may arise, a condition aptly defined as suboxidation. By suboxidation we understand that there is too little oxygen in the body tissues to be compatible with perfect good health, or the highest degree of resistance. Suboxidation is principally produced in a purely mechanical manner by the inspired air being drawn through abnormal nasal fossæ or by mouth breathing, resulting in improper moistening, warming, and filtering of the air as it passes through the nasopharynx, thus making it impossible for lung alveoli to absorb the oxygen in the proper proportion. The question has been raised, why air passing through the mouth in the case of mouth breathers will result in suboxidation, facilitating the growth of germ life in any of the body structures, especially the nose and throat, and resulting in disease, either local or remote. Many physicians readily understand why air passing through abnormal nasal fossæ will result in suboxidation, but the other alternative seems to be a puzzle to them. It is self-evident that air inspired through the mouth will not be properly warmed, moistened, and filtered, since the turbinate bodies of the nose, and not the structures to be found in the mouth, were especially intended to perform those functions.

Abnormalities of the nasopharynx are undoubtedly of vast import in the production or aggravation of many diseases, both local and constitutional. These facts are true of an almost inexhaustible list. As a common example syphilis may be mentioned. Clinicians will find that the difficult or intractable cases are those afflicted with an abnormal nasopharynx. This is true of both adult and child. Interstitial keratitis in a child with a perforated or deflected septum and enlarged tonsils and adenoids is a difficult condition to cure; whereas in children with normal nasopharynxes the condition clears up under the simplest treatment.

To an important extent, then, many diseases fundamentally owe their existence, and many other again owe their intensified state, to chemico-

mechanical factors in the nasopharynx. These facts are due largely to purely mechanical factors found in the nasopharynx, preventing the normal ingress of air. Because of this last mentioned reason we may speak of such a thing as the "mechanism" of the production of disease; i. e., in the final analysis, these pathological states are either brought about or aggravated by purely mechanical factors. These mechanical factors make it possible for the chemical factors to accumulate, and produce actual disease. Should these facts be true, then the nasopharyngeal factors should be given their proper value in producing, aggravating, preventing, or assisting materially in the cure of many diseases. For simplicity sake, we will assume there is such a thing as the "mechanism" of the production of diseases. It is just this so called mechanism of production of disease, so little understood, that will be found to be the explanation for the existence of so much disease, malnutrition, and undevelopment.

In the "mechanism" of the production of many diseases there are principally two simple, easily understood factors; a third factor may be involved.

Tuberculosis is not produced, or rather let us say, permitted to grow in a healthy body. This is selfevident. Its inception and growth require something fundamentally wrong with the nasopharyngeal tract. These defects consist in young subjects of hypertrophied or diseased tonsils, adenoids, and adhesion bands; in older subjects we find diseased tonsils, and adenoids or the remains of adenoids, and adhesion bands, and in addition a third factor, a deflected septum. These abnormalities produce a diseased nasopharyngeal condition which is reflected on the whole body, and this, in conjunction with the improperly treated inhaled air, which is so poorly absorbable, gives rise in turn to a condition of the body tissues in which germ growth or infection is allowed. These abnormalities act to such an extent, in a purely mechanical manner, producing disease by directly interfering with the proper preparation of the air as it is taken in, whether it pass through the mouth as in the case of true mouth breathers, or through an abnormal nasopharynx, that it is justifiable to refer to the process as the mechanism of the production of disease. Thus the general condition is brought about by a mechanical factor causing a condition of suboxidation, or state of lowered resistance. The infective or chemical factor is, of course, of vast importance, but the degree of its influence depends upon the extent of the mechanical condition.

If sufficient oxygen is taken into the system, it will keep the body well and burn up the dirt inhaled, the germs and toxins absorbed, and any other noxious material gaining access to the tissues. This means not merely drawing sufficient oxygen into the lungs, but its absorption in sufficient quantities by the lung alveoli from the inhaled air. Thus the point of chief importance is the percentage of oxygen the lung alveoli are capable of absorbing from the inspired air. Are these absorptive powers normal or subnormal? These powers can only be normal, in the average alveoli,



when the air is properly prepared, i. e.; warmed, filtered, and moistened, in its passage through the nasopharynx; this presupposes a normal nasopharynx, and the passage of the air through the nasopharynx in a normal manner; certainly not as in mouth breathing. It is not so much the degree of purity of the air that counts, within certain limits, but the amount of air that will be absorbed and pass into the system. The intimate connection between this and the state of the nasofossæ-tonsillar tissues will be explained. A deflected septum with sinusitis and turbinal hypertrophy prevents the air from reaching the lungs in proper form for absorption in normal quantities. Mouth breathing will do the same, as will hypertrophied tonsils and adenoids. Thus a state of lowered resistance of the body tissues is produced which permits growth of the tubercle bacilli and other forms of bacterial life, absorbed most probably from the tonsillar and nasal fossæ tissues. In the case of the lungs, direct implantation does apparently take place. The importance of the gastrointestinal tract as a means of admission of the tubercle bacillus and other germs to the body is less than that of the nasopharyngeal.

Infection, leading to tuberculosis, presupposes a peculiar state of the body, which can be quite readily understood. There are various factors absolutely necessary for its production. Tuberculosis is in every sense of the word a slow disease, as regards onset, manifestation, and course. To contract consumption a patient must first have his tissues converted into a certain receptive state; they must assume the nature of proper culture material, wherein the growth of the tubercle bacillus may go on undisturbed. This can be accomplished, ordinarily, in only one way—by a deranged nose and throat.

This deranged nose and throat consists in all cases of primarily three cardinal points. These are: 1. The presence of tonsils. The tonsils, whether large or small, easily visible to the eye or invisible, due to the fact that they are submerged or almost completely covered by mucous membrane, and entirely out of view behind the anterior tonsillar pillars, are diseased (chronic tonsillitis—Osler). 2. Tissues found in the pharyngeal vault, consisting of adenoids, or their remains, and adhesion bands. The adhesion bands stretch between the Eustachian tube and the pharyngeal vault, and the granulations found among these bands are included under this heading. 3. The presence of the deflected nasal septum, whether markedly deflected or only slightly so, does not matter. This statement requires modification in cases of most children less than six or seven years of age. Though a deflected septum will not frequently be found in their cases, nevertheless a working condition equivalent to its presence will be described.

That hypertrophy of the turbinate bodies including polypoid degeneration and polypi is of importance no one will gainsay; this is equally true of the various forms of sinusitis which are so frequently met with in the accessory sinuses of the nasal fossæ. However, to any one doing much nose and throat work along the lines suggested, it

must readily become apparent, that both turbinal hypertrophy (including polypoid degeneration) and sinusitis are merely pathological conditions resulting from the evil influences of the so-called three cardinal points, and that almost invariably if these three factors receive proper attention the remainder of the nasopharyngeal structures will take care of themselves. Reducing the turbinates to about the size they normally should possess is practically all that is necessary (this includes attention to polypoid turbinates and removal of polypi if present). Scarcely will it be found necessary to touch the sinuses. In children it will almost never be necessary to touch these structures, since attention to the first two cardinal points is usually sufficient; the third factor requires attention but infrequently.

The *modus operandi* of the production of tuberculosis varies with the age of the subject, though in its final analysis is practically alike at all periods of life, excepting the very old, or the very sick, with completely broken resistance.

#### THE MECHANISM OF THE PRODUCTION OF CONSUMPTION IN THE YOUNG.

In the young it is produced by a mechanical-chemical factor, producing a vicious cycle. The child's tonsils become infected from sources due to its environmental conditions: Kissing, speaking over the child's face by its elders, and all forms of contact with others, are probably the most prolific sources of infection; food is another; likewise toys and other articles the child puts into its mouth. Germs of all varieties naturally enter the crypts of the tonsils and the adjacent nasopharyngeal tissues producing at first a slight cold (discharging rhinitis), light or severe coughs, or mild croupy attacks. The tonsils swell up with each attack (hypertrophy); the adenoids do likewise. The mucous membrane of the nasal fossæ undergoes a similar catarrhal swelling; catarrhal ethmoidal sinusitis is present at this stage. The swelling of the tonsils, adenoids, and mucous membrane of the nasal fossæ produces a mechanical obstruction of the nasal air passages, interfering with proper nasal breathing, causing mouth breathing, either constantly or intermittently. This is the "mechanism."

Two important chemical factors now enter, producing the poisoning of the child, which is practically what it amounts to. 1. The direct absorption into the system of toxins or germs, or both, chiefly from the tonsils, and also from the nasal fossæ and structures in the vault of the pharynx. Direct pulmonary inhalation and direct gastrointestinal absorption would come next in importance in the order named, but the efficacy of absorption from these routes would depend entirely on the state of normality or abnormality of the nasopharyngeal tract. Clinically, it is apparent that the tonsils play the chief rôle, in the entrance of toxins or germs or both to the body, causing the usual diseases found in childhood. The tonsils seem to be the chief and direct channel from the outside world into the system, not excepting the method whereby the tubercle bacillus gains entrance to the body. It outranks the nasal fossæ, alimentary, genitourinary, and the teeth (pyorrhea) since it is only necessary to recall

the fact that young children or infants have few or no teeth.

2. This second factor is the production of suboxidation, a condition where there exists too little oxygen in the tissues and blood, insufficient to burn up the toxins or germs circulating in the blood or lodged in the tissues; i. e., insufficient to permit the natural protective antibodies of the body to work properly. This condition is brought about by the mechanical obstruction of the air passages, by the enlarged tonsils, or adenoids, and in all cases also by the narrowed nasal passages, producing a condition equivalent to the actual presence of the deflected septum. The mucous membrane opposite the anterior tips of both middle turbinates presents a pyramidal swelling, simulating a deflected septum. The child breathes entirely or almost entirely through its mouth. In a certain percentage of cases, an actual septal deflection will be found, but this is seen as a rule in children past the age of six.

Suboxidation is recognized ordinarily in the child by the common symptoms of anemia, flabbiness, malnutrition, lack of development, poor resisting power to diseases, the ability to contract diseases easily, the presence of the eczematous types of disease, which may be aural, nasal, or ocular; and the tissues of the child are more easily attacked by germs. Naturally a low hemoglobin reading and small red cell count is to be expected. Hence we have slight colds (rhinitis), with its commonly seen nasal discharge; bronchitis with its well known cough; laryngitis with its familiar croup; almost the entire range of ear inflammatory diseases; innumerable forms of eye disease, especially the eczematous disease; the entire gamut of the once famous scrofulous disease; swollen cervical glands, with or without discharging sinuses; and as the suboxidation becomes greater or the child is exposed, perhaps a little more heavily than usual to colds, stress, etc., the more serious conditions of bronchopneumonia, pneumonia, pleurisy, pericardial or endocardial lesions, nephritic, tubercular infections; also the entire range of the so-called rheumatic infections, etc.

In other words the tissues of the child are converted into such a state, and the resistance so destroyed, that germ life may grow easily. It is well known that almost all ordinary species of germ life are nearly always present on the surface of all mucous membranes. Hence the exciting cause is ever present, and all that is necessary for the production of disease is to allow this condition of suboxidation to supervene.

The vicious cycle operates as follows. The more the tonsils and adenoids are infected, the greater they naturally swell, and the greater the swelling, the greater the interference with the normal nasal breathing. The more the child breathes with its mouth, the greater will be the degree of suboxidation, and the more easily will germs live and proliferate and be absorbed from the nasopharyngeal tract to the detriment of the child. Hence we have the vicious cycle leading to the production of the terminal diseases of pneumonia, diphtheria, tuberculosis, etc.

That these deductions are correct can be proved

by the complete removal of both of the faucial tonsils, and the thorough cleaning out of the vault of the pharynx. The child continues to grow, free of almost all ailments thereafter. The vicious cycle has been completely and easily broken.

No physician has a right to attempt to cure eczematous keratoconjunctivitis without completely enucleating both the faucial tonsils and thoroughly cleaning out of the pharyngeal vault, every vestige of adenoid tissue and adhesion bands, and assuring himself of the fact that the septum is ordinarily straight. This statement is equally true of all infiltrative inflammatory disease of the cornea. In eczematous children it is absolutely essential to finger scrape the pharyngeal vault repeatedly, subsequent to the initial removal of the tonsils and adenoids; this should be done at stated intervals of three, six, and nine months after the primary operation. Beneficial results will be observed, as a result of this finger scraping within a week's time with almost mathematical accuracy. This is equally true of eczematous diseases of all types, as found in childhood.

The fingersnare method for complete enucleation of the tonsils, under local anesthesia (novocaine) is the best for all ages of the child. The vault of the pharynx should be scraped by the index finger (finger scraping) following a careful use of the adenoid curette. It is also necessary to remember to treat the vault of the pharynx in this same manner, in periods varying from three months to two to four times that length of time, subsequent to the removal of the tonsils. If a piece of the tonsil has been left over or returns, it is to be completely removed at the earliest opportunity.

The majority of deaths of slum babies, or for that matter also of the better classes, is originally caused, or has its foundation laid by diseased tonsils and adenoids producing the condition of the nasal fossæ described, and subsequently of the body. The deaths of most of these children are preventable, by the timely removal of the tonsils and adenoids. Not only does this hold true, regarding deaths due to cardiac, respiratory, vascular, and nephritic diseases, but it is equally true for alimentary diseases, since they are seldom in themselves the cause of death, but bring about diseases of the cardiac, respiratory, nephritic, and vascular organs, which are the direct cause of death.

In derision, it has been said that some men regard the removal of the faucial tonsils as the panacea of all diseases of childhood. It may not be the panacea, but when combined with a thorough understanding of the other two important factors, the continuous maintenance of a perfectly clean vault and a straight septum, it will be the nearest approach that has been made to it, and can undoubtedly be considered the foundation of good health.

#### METHOD OF PRODUCTION OF CONSUMPTION IN THE ADULT.

In the adult a vicious cycle is likewise established resulting in a condition of suboxidation. The principal reason for this is that the adult does not receive the oxygen into his lungs in the proper form in which it should be, thus producing sub-



oxidation. This is produced to a great extent by the mechanical disarrangement of his nasopharyngeal organs, leading to easy growth and fermentation of germs in the nasal passages and structures, and also in the tonsillar tissue and the tissues found in the vault of the pharynx; systemic absorption of toxins or germs or both from these areas results, producing milder or severer diseases and ultimately, in many cases, tuberculosis.

We have in adults three cardinal points to deal with. 1. The diseased tonsils. The fact that some tonsils appear quite harmless, is not in their favor; neither should their size materially affect our judgment, nor the fact that we can obtain no history of sore throat. The tonsils occupy an even more prominent part in the case of adults than they do in the child, as the organ which gathers up, under ordinary circumstances, more germ life and permits more to be absorbed into the general system than any other organ of the body. That is because in the child the purely mechanical factor of nasal fossæ obstruction to air circulation is almost equal in importance to the absorptive factor from the tonsils and other nasopharyngeal structures; whereas in the majority of adult cases, if the mechanical factor of obstruction is present, it is rarely produced by the tonsils, but most frequently by the third cardinal factor, the deflected septum, aggravated by the enlargement of the turbinate bodies, and by the inevitable chronic catarrhal condition of the mucous membrane of the nasal fossæ and accessory sinuses.

2. The presence of adenoids or their remains acts by both the mechanical and chemical method in assisting to produce this condition of suboxidation. This process depends on the age of the patient and the nature of the case. The adenoids or their remains act as an absorptive area and assist mechanically in obstructing the nasopharyngeal air passages. In the younger adults we will still find them present in large amounts. In older people they will be found mostly atrophied, to a greater or less extent, leaving bands of connective tissue (adhesion bands), stretching between the vault of the pharynx and the pharyngeal projecting ends of the Eustachian tubes. The interspaces between these various bands are the breeding and harboring spaces for germs, which aid in infecting the tissues of the tonsils and nasal fossæ, and also act as direct absorbing foci for the body.

The tonsils are the most important absorbing and manufacturing organs for toxins, germs, or both, that the body has to contend with, and from them more germs gain access to all the body tissues than from any other source. The ability of the tonsils to act in this serious capacity is only made possible, in most cases, by the chemical and mechanical assistance rendered it by the abnormal tissues found in the vault, and the chemico-mechanical pernicious effect a deflected septum exerts on the organism. The exceptions are those tonsils that are in themselves so viciously diseased that they themselves can produce deleterious effects on the organism; even these cases are invariably aggravated by vault abnormalities and also frequently by a small, high deflection of the septum. Patients afflicted in

the latter manner will, as a rule, never be found as seriously affected as those in the former group.

The only abnormality of the nasal fossæ which is of prime importance is the deflected septum. All other abnormalities of the nasal fossæ are secondary to it, and caused by it, or caused by the deflection and the assistance rendered the deflection by the diseased tonsils and tissues in the pharyngeal vaults. Practically all forms of sinusitis, hypertrophy of the turbinates (including polypoid and polypoid degeneration of the turbinate), are all secondary to the deflection, diseased tonsils, and vault abnormalities, and owe their existence to the presence of these latter conditions. The adenoids or their remains and adhesion bands help to produce and aggravate these diseased conditions, in proportion to their size.

In adults, as a rule, the most important factor is the third cardinal point, the deflected nasal septum. The importance of this as a factor is probably greater than the absorptive part the diseased tonsils play, in allowing the infection to enter the system.

We may claim that the presence of this third cardinal factor is essential for the production of tuberculosis, and therefore we may call the production a purely mechanical matter, hence the use of the term, the "Mechanism" of the Production of Tuberculosis and other diseases. The importance the deflection of the septum possesses as an instrument for the production of disease rests fundamentally on the presence of the tonsils and the abnormal tissues to be found in the vault of the pharynx. Hence, in most cases, the presence of the tonsils and abnormal tissues of the vault are essential in enabling the deflected septum to produce diseased states.

For a properly performed submucous operation to be a complete success, it is absolutely essential that the tonsils be completely removed, preferably preceding the submucous operation; a clean vault is likewise essential. Where the tonsils remain after a submucous operation the nasal discharge (chronic catarrhal state) does not disappear, but does so shortly after their complete removal.

Irrespective of the fact as to whether tuberculosis is produced by direct implantation of the tubercle bacillus on the lung tissue itself, or is conveyed there after absorption from the nasopharyngeal structures, or via the gastrointestinal route, the tubercle bacilli could not possibly live and grow, even allowing that they gain entrance by various routes, unless the mechanical factors described existed; for if the oxygen were properly received into the system, it would under ordinary circumstances burn up (oxidize, by working through the natural protective elements of the body) the tubercle bacilli as fast as they gained entrance.

The importance of the third factor lies in the fact that if the oxygen is to be assimilated by the lung tissue in the normal percentage, it must be properly prepared, that is correctly warmed, moistened, and filtered; so that the lung alveoli can absorb the proper proportion of oxygen, and give off the normal amount of effete material, thereby en-

abling the body to take up the "safe margin" of oxygen sufficient to burn up the toxins or bacteria absorbed from mucous membrane surfaces. This can only be accomplished by the passage of the air through normal nasal fossæ.

A person with a deflected nasal septum (including the presence of ridges and spurs, which are merely modifications of the deflection) can only derive from one fifth to four fifths the benefit from the air that a person with a straight septum does. Or further, an individual with a straight nasal septum derives more benefit from a vitiated atmosphere than a person with a deflected septum derives from a pure country atmosphere.

The condition of suboxidation in most adult cases is produced by the state or states of the nasal fossæ described. These individuals are mouth breathers, either constantly or intermittently, and very frequently unknown to themselves. A normal state of the nasal fossæ is one wherein the nasal septum is straight, making it possible for the two nasal fossæ to be equal in size, in all dimensions. The air is then properly filtered, warmed, and moistened, and can be absorbed by the lung alveoli, in the normal amount. If the nasal septum is not straight, thereby assisting in producing the other abnormal conditions of the nasal fossæ, the lungs cannot absorb the proper amount of oxygen from the air, which would be improperly prepared by such nasal fossæ, suboxidation supervenes, germ life, including the tubercle bacillus, may then easily grow when implanted on the tissue just as the seeds of the plant do when they fall on fertile ground.

We have then this vicious cycle: The less oxygen the lung alveoli can absorb from the inhaled air, the greater the supervening state of suboxidation, and the more pronounced the latter, the weaker does the resistance grow; with the constant absorption of bacteria, toxins, or both, taking place through the tonsils and nasal fossæ and with repeated colds and other ailments the tissues finally become ripe for the growth of the tubercle bacillus.

The longer the individual suffers from abnormal nasopharyngeal conditions, the poorer will the resisting qualities of his tissues become. The greater the amount of absorption of bacteria and toxins from the nasopharyngeal tract, the more pronounced will the degree of intoxication of the individual's tissues be. The character of the environment to which the individual is subjected must be taken into consideration; the less perfect the less time will it take to produce diseased conditions. The strain and stress of the particular life the individual has to lead is naturally a highly important factor. A careful person who is well protected by kindly home influence will last longer than one not quite so fortunate, although possessing the same or perhaps not quite so abnormal a nasopharynx. Dissipation in those, especially the young, afflicted with an abnormal nasopharyngeal apparatus, leads quickly to disease.

By deductive reasoning we must conclude that we possess today a wonderful instrument for the prevention of tuberculosis and innumerable other

ailments and for a more scientific handling of these diseases when present.

By the employment of the above methods we may, perhaps, achieve the eradication of tuberculosis in all its forms; but naturally this still remains to be proved. It would appear that the body can be considered in the light of a valuable machine. The reason for breakdowns will thus be more easily understood.

The similarity in the manner of production of the common infectious diseases and tuberculosis must readily become apparent to the clinician, when looked at as above pictured. The *modus operandi* of their production is practically similar to the production of tuberculosis. The difference is due to variety of infective agents, intensity of infection, difference in predisposing factors, such as exposure and worry, wear and tear, and stress and strain of life, and difference in degree of abnormality of the nasopharynx.

In practically all our cases of tuberculosis, we can obtain on careful inquiry, a history of repeated colds, poor health, and anemia; frequently many diseased conditions that may be referred to the nasopharyngeal, and the respiratory system. These histories usually cover quite a period of time. The similarity of the histories will readily become apparent on a close analysis, and undoubtedly greatest stress must be laid on the nasopharyngeal factors as the most important agents in bringing about these pathological states. Pleuritic, pulmonary, nasopharyngeal, laryngeal, and cardiac diseases owe their existence primarily to the same causes, and are only modified by the degree of intensity of infection, character of exposure, and diminished local resistance (*resistentia locus minoris*), the misfortune of being compelled to expose one part of the anatomy more than another, and all the other simple, ordinary, daily factors of this nature. Primarily they hinge on a common origin, the abnormal condition of the nasopharynx.

We have, by the use of the above advised methods, a means of preventing a large percentage of our childhood diseases, and if not completely, at least we may make it possible that these appear in a much milder form; this is especially true of the most serious diseases of childhood.

Here, too, is the key to the relief of most cases of underdevelopment as found in children in all walks of life; providing, that they were born normal and remained so until a few months subsequent to birth.

We can also find here the explanation and cure for the vast majority of cases of underweight, malnutrition, and anemia, and the reason for the inability to produce a cure in many diseases, such as the eczematous type of disease in childhood known in the older days by the general term of scrofulous diseases, and including eczematous keratoconjunctivitis, discharging ears, enlarged cervical or submaxillary glands with or without sinuses, etc. Chlorosis in young girls with its attendant amenorrhea is another condition to be successfully treated by this method.

The shock the general scapegoat "heredity" has received up to the present from the medical pro-



fession will be greatly intesified as the profession in general realizes the tremendous importance the above outlined work bears to the proper development of the child, and that it most probably has an all important influence in keeping the child free from neurotic diseases.

It certainly is lamentable to feel that we possess such inaccurate methods, in attempting to prevent tuberculosis or effect a cure in people afflicted with it. The reason for this is that up to the present the mechanism of production of the disease has not been understood, but with a more thorough comprehension of this we will obtain more favorable results. We mistakenly attempt to eradicate the disease with the body in the same state as when the disease was contracted.

The object of the prevention of tuberculous and many other diseases should be the destruction or removal of the disease producing mechanism mentioned above, thus breaking the vicious circle established and allowing the air to enter the lungs in the proper form so that alveoli can absorb the oxygen in the normal percentage; likewise removing the germ and toxin areas situated in the tonsils and nasal fossæ. This may be accomplished by, 1, the complete removal of the tonsils in all cases; 2, removal from the pharyngeal vault of all adenoid tissue and adhesion bands (the last implies finger-scraping the vault, at stated intervals), and 3, a complete submucous operation to straighten the nasal septum in those who require it.

If the above outlined work is a preventive of consumption, it is logical to assume that it is also the rational plan to be followed in attempting to favorably influence the course of the disease. We can say positively therefore that no tubercular patient is properly treated unless his tonsils are completely removed, and he is assured that in his nasal fossæ there exists a straight and thin nasal septum, and that he possess a perfectly clean pharyngeal vault, a fact to be repeatedly ascertained. This practically means a complete submucous operation on the nasal septum in every tubercular adult, provided the patient is able to undergo the operation. Naturally, the earlier all surgical work is done, the greater will be the patient's resisting power. Such a procedure can only be adopted, under the most careful scientific handling, especially as regards diet and prolonged rest in bed, or absence from work. These rules the writer has found are necessary only as regards tubercular cases; all other infectious diseases appear to be more benign and amenable to surgical treatment and may be safely handled in an ambulatory manner.

It will very seldom be found necessary to remove much turbinate tissue; this refers to before, during, or subsequent to the complete straightening of the septum operation. A little trimming of the edges of the middle turbinate on the concave side of the septum will be necessary, in order to reduce it to about the normal size of a middle turbinate, but never to less. This is equally true of the inferior turbinates. Polypoid tissue of course, is to be removed, but always bearing in mind the necessity of sparing as much of the turbinate tissue as possible.

Regarding the analogy of production, existing

between tuberculosis and innumerable diseases, we may safely say they are produced in a manner absolutely similar to tuberculosis and may be prevented by steps similar to those used in preventing tuberculosis; only more easily so, judging from the difficulty of cure of tuberculosis.

The fight for sterilans magna which the body is constantly struggling for, can easily be won with a straight septum, absent tonsils, and clean vault, but is more or less of a hopeless battle where these conditions do not exist. The reason for the present lamentable state of inaccuracy in the prognosis of tuberculosis and innumerable other diseases can be found in the patient's nasopharyngeal tract; and from the time when we regard the chances of recovery as proportional to the normality of the nose and throat, this hazy state will disappear.

And finally, let us stop to consider the vast difference a normal nose and throat, so defined, would mean to our boys in the trenches. The chances of contracting tuberculosis would be ever so greatly reduced; the chances of contracting innumerable other ailments common to army and trench life, especially pulmonary, meningeal, pleuritic, etc., would be greatly minimized. Would it not mean healthier, stronger, more resistant men, less likely to give way under the necessary stress and strain of army life, to tuberculous, nervous, cardiac, pulmonary, and other diseases? It would mean more normal men in general. In these men all that is necessary is the removal of the tonsils and the production of a thoroughly clean vault. Work on the septum would be rather infrequently necessary.

During the writer's short stay at the Plattsburg Training Camp recently, he was not at all surprised to find that diseased tonsils and deflected septi were as common as they are, even among otherwise perfectly healthy men. And further, when the examination of somewhat older men was made, who had begun to show signs of deterioration, the invariable presence of diseased tonsils and deflected septi, seemed to indicate a profound connection between rather early degeneracy and an abnormal nasopharynx. Proper attention to this condition in early youth, might have avoided, or at least greatly delayed this catastrophe and prevented other diseased conditions.

There is one factor of vast importance—the common unhealthy practice of mouth breathing—to be constantly kept in mind when discussing the importance of the relationship of the nose and throat to the production of disease. The majority of patients with abnormal nose and throat are to a greater or lesser extent mouth breathers although they may be unconscious of the act; during sleep they are naturally unconscious of it. Proper nasal breathing is an automatic act, which in a normal nose and throat takes place spontaneously. After a patient's nose and throat have been placed in a normal condition he will naturally breathe through his nose; but as long as his nasopharynx is abnormal he cannot breathe normally and will use his mouth for breathing purposes a large part of the time—a dangerous practice and one leading to disease.

2626 BROADWAY.

# Medicine and Surgery in the Army and Navy

## IMPROVING THE SIGHT OF SOLDIERS AND SAILORS AND RELIEVING PAIN.

*A Suggestion to the Surgeon Generals of the Army and Navy.*

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Up to 1908 the United States required normal vision in its army. In that year Bannister and Shaw made some experiments from which they concluded that a perfectly sharp image of the target was not necessary for good shooting and that, therefore, a visual acuity of 20/40, or even 20/70, was sufficient for the soldier. This conclusion was not universally accepted; but normal vision had become so rare that it would, doubtless, have been useless to insist upon it. The visual standard for admission to the army was accordingly lowered to 20/40 for the better eye and 20/100 for the poorer eye and it was further provided that a recruit might be accepted when unable, with the better eye, to read all the letters on the 20/40 line, provided he could read some of the letters on the 20/30 line.

It is a matter of common knowledge that in the enrollment of the present army these very low standards have been liberally interpreted. It appeared, no doubt, to those in authority that there was nothing else to be done if an army was to be raised at all, for even under these standards 21.68 per cent. of all rejections—thirteen per cent. more than for any other single cause—were for eye defects. To keep the enlisted eye defectives supplied with glasses, an optical service has been organized both for the training camps and the men at the front, the overseas force consisting of a central optical shop with eight auxiliary units.

While the visual standards of the navy are higher than those of the army, they are still below normal, while, owing to the extreme rarity of good eyesight and the difficulty of securing the combination of physical and mental qualities required for successful flying, it is probable that the former high standards of the aviation service are not being very strictly enforced. The British air service is very lenient in the matter of visual tests, and it has been noted that (1) some of the most famous of the British fliers have had very poor eyesight. On the currently accepted theory that the only remedy for errors of refraction is the placing of correcting lenses before the affected eyes, this is truly an appalling state of affairs. No aid to vision, however carefully adjusted, can compensate for the loss of the natural powers of the eye. No optical service, however excellent, can insure that the lenses will not break, or become clouded, at the moment when they are most needed.

For thirty years I have been of the opinion that the usefulness of correcting lenses has been greatly overrated, and I have lately been able to present evidence (2) which seems to me to show conclusively that the defects for which they are worn are functional and curable. Since the beginning of the war I have had the privilege of making it pos-

sible for many young men to gain admission to the army, or to favorite branches of the service from which their eyesight had previously excluded them. I believe that these benefits need not be confined to the few, but that all soldiers and sailors may obtain normal vision without glasses, and I have supplied the Surgeon General of the Army with a plan whereby this end might be attained with far less time, trouble, and expense than will be necessitated by the optical service on which we are now depending. The same method could be used with equal success in the navy.

The plan is similar to the one used successfully for eight years in the public schools of Grand Forks, North Dakota, and for a shorter time in Rochester, New York, and other cities. A Snellen test card was hung in each classroom, and the children were directed to read it every day with both eyes, also with each eye separately—the other being covered with the palm of the hand in such a way as to avoid pressure on the eyeball. This required but half a minute a day, but many children, finding that it improved their sight, or relieved their discomfort, repeated the exercise at frequent intervals during the day and were encouraged to do so. As the card hung in the classroom all the time, the children memorized it. It became a familiar distant object, and they learned to look at it without the strain always caused by unfamiliar distant objects.

At the front, or on the parade grounds of the training camps, a Snellen test card might be impracticable; but there are other letters, or small objects, on the uniforms, on the guns, on the wagons, or elsewhere, which would serve the purpose equally well. An officer has buttons on his coat with letters on them. A noncommissioned officer has a belt with cartridges. The letters, the cartridges, or the spaces between the cartridges, could be used as points of fixation.

Letters, or objects, which require a vision of 20/20 should be selected by some one who has been taught what 20/20 means, and the men should be required to regard these letters, or objects, twice a day. After reading the letters they should be directed to cover their closed eyes with the palms of their hands to shut out all the light, and remember some color, preferably black, as well as they are able to see it, for half a minute. Then they should read the letters again and note any improvement in vision. The whole procedure will take not more than a minute. It should be made part of the regular drill, night and morning, and men with imperfect sight should be encouraged to repeat it as many times a day as convenient. They will need no urging; most of them are eager to adopt any means for improving their sight, as imperfect vision is a bar to advancement, and excludes them from the favorite branch of the service, namely, aviation.

In each regiment every ten men should be under the supervision of one man who has been trained in a manner to be described later. He should carry a pocket test card, consisting of a few of the smaller letters, and should test the vision of the men at the



beginning of the training, and thereafter at intervals of three months, reporting the results to the medical officer in charge. Men wearing glasses should not be required to take part in the drill, but when they see the benefits of eye education they may wish to practise it. They should then be permitted to do so, but should be required to discard their glasses, as the method will do them no good while these are worn.

The method will not only correct defects of vision that have become permanent, but will prevent those deviations from the normal to which every eye—no matter how good its sight may ordinarily be—is subject.

The normal eye is commonly supposed to have perfect sight all the time, but as I have pointed out in a previous article (3), this is very far from being the case. It is unusual to find persons who can maintain perfect sight continuously, even under the most favorable conditions, and under the stress and strain of army life it is not surprising that men should frequently become more or less blind. Loss of color perception is frequent among persons whose sight is ordinarily normal. Night blindness of various degrees is also common. Errors of refraction of all kinds may be produced in normal eyes by various kinds of mental and physical disturbances; many accidents in civil life and disasters in military operations are doubtless due to this unrecognized cause. Accidents to aviators, otherwise unaccountable, are easily explained when one understands how dependent the aviator is upon his eyesight and how easily perfect vision may be lost amid the unaccounted surroundings, the dangers and hardships of the upper air. It was formerly supposed that aviators maintained their equilibrium in the air by aid of the internal ear, but it is now becoming evident from the testimony of aviators who have found themselves emerging from a fog with one wing down, or even with their machines turned completely upside down, that equilibrium is maintained almost entirely, if not altogether, by the sense of sight (4). If the aviator loses his sight, therefore, he is lost, and we have one of those "unaccountable" accidents that are so unhappily common in the air service.

The cause both of continuous and of temporarily imperfect sight is a strain or effort to see, and eye training is very successful in relieving and preventing this strain. All persons connected with the army and navy, therefore, should make a daily practice of reading small, familiar letters, or observing other small, familiar objects, at a distance of ten feet or more. In addition, aviators should have a few small letters or a single letter on their machines, at a distance of five, ten, or more feet from their eyes, and should read them frequently when flying. This will greatly lessen the danger of visual lapses, with their accompanying loss of equilibrium and judgment. Arrangements should be made for illuminating these letters for night flying or fogs.

Eye education is important, not only because it improves the sight, but because the control of the visual memory obtained by palming, or the practice of seeing black with the eyes closed and covered, is extraordinarily efficacious in relieving pain and fatigue and other physical discomforts.

Many years ago patients who had been cured of imperfect sight by treatment without glasses quite often told me that after their eyes were cured they were always relieved of pain, not only in the eyes and head, but in other parts of the body, even when the pain was apparently caused by some organic disease, or by an injury. The relief in many cases was so striking that I investigated some thousands of cases, and found it to be a fact that persons with perfect sight, or the memory of perfect sight, do not suffer pain in any part of the body, while pain can always be produced in any part of the body by a strain or effort to see.

Perfect sight does not necessarily mean the perfect visual perception of words, letters, or objects, of a more or less complicated form. The color alone is sufficient, and the color which it is easiest to see perfectly is black. But perfect sight is never continuous. Careful scientific tests have shown that persons whose sight is ordinarily perfect may lose it temporarily for a few minutes, while most people lose it even more frequently. For practical purposes in relieving pain, therefore, the use of the memory is more satisfactory. With eyes closed and covered with the palms of the hands, shutting out all light, a person with good eyesight who has had a little training in the method is ordinarily able, in a few minutes, or less, to remember or see a perfect black. An untrained person may require the assistance of some one who understands the method. When the black is seen perfectly, a temporary, if not a permanent, relief from pain always follows. By this means surgical operations have been performed and teeth extracted painlessly. The feeling of heat, the feeling of cold, hunger, fatigue, and the symptoms of disease, such as fever, weakness, and shock, have also been relieved by it. If soldiers understood this, not only much suffering, but many deaths from pain, shock, hunger, thirst, or cold, might be prevented.

A soldier in a trench full of water, if he can remember black perfectly, will know the temperature of the water, but will not suffer from cold. He may succumb from weakness on the march, but will not feel fatigue. He may die of hemorrhage, but he will die painlessly. The method would also obviate the necessity for using morphine to relieve pain, and would thus prevent the soldier from becoming the victim of lifelong morphine habit.

The Germans use a bullet which breaks when it strikes the bone and causes intense pain; the men often die of this pain before help arrives. When they are rescued the surgeons at once give them morphine. A few hours later the injection is probably repeated. Then the drug is given less frequently, but in many cases it is not discontinued entirely while the man is in the hospital. A Red Cross surgeon at a recent meeting of the New York County Medical Society stated that he had been responsible for producing the morphine habit in 10,000 soldiers, and that every physician at the front had done the same. By such a simple method as palming all this might be prevented. If the black can be remembered perfectly with the eyes open, the same benefits will be obtained as by palming, and since there are times, as with soldiers on the march, when palming is not feasible, all soldiers

should be taught to remember black with their eyes open.

Why the memory of black should have the effect of relieving pain cannot be fully explained; but it is evident that the body must be less susceptible to disturbances of all kinds when the mind is under control, and only when the mind is under control can black be remembered perfectly. That pain can be produced in any part of the body by the action of the mind is not a new observation, and if the mind can produce pain, it is not surprising that it should also be able to relieve pain.

To provide a corps of instructors in eye education and palming, ten men—either officers, physicians, or privates—who have normal vision and do not wear glasses, should first be trained by an expert. Each one should then train ten other men, and each of the latter should train ten more. In this way an endless chain will be started which will soon provide competent instructors for every division in the army and every vessel in the navy. All nurses, all Red Cross or Y. M. C. A. workers, and all members of the Medical Corps should qualify as instructors, as they will have constant occasion to use the method for the relief of pain. If the method is to be a success it must be practised by those in authority as well as by those in humble positions. It is so simple that the rank and file cannot be expected to take it seriously unless they see that those of higher rank think well enough of it to use it themselves.

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40 EAST FORTY-FIRST STREET.

### INFLUENZA AT THE PORT OF EMBARKATION.

#### *Sick Detached from Command Bound Overseas—Hospitals Filling Up—Types of Infection Segregated.*

The movement of commands for overseas service has not been materially affected by influenza. All save three of the camps in the United States have reported the presence of the disease and every train load arriving at the Port of Embarkation brings its varying quota of cases. No attempt is made to isolate the contacts, as this would mean the complete cessation of the movement of troops, but all the men affected are at once detached from their commands and placed in hospitals. The Port of Embarkation, which has its headquarters at Hoboken, embraces all the Atlantic ports from Baltimore northward. Through this port as high as 300,000 troops have taken ship for Europe in a single month. As the incidence of the disease grows this means an enormous concentration of influenza patients in the military hospitals in this district. Fortunately the disease runs its course in a brief time, ordinarily in a week or less, except where pneumonia develops. On account of the rapid shifting of the military population of the Port of Embarkation, and the rapidity with which the influenza has increased, no reliable statistics are available as to the total num-

ber of cases here nor as to the exact proportion of patients in whom pneumonia develops. The mortality in the pneumonia cases varies from fifteen to twenty per cent., the mortality in the different camps and hospitals running quite uniformly in each particular camp. The symptoms developed are also fairly uniform for each camp. In some of the camps vomiting is almost uniformly present, in others it is absent. Nosebleed occurred in one camp for a while, but eventually disappeared. Since the disease is conveyed by direct, droplet, infection, the utmost care is taken to isolate patients. As soon as a soldier is reported on the sick list, he is required to put on a mask of gauze, or in the absence of gauze to tie his handkerchief over his nose and mouth so as to prevent spreading infection among his comrades. The patients are removed as promptly as possible to hospitals where an effort is made to segregate the different strains of infection. As far as possible the patients are separated from each other by curtains around the beds. Nurses and surgeons are required to wear gauze masks when on duty in the influenza wards. The treatment is purely symptomatic and no general order has been issued regarding it, each surgeon or each medical service following its own ideas regarding treatment. The administration of aspirin, salipyrin, or other salicylic compounds, is the routine treatment; where cough or pneumonia develops they are treated symptomatically.

When the disease made its appearance the Surgeon of the Port of Embarkation, Colonel J. M. Kennedy, M. C., conferred with the commanding officers of the various camps and hospitals under his supervision, made ample provision for hospitals and personnel and outlined the general policy to be pursued in handling the situation. In view of the wide variation of conditions existing in the several camps no general order has been issued by the Officer of the Port, Brigadier General W. V. Judson, but the commanding officer of each command has issued general orders, of which the following is a typical specimen:

#### SPECIMEN OF GENERAL ORDERS ISSUED BY CAMP COMMANDERS.

Owing to the present dangerous epidemic of influenza, Camp ——— will be closed until further orders, commencing at Retreat, this date. Official and purely business activities not specifically mentioned will not be interrupted, due care being taken by all concerned to observe effectively both the letter and spirit of disease preventive measures enjoined. The following is ordered:

(a) The issue of passes to enlisted men, other than those required in the course of official business, will cease. Married soldiers quartered outside of the reservation by authority are excepted from this provision.

(b) Officers on duty with troops will remain with, or in close contact with, their commands, and they will not be permitted to leave camp for personal reasons other than under exceptional circumstances, the responsibility of determining which will lie with their commanding officers.

(c) Individual enlisted men of all organizations and detachments will be restricted to the area of their respective camp section, which includes barracks, mess halls, and latrines, the necessary exceptions required for the transaction of official business being strictly interpreted. This restriction does not apply to out of door formations in charge of an officer or noncommissioned officer.

(d) Visiting days and the privilege of entrance to camp connected with them are discontinued.

(e) All normal activities will be discontinued by the



Young Men's Christian Association, Knights of Columbus and Jewish Welfare Board. Hostess House activities will cease, except that they will be permitted to receive persons who have been summoned by the commanding officer, base hospital, on account of the dangerous illness of relatives. The Liberty Theatre and entertainment halls will be closed. Camp exchanges will be closed to individual business, but goods may be sold to organizations through their officers.

(f) The previous memorandum (concerning influenza) is hereby rescinded, and the following will be exactly and scrupulously carried out.

(g) This order, together with Memorandum No. 25, will be read at three successive formations to all permanent organizations, to all transient organizations now in camp, and to all incoming organizations after arrival.

#### MEMORANDUM NO. 25—CONCERNING INFLUENZA.

With a view to limiting the spread of the present epidemic of influenza the following instructions are published for the information and strict guidance of all concerned, and to be observed in connection with General Order No. 30.

"Influenza is a crowd disease. Epidemics are more extensive and complications more frequent and serious according to degree of overcrowding."

(a) In barracks a minimum of fifty square feet of floor space for each man is required. The type of barracks in use at Camp —, at the rate of sixty-six men per building, conforms to these requirements. All commanders will check the number of men quartered in barracks under their control. Where it is found that less than fifty square feet of floor space per man exists, steps will be immediately taken to remedy this condition.

(b) Free ventilation of barracks is necessary—keep windows open day and night. Arrange bunks so that no two adjoining men have heads together (alternate head and foot arrangement).

(c) Every effort will be made to keep men in the open to the greatest extent permitted by weather, by means of drills, marches and games.

(d) Spitting on the floors must be absolutely prevented. Men will be cautioned to cover their mouths and noses with handkerchiefs when coughing and sneezing. Every man showing evidence of a cold or other ailment will be immediately sent before a medical officer.

(e) Individual drinking and toilet articles must be insisted upon.

(f) In mess halls men will be seated on one side of the table only, all facing the same direction. This provision will no doubt require doubling of service. All individual mess equipment will be scalded after each meal.

(g) Floors of all occupied barracks will be freshly oiled.

(h) Daily inspection of all barracks will be made by an officer of the organization, and by a medical officer. If the command has no medical officer, inspection will be made by the camp surgeon's office.

(i) The greatest reliance in combating this disease must be placed upon careful and continued personal effort to observe sanitary precautions, and to bring about compliance with the above regulations. All persons connected with Camp —, of whatever grade or status, are cautioned and directed to cooperate in their respective spheres, in the effort to check the spread of this disease.

(j) This memorandum will be read at three successive formations to all permanent organizations, to all transient organizations now in camp, and to all incoming organizations after arrival.

In each camp the epidemiologist has drawn up a set of instructions as to proper hygienic precautions for the guidance of the troops. Copies of these are given to the officers and these are read to all of the men who are required to conform with the instructions there laid down. These instructions are along familiar lines as to personal hygiene. The soldiers are required to arrange their cots so that heads and feet alternate, and as far as possible curtains are hung between the beds.

#### BACTERIOLOGICAL STUDIES OF THE DISEASE.

Laboratory investigations in the various stations of the Port of Embarkation show that, since July, ships returning from European ports have had epidemics of influenza on the voyage. With the permission of Colonel Kennedy, surgeon of the port, Major E. H. Schorer, M. C., chief of the clinical laboratory of the port, has supplied the following information. From the first these were investigated, but usually all the men had recovered by the time New York was reached. Cultures were made from the nasopharynx, tonsils, and sputum, and influenza-like bacilli were found in about fifty per cent. of the cases. In addition, streptococci, hemolytic and non-hemolytic and *Micrococcus catarrhalis* were found at times.

The investigations in the camps and hospitals in the Port of Embarkation were begun as soon as cases appeared. The methods and technic had first to be developed, and the amount of material that required examination was so large that some time was required to evolve reliable and suitable methods to get all the information desired. With a fairly uniform technic in the various laboratories results have still varied considerably, largely due to the fact that the troops are only transient and come from all the cantonments and camps of training. Investigations have been concentrated on 1, nose and throat cultures of influenza patients so that those patients with similar infection might be segregated; 2, study of the cultures from pneumonia sputa; 3, blood cultures; 4, investigations at autopsy; 5, white blood cell and differential counts.

1. *Nose and throat cultures.*—During the winter and spring when many nasopharyngeal cultures were made for the detection of meningococcus carriers, influenza bacilli were so frequently found that surprise was often expressed that the disease, influenza, did not exist. In this epidemic, however, influenza bacilli have been less frequently found in the nasopharyngeal cultures. In all over 5,000 cultures were examined.

The results vary markedly, influenza bacilli being found in from four per cent. to ninety per cent. of the cases, hemolytic streptococci in from one per cent. to ninety per cent. of the cases and pneumococcus in from 3.3 per cent. to twenty-four per cent. of the cultures taken at the various hospitals and camps. This difference in results may, however, be more apparent than real. Opportunity was presented at one hospital to get good data on nasopharyngeal and tonsil cultures, and out of ninety-one patients from whom nasopharyngeal and tonsil cultures were taken, influenza bacilli were found only six times in the nasopharynx as compared to seventy-eight times when the tonsil cultures were taken. Hemolytic streptococci occur frequently and so do pneumococci, but not so frequently as influenza bacilli. The taking of throat cultures is advocated so that cases can be segregated. In a series of contacts studied hemolytic streptococci were found in 7.8 per cent. of the cases as compared with ten per cent. in the influenza patients in the hospital.

2. *Examination of sputa in pneumonia.*—A large number of sputa have been examined—about 1,000

to date. In these, influenza bacilli are found in a large percentage, especially when mice or rats are used to test with. Pneumococci are very frequently found. The relative occurrence of the types at different hospitals is shown in the following tabulation:

	a	b	c	d
Type I.....	3	7	69	1
Type II.....	16	13	0	0
Atypical Type II.....	0	8	0	2
Type III.....	5	29	0	2
Type IV.....	33	102	16	14

Hemolytic streptococci are being found in about ten per cent. of the pneumonia sputa.

3. *Blood cultures.*—About 200 blood cultures have been made. The blood is generally sterile and, so far, influenza bacilli have not been found. Hemolytic streptococci have been found on a few occasions and pneumococci about ten times as frequently.

4. *Autopsies.*—A considerable number of autopsies have been performed. Generally the trachea is congested and red and frequently contains seropurulent and blood stained exudate. The lungs may show either complete consolidation or bronchopneumonia, but always intense engorgement, and frequently solution of the red blood cells. Adhesions and empyema have seldom been found, probably because death has occurred too early for their development. The bacteriological findings at autopsy show that influenza bacilli occur in the tracheal exudate and the consolidated areas but that hemolytic streptococci and pneumococci occurred in the lungs in at least one half of the pneumonic lungs.

5. *White blood cell and differential counts.*—The white blood counts have shown generally but little increase in the total number of white cells, even when pneumonia existed. The differential counts frequently have shown an increase in the percentage of lymphocytes.

There can be no doubt that the epidemic is due to the influenza bacillus, but the pneumococcus and hemolytic streptococcus are responsible for some of the severe complications. The particular type of the complicating organism is probably determined by the type already prevailing at the camp or cantonment.

## MEDICAL NEWS FROM WASHINGTON.

*Surgeon General Ireland's Record.*—Major General Noble Becomes Assistant Surgeon General for Overseas Service.—Three New Brigadiers.—Authority Asked to Requisition Hospital Buildings and Sites.—Navy Staff Deaths from Influenza.—Promotion for Navy Officers.—For Instruction of Physically Defective.

WASHINGTON, D. C., October 5, 1918.

Perhaps no army appointment in recent years has met with such universal approval in the regular service as that of Major General Meritte W. Ireland to be Surgeon General of the Army, with the rank of major general, to succeed Major General William C. Gorgas, who reached the retiring age of sixty-four years on October 3d. General Ireland for some time has been serving as chief surgeon on the staff of General Pershing in France. Several months ago, information came to Washington that the Army Medical Service in France, including both perma-

nent and temporary officers, the Red Cross authorities there, and others having to do directly and indirectly with medical and surgical activities in connection with the army in the war zones, were practically unanimous in favor of the selection of General Ireland for appointment as Surgeon General, and the same attitude was taken among the permanent officers of the Medical Corps in this country. This not only was on account of his pre-eminent fitness for the place, but also because he could bring to it the valuable experience gained with the forces in France.

Service approval also attends the appointment of Brigadier General Robert E. Noble, Medical Corps, to be major general, for the period of the emergency, for service abroad, vice General Ireland. Appointments also have been made of Colonel James D. Glennan, of the Permanent Medical Corps, and of Colonels James M. T. Finney and William S. Thayer, temporary officers of that corps, to be brigadier generals in the Medical Corps, "during the existence of the present emergency."

The last army appropriation act authorized the appointment of one assistant surgeon general, with the rank of major general, for service abroad during the present war (the place that has been held by General Ireland and to which General Noble just has been appointed), and two assistant surgeon generals, who shall have the rank of brigadier general, all of whom shall be appointed from the Medical Corps of the Regular Army, and two major generals and four brigadier generals to be appointed from the Medical Reserve Corps. Most of these latter places remain to be filled.

\* \* \* \* \*

The Secretary of War has asked Congress to enact legislation authorizing him to requisition lands, buildings, etc., or to make temporary use thereof, for hospital purposes. It is explained that there is an urgent necessity for the enactment of this legislation. Under existing law, unless the particular hospital it is proposed to acquire is so related to a particular training camp that it may be considered a part thereof, there is no authority under which it can be acquired except by purchase or lease, or by the slow process of condemnation under the general laws on that subject. These laws do not meet the requirements of the existing emergency according to the army medical authorities. The experience of the War Department in attempting to lease a vacant hospital, the need for which was urgent, was futile, as the owners of the property refused to sell unless they could get what the authorities considered an exorbitant price, and they would not entertain a proposition to lease it to the government. The need for hospital facilities for sick and wounded returning from the battlefields of Europe becomes increasingly great as more and more American troops are getting into the combat, and the permanent and temporary facilities already provided by the army are inadequate to cope with the situation.

\* \* \* \* \*

Doctors and nurses are paying a heavy toll in the fight against the epidemic of influenza, and this is



particularly the case with the navy, where a number of medical officers have given up their lives in devotion to duty, the latest reports indicating that at least eight commissioned officers, one pharmacist, and six members of the Women's Nurse Corps have died as a result of contracting the disease. At the Naval Training Station, Great Lakes, Ill., no less than twenty-four members of the Hospital Corps (male) have died of pneumonia developing from influenza.

The navy medical officers whose deaths have been reported are Lieutenants G. M. Neuberger, at Naval Hospital, League Island, Pa.; Bronson E. Summers, Marine Camp, Quantico, Va.; John L. Fisher, Battleship *Kearsarge*; M. J. Carroll, Naval Hospital, Newport, R. I.; G. T. Courtney, U. S. S. *America*; J. A. McCarthy, Naval Hospital, New London, Conn.; James L. King, Dental Corps, Naval Base, Hampton Roads, Va., and another at Philadelphia, whose death has not been reported officially.

\* \* \* \* \*

Certain staff officers of the navy have become due for promotion to the ranks of lieutenant commander, lieutenant, and lieutenant (junior grade), by seniority, as a result of promotion of their "running mates" in the lines, as of September 21st. In the Medical Corps, Lieutenants Ruskin M. Lhamon, Robert A. Torrance, Clarence W. Ross, Carleton I. Wood, Foster H. Bowman, Chalmers H. Weaver, William A. Brams, William W. Wickersham, Cecil S. O'Brien, Charles W. Depping, Henry McDonald, William H. Michael, William A. Stoops, Talmadge Wilson, Joel T. Boone, Walter W. Cross, Henry M. Stenhuse, Joy A. Omer, Summerfield M. Taylor, Frederic L. Conklin, John Harper, Richard H. Miller, Paul Richmond, Jr.; Forrest M. Harrison, Lawrence F. Drumm, George W. Taylor, Walter A. Vogelsang, Elphege A. M. Gendreau, Grover C. Wilson, Russell J. Trout, and Virgil H. Carson are due for temporary promotion to the rank of lieutenant commander; and Lieutenants (junior grade), James F. Finnegan to and including Boyce L. Brannon on the list for temporary promotion to the rank of lieutenant.

\* \* \* \* \*

Among the additional building projects just authorized by the War Department to be carried out under the construction division are the following: Six two-story barrack buildings to be added to the general hospital No. 14 at Fort Oglethorpe, Ga., to cost about \$123,000. Additions and improvements to existing buildings at the base hospital at Camp Stuart, Va., at a cost of about \$449,000. The new buildings will consist of additional officers' quarters, laboratories, storehouses, and alterations to the administration building, receiving ward, nurses' infirmary, and nurses' quarters.

\* \* \* \* \*

At the suggestion of the Public Health Service, copies of a circular of instruction for draft registrants rejected in the draft because of physical defects have been sent to all the local draft boards throughout the country. Surgeon General Rupert Blue, of that service, has pointed out that in the first draft about one-third of the men examined were

rejected for physical disabilities and that hundreds of thousands will be added as a result of the examinations to be made of new registrants. It is believed to be highly desirable that the men found to be disqualified for military service by the examining physicians of the local draft boards should receive instruction as to the meaning of their disabilities and that a strong appeal be made to them to correct these disabilities as far as possible. The object not only is to reclaim men for the military service or for such service as they can perform, but also to lessen the burden of illness and disability among those engaged in essential industrial work. It is hoped that the instructions in this circular, which is really a primer of the physical defects of the nation, will reach far beyond the draft boards and be utilized by all agencies interested in improving the public health to instruct the people with regard to their physical deficiencies and the ways and means by which they can be remedied.

\* \* \* \* \*

According to the Public Health Service, experience everywhere shows that the proportion of persons with physical impairments is considerably greater in persons between thirty and forty than in those between twenty and thirty years of age. This waning vitality at ages over thirty, so commonly accepted as inevitable, can be postponed to a large extent. In this connection it is pointed out that sixty per cent. of the physical defects found in the last draft were of a preventable or curable nature. The circular now being distributed, which was prepared by the Public Health Service, contains specific information relating to the commoner causes of rejection or deferred classification, among them being defective eyesight, teeth and feet, underweight, overweight, hernia, hemorrhoids, varicocele, varicose veins, bladder, kidney, and urinary disorders, ear trouble, heart affections, high blood pressure, lung trouble, rheumatism, venereal disease, alcohol, nervous and mental disease, and miscellaneous conditions.

\* \* \* \* \*

At present the only government hospital services available for the care of beneficiaries of the war risk insurance are the hospitals and relief stations of the Public Health Service, as the hospitals of the army and navy cannot be used for the treatment of discharged soldiers and sailors under the law. An appropriation of \$10,500,000 has been asked to provide for this service.

Among the largest problems connected with this work is the caring for discharged soldiers and sailors suffering from tuberculosis; and, as 10,000 already have been discharged and are eligible for compensation and sanatorium treatment, the government sanatorium at Fort Stanton, N. Mex., has been filled to its capacity, and difficulty is being found in securing bed space in local hospitals, where the cost of maintenance is greater than in government institutions.

It is proposed to place hospital and sanatoria additions at the following places: Boston, Chicago, Cleveland, Detroit; Evansville, Ind.; Louisville, Ky.; Norfolk, Va.; New Orleans, San Francisco, Seattle, St. Louis; Wilmington, N. C.; Fort Stanton, N. Mex.; and Berkshire Hills, N. C.

# Editorial Notes and Comments

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### THE PREVAILING INFLUENZA.

The very rapid spread throughout most of our Army cantonments and through large sections of the civil population of what has been called Spanish influenza has quite naturally aroused the profound interest of both the laity and the medical profession. This interest has led to the expression of opinions by physicians which are more or less contradictory and some of which are of a highly speculative nature. It is opportune, therefore, to pause a moment to sift what seems to be the wheat from what is obviously the chaff.

The very name, "influenza," calls to mind the great pandemic and raises the question of the similarity between this outbreak and the older one. Certain it is that the general features of the disease are much the same now as they were in the influenza of 1890, but some differences are noticeable. In the present outbreak there seems to be a small proportion of cases of very brief duration—three days or less; the period of convalescence seems to be shorter in a large number of the brief cases; complications

seem to be far less numerous and varied now than before and even of less frequent occurrence. In fact they are almost limited to the development of a bronchopneumonia, which, while comparatively infrequent, is extremely fatal in type. Finally the intestinal form of the disease, so common in the former outbreak and still often seen in the sporadic disease, seems to be generally absent from the present epidemic. It is difficult to interpret these clinical differences, and others of less striking nature, in the present state of our knowledge, but they do not seem sufficient to be used as arguments for the lack of identity of the present epidemic and the sporadic influenza or the pandemic of 1890.

The causative organism of the disease still remains a matter of dispute, and European authorities particularly record the most divergent views as to the specific organism. The studies reported by Major E. H. Schorer (p. 642), by Lieutenant J. J. Keegan (*Journal A. M. A.*, September 28, 1918, and the observations of Dr. William H. Park (p. 621), all made in this country, seem to point to the *Bacillus influenzae* of Pfeiffer as the causative organism, or at least as one of the organisms, which in symbiosis, produce the disease. Keegan even goes so far as to express the belief that the influenza bacillus is the primary cause of the bronchopneumonia, streptococci and pneumococci being merely secondary invaders. It should be borne in mind, however, that the *B. influenzae* has not been universally accepted as the specific cause of endemic influenza, or of the disease as it prevailed in 1890. From the point of view of possible prophylactic immunization, the settling of the question of the specificity or lack of it of the *B. influenzae* is a matter of the greatest importance.

The pathology of the disease is quite unimportant save in the cases with bronchopneumonia. This complication, or type of the disease, as the case may be, varies from the rare instances of very severe inflammation of the capillary bronchioles and a few small patches of lobular consolidation to the common type of widespread, confluent areas of bronchopneumonic consolidation. This subject is admirably covered in the paper by Dr. Douglas Symmers on page 641 of this issue.

The treatment of this widespread affection seems to fall naturally into three divisions. The first is that of prophylaxis, both individual and communal. The extraordinary infectivity of the organism and the absence of absolutely characteristic early symptoms tend to make all ordinary prophylactic meas-



ures less effective than might be anticipated, but there can be no question of the utility and necessity of immediate isolation of the individual, the quarantine of cantonments or institutions, and the avoidance of crowds in enclosed places. The universal use of face masks by those ill with the disease and by those in attendance upon it, scarcely requires comment, and the same may be said in favor of always covering the mouth and nose with the handkerchief in coughing or sneezing, its importance is so great. The observance of good general hygiene, an adequate diet, and living as much as possible in the fresh air, should be urged upon all. Elsewhere in our columns (p. 621) will be found some suggestions as to the possible value of prophylactic immunization with a killed influenza vaccine, and we must leave the reader to the perusal of Doctor Park's paper for more detailed discussion. The treatment of the attack and of convalescence constitutes the second division of the therapy of this disease, and we would add little to the excellent suggestions made by Dr. Walter A. Bastedo (p. 626). Special emphasis, however, ought to be laid upon the fact that there is no specific treatment, and that one's therapeutic aims must be largely limited to the relief of distressing symptoms and the avoidance of complications so far as possible. Time seems to have established the salicylates as among the most effective of the symptomatic remedies in influenza, and it has even been suggested by some that they have more or less definite specific action. However that may be, if they are used they should be given in sufficiently large doses to produce their effects and the urine should be watched, although their potential dangers to the kidneys have been decidedly exaggerated. There is certainly nothing to be gained by the combination of caffeine with the coal tar antipyretics, and there is the possibility of danger. Attention should be directed to the fact, so often overlooked, that if one or two average doses of acetanilide or acetphenetidine, or other coal tar antipyretic, do not relieve the symptoms, no further amount, however large, will prove more effective. Their exaggerated dangers need not be feared if this fact be remembered.

Finally, the treatment of the complications, in the present epidemic at least, largely resolves itself into dealing with the very serious bronchopneumonia. Although suggested, it seems questionable whether the use of Type I pneumococcus serum in cases showing this type of organism will prove of any real value, because of the probability that other organisms are as much concerned as the pneumococcus, or more so. However, its use can do no harm, and controlled observations will soon settle the ques-

tion. The use of digitalis as a routine is to be commended, but one should be quite certain of the activity of his preparation and should also be on guard to note the appearance of the first signs of toxic action of the drug. Unless digitalis be pushed to near the toxic stage its effects are much inferior to what may be secured, and the best is none too good in so fatal a pneumonia as this.

The prognosis seems to depend almost wholly upon whether a bronchopneumonia develops or not. If it does not develop, the outlook is extremely favorable, while if pneumonia supervenes the condition is entirely reversed, and a mortality of about fifty per cent. or over can be expected. Statistics are not yet available to indicate the morbidity rate of the disease in the civil population, but in cantonments the rate is very high, and it would be fair to anticipate that possibly as high as a quarter of the population in invaded civil communities might be affected. The rapid spread of the disease from Spain over the European continent, to England, and thence to our Atlantic seaboard, whence it has followed the lines of travel inland, would lead to the anticipation that the disease would continue its course across our continent in epidemics of about a month's duration in each of the communities to which it gains access.

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#### RESPIRATORY DISEASES IN ARMY CAMPS.

Anything that can throw light upon the transmission and widespread occurrence of respiratory diseases is of utmost value to all civil communities. In army camps it is a matter of most essential importance. The study of these diseases therefore in their incidence and prevalence has both an immediate and a more lasting service to perform. A detailed report of such a study by two members of the medical staff of the army lays emphasis upon a number of practically important features [Colonel V. C. Vaughan and Captain G. T. Palmer: Communicable Diseases in the National Guard and the National Army of the United States during the Six Months from September 29, 1917, to March 29, 1918, *Journal of Laboratory and Clinical Medicine*, August, 1918].

This study would necessarily be somewhat incomplete and indefinite. In the first place, it has not been easy to obtain as full statistics from civil life as desirable for comparison. Then it is also impossible in the comparatively brief period for observation afforded by the alterations in camp life to watch closely the conditions of development of disease, modes of transmission, and all the factors which should enter into account. The

writers have, however, brought many facts to attention and suggested important lines for future consideration and action.

It is undisputed that the prevalence of these respiratory diseases is higher than in comparable areas of civil life, and that both the morbidity and the mortality rates exceed those of ordinary communities. The study occupies itself chiefly with respiratory diseases, under which practically all the communicable diseases of our camps may be included. Venereal diseases and the typhoids are practically the only exceptions. The mention made here of their incidence is brief, because of the control secured at the present time over the one group, and because the nature of the other does not bring it under the same study of relation to environment and mode of transmission as the respiratory diseases.

Most numerous of the diseases incapacitating the men for a shorter or longer period are colds, influenza, bronchitis, and mumps. Pneumonia and meningitis, on the other hand, have caused the most serious loss of life, while measles alone has been a very serious factor in incapacitation of the men. Measles as well as the lesser ailments also have a predisposing effect toward pneumonia. There has been a wide difference in the camps both in morbidity and mortality from pneumonia, and the question is asked whether the form of the disease has differed. Both lobar and bronchopneumonia are reported. The latter seems to have been usually the more fatal. It is also more frequent as a secondary affection, particularly following measles. The pneumococcus has been responsible for both forms of pneumonia. The *Streptococcus hemolyticus* has also been reported as causing both these forms with more frequent empyemic complication and greater fatality than in the pneumonia caused by the pneumococcus.

The wide survey of the appearance and results of these diseases in all their variety in the various camps, differently located as they are, and drawing their men very often from the very locality in which the camps are found, offers many suggestive fields for still further study. The transference from one camp to another has been an important factor, as this has introduced the disease already incipient in many of the men transferred, or lying latent in them as healthy carriers. All these and many other features the writers have passed in comparative review.

They conclude that the factor upon which most emphasis must be laid is the natural susceptibility of the men. The other factors are variable

and of only secondary importance. Upon the susceptibility of the men, however, they act as upon ready soil, and it is this fundamental fact which therefore best offers itself for protective measures on the part of the medical control. Susceptibility is due to lack of opportunity to build up a resistance through an acquired immunity. This is particularly evident among Southern men. Also weaker physiques are responsible, and it was found that the presence of hookworm disease was a factor here. The ignorance of the men in regard to dissemination through spitting and the like, the necessarily close contact when coughing, sneezing, or even in conversation—all these are participating factors. External conditions such as exposure, fatigue, insufficient clothing, are then aggravating elements which lessen resistance.

It is recommended that the induction into camp should be more gradual and that there should be more care in detecting incipient diseases both before entering men and before transferring them from one camp to another.

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#### INFLUENZA AND THE PUBLIC HEALTH SERVICE.

That Congress should so promptly appropriate \$1,000,000 for work against the epidemic of Spanish influenza, now raging in the United States, reflects credit on our chosen representatives. Within a few hours after the money was voted, officers of the United States Public Health Service, cooperating with the Red Cross and the Council of National Defense, had organized several units of doctors and nurses and hurried them to Massachusetts, where the epidemic has thus far raged most intensely. In its extensive and rapid spread the present epidemic reminds older practitioners of the visitation of 1890; certainly none of the outbreaks of so called gripe of recent years have been so widespread.

From foreign sources we learn that the epidemic in Germany during June and July of this year occasioned considerable controversy as to the nature of the infection, much of it being carried on in the newspapers. On the one hand, eminent authorities expressed the view that it was caused by the influenza bacillus of Pfeiffer; on the other, men equally eminent insisted that the influenza bacillus bore no causal relation to the disease. In this country opinion appears divided, and while it is admitted that the influenza bacillus is present in the nasal or bronchial secretions in a large proportion of cases (eighty per cent.), some of the best ob-



servers are unwilling to regard this organism as the sole etiologic factor.

In this state of affairs, it is encouraging to know that Surgeon General Blue has requested the Medical Division of the National Research Council to initiate extensive laboratory investigations in different parts of the country, sending a specimen of all pure cultures thus obtained to the United States Hygienic Laboratory for comparative study. In this connection, it may be well to recall the interesting results obtained some time ago by Foster, in his study of common colds. As our readers may remember, considerable evidence was presented to show that such colds were frequently caused by an ultramicroscopic organism, a so called filterable virus. The report of the United States Public Health Service will undoubtedly be awaited with interest.

#### A CANADIAN MINISTRY OF HEALTH.

To get the Canadian Government to give due consideration to the formation of a Ministry of Health with a view to prompt action, a strong committee of those interested in such a Ministry for Canada has been organized at Ottawa. Those who have followed this question for the past twenty years know that the Canadian Medical Association has upon different occasions passed numerous resolutions favorable thereto, has frequently and fully debated the question, and has on several occasions sent representative deputations to Ottawa to request the Federal Government to act in this direction. The matter also has been frequently debated in the House of Commons, with the result, now becoming rather monotonous, that it has always been shelved.

In public health matters Canada is in this position: At least six departments of the Government have separate bureaus of public health; and the object is to consolidate all these under one responsible Minister of the Crown. It is equally well known that in all these years the main opposition to any scheme of a united public health administration comes from the deputy heads of departments who, it is understood, objected to give up anything in the way of patronage in their respective departments. Now, however, that Canada is abolishing the patronage system—and the evidence that business is meant in that direction commences to show itself—that objection can no longer be tenable. The position in Canada has been something like that prevailing in England, where departmental heads have for long blocked so desirable a system.

#### THE INFLUENZA SITUATION.

The influenza epidemic continues to spread and has now made its appearance in every part of the United States. Both in the number of cases and in the number of deaths reported Boston still maintains its unenviable lead, but the latest reports show a slight decline in the number of cases and of deaths reported. The number of patients in the camps continues to grow, a total of 13,605 cases having been reported on Wednesday. There were 2,930 new cases of influenza and 212 of pneumonia reported on Wednesday in New York, a decrease of forty-two in the number of new cases reported for the preceding twenty-four hours. One hundred and twenty-four deaths were reported from influenza on Wednesday and 166 from pneumonia. A total of 17,712 cases have been reported in the city up to Wednesday night. The orders issued by the Department of Health fixing the hours of opening and closing business houses and places of amusement with a view to diminishing the crowding on transportation lines has had some effect, but it is charged that this effect has been partially nullified by the failure to provide an adequate number of cars. One public school has been closed in the city. Places of amusement have been notified that they will be closed up if they are crowded or ill ventilated. The members of the senior classes in the medical schools have been assigned to duty to help in nursing in the various hospitals. A clearing house for influenza patients has been established by the Commissioner of Health. An influenza clerk has been assigned to duty at the Department of Health and will answer telephone calls for information as to hospital accommodations and medical attendance.

#### A VOLUNTEER NOT AN ENFORCED SERVICE.

The organization of the Volunteer Medical Service Corps was hailed a wise move to coordinate the reserve forces in the medical profession. It had the express approval of the Surgeon General of the Army, the Surgeon General of the Navy, and the Surgeon General of the United States Public Health Service, all of whom took part or were represented in the organization meeting of the corps held at the Hotel Willard, Washington, on May 5th. Since that time the President of the United States has formally approved of the corps.

Unfortunately, however, in the zeal for enlisting volunteers some of the literature sent out by the organization smacked rather of a conscription than of a volunteer organization. Some physicians have construed the appeals as commands and vigorous protests have been made against the too strenuous campaign for membership in the corps. In order that the entirely voluntary character of the organization may be made clear the following notice has been issued by the officers of the corps:

No official or committeeman representing the Volunteer Medical Service Corps or the General Medical Board of the Council of National Defence is now authorized or has

been authorized to favor any organized or unorganized method of coercion in inducing members of the medical profession to join the Medical Corps of the Army or Navy, or the Volunteer Medical Service Corps. Our committee-men are especially urged against favoring any movement that would threaten to impair a medical man's standing in his local, state, or national society because he refused to enroll in the Army or Navy, or the Volunteer Medical Service Corps.

*It must be made clear that the Volunteer Medical Service Corps is a volunteer organization which has for its object the enrollment and classification of the profession. Its members are entitled to wear an insignia which will clearly indicate that they have offered their services to the government, when such services are needed. Patriotism cannot be created by coercion. It also must be made clear that the Volunteer Medical Service Corps has for its primary object furnishing its classification to the Army, the Navy, the Public Health Service, the Red Cross, and Provost Marshal, as well as to civilian institutions and communities, as a guide in providing for their needs to the best advantage.*

The object of the corps is not to disturb any medical man in the performance of any duty to which he has been assigned by any governmental agency either for service at the front or at home.

This announcement is signed by Edward P. Davis, president, Volunteer Medical Service Corps, and Franklin Martin, chairman of the General Medical Board, Council of National Defense.

#### CLIMATE AND HEALTH.

"It is your human environment that makes climate."

This wise saying of Mark Twain's should be kept in mind by the physician when considering the advisability of sending a patient away from home. Fortunately, this disposition of the sick is not so frequent as formerly, but when it is made, it is too often done thoughtlessly and with dire results.

The body lives by change—by stimulation, and often a change of scene—in other words, a manifold stimulation of the sense receptors by new surroundings does a great deal of good. But stimuli are of two sorts: those which elevate and those which depress the vital functions, and for the benefit of health, a change of climate must not impose hardship through loss of happy companionship and homelike surroundings. A sensitive patient, lacking the warmth of sunny friends, would pine in an atmosphere otherwise surcharged with healing influences. An untold amount of pain from nostalgia may be imposed, by change of climate, upon those already sick.

On the other hand, where the human environment at home is at fault—where nonappreciation and nagging and family jars of all descriptions lay the nerves bare and aggravate old weaknesses, the change of climate is invaluable, though it does not matter much where the patient goes. One should not be deceived into thinking that it is ozone, or altitude, or varied scenery, which brings about the improvement. Could the human environment in the home have been adjusted the results would have been as remarkable. If the physician could only remove the family skeletons and oil the machinery which is responsible for family friction, he would become a master hand at the making of what, for medical purposes, we call good climate.

## Obituary

### CLARENCE FAHNESTOCK, M. D.

Major, Medical Corps, U. S. Army.

Dr. Clarence Fahnestock, of New York, who entered the army a year ago and was assigned to the 301st Infantry soon thereafter, died in France on Saturday, October 5th, of pneumonia and was buried with military honors near the front on Sunday. Doctor Fahnestock entered the army as a line officer but later took up his surgical work and was made surgeon to his division. Major Fahnestock was a son of the late Harris G. Fahnestock, vice-president of the First National Bank of New York. He was born in New York in 1873 and was educated at Berkeley, Harvard, and the University of the State of New York, obtaining his degree in 1900. He was a member of the house staff of the Presbyterian Hospital and later specialized in the New York Eye and Ear Infirmary. He was widely known as a hunter of big game. He made three trips to Africa and Alaska in pursuit of that sport.

## News Items.

**Clinical Assistant Wanted.**—There is a vacancy in the Urological Clinic of the West Side Dispensary and Hospital; three evenings weekly; splendid opportunity; experience desirable but not essential. Communicate with Dr. Abr. L. Wolbarst, 328 West Forty-second Street, New York.

**Public Health Meeting Postponed.**—Owing to the prevalence of influenza in all parts of the United States the executive committee of the American Public Health Association has postponed the annual meeting of the association, which was to have been held in Chicago next week.

**New American Hospitals in France.**—Thirty thousand beds are ready for American wounded in a series of new hospitals established in southern France under the command of Major W. H. Browne, of Detroit. Hospital units composed of American physicians and nurses are being sent to Nice and other cities along the Riviera, where the hospitals are located.

**Deutscher Verein Now a Red Cross Hospital.**—The former German club on Central Park South, New York, was turned over to the Red Cross on Wednesday evening, October 9th, under whose direction it has been transformed into a convalescent home for American soldiers and sailors. The new name of the one time Deutscher Verein is Lafayette House. It is the first of several in the metropolitan area which will provide 50,000 beds for convalescents. Lafayette House is furnished luxuriously. There are fifty-five rooms in all and thirty-five bathrooms. Everything is ready for the reception of patients.

**The Morgan Disaster.**—On Friday evening, October 4th, an explosion occurred in the shell loading plant of T. A. Gillespie & Co., at Morgan, N. J., just south of South Amboy. Following this explosion, which seems to have been caused by an accident, a series of disastrous explosions and fires occurred which lasted for nearly two days. Nearly a hundred of the workmen in the plant were killed and many others were injured. All the windows in the buildings at South Amboy and surrounding villages were shattered by the explosions and some of the buildings wrecked by the exploding shells. A large number of physicians, nurses, and ambulances were sent to the scene of the disaster from New York and from the cities and cantonnements of New Jersey. The entire plant, valued at something like \$15,000,000, was wrecked, but will be rebuilt immediately.



**Influenza Increasing in Philadelphia.**—For the twenty-four hours ending at noon on Wednesday, October 9th, 4,013 new cases of influenza were reported, and in the same period 304 deaths from influenza and 124 from pneumonia were reported.

**The Red Cross Reports.**—The war council of the American Red Cross has planned to issue a series of reports to the American people concerning the use of the first Red Cross war fund of \$100,000,000. The first section of these reports, issued September 1, covers the work of the Red Cross in caring for the families at home of America's men on military service.

**Camp Mills Quarantined.**—Camp Mills, at Mineola, Long Island, was placed under quarantine on Wednesday, October 9th, by order of the military authorities. No public statement accompanied the order further than that the action taken was a precautionary rather than a remedial measure. It is reported that a call had been sent out for more nurses and doctors.

**Medical Students Drafted as Nurses by the Health Department.**—At the request of Dr. Royal S. Copeland, health commissioner of New York, the deans of the various medical colleges in New York have given their consent to fourth year medical students dropping their studies temporarily to aid in nursing influenza patients in the city hospitals. As a result about 250 men were added to the hospital nursing forces on Thursday morning, October 10th. These medical students will work under the direction of graduate nurses.

**Coming Meetings of Medical Societies in New York.**—The following medical societies will meet in New York during the coming week:

*Monday, October 14th.*—Society of Medical Jurisprudence; New York Ophthalmological Society; Yorkville Medical Society; Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society.

*Tuesday, October 15th.*—New York Academy of Medicine (Section in Medicine); Federation of Medical Economic Leagues of New York.

*Wednesday, October 16th.*—New York Academy of Medicine (Section in Genitourinary Diseases); Geriatric Society; Medical College Society; Northwestern Medical and Surgical Society of New York; Veterans Medical Association of New York City; Alumni Association of City Hospital.

*Thursday, October 17th.*—New York Academy of Medicine (stated meeting); New York Celtic Medical Society.

*Friday, October 18th.*—New York Academy of Medicine (Section in Orthopedic Surgery); Clinical Society of the New York Postgraduate Medical School and Hospital; New York Microscopical Society; Brooklyn Medical Society.

**Resolutions on the Death of Dr. Morris Jacob Karpas.**—The New York Neurological Society, at an executive session following the regular meeting of October 1, 1918, unanimously passed the following resolutions:

Whereas, The New York Neurological Society has learned with profound regret of the untimely death in his thirty-ninth year, on July 4, 1918, in France, of angina pectoris, of Dr. Morris Jacob Karpas, major in the United States Army Medical Corps, by whose death the society has been deprived of one of its most valued members, a contributor to its scientific transactions of material of exceptional merit and a man of pleasing personality and of broad knowledge, particularly in his special field of medicine; and

Whereas, The New York Neurological Society feels that the death of Dr. Morris Jacob Karpas is a great loss to modern medical science, for not only was he possessed of unusual attainments, but he unselfishly devoted his energies, time and interest to the furtherance of the amelioration of the sufferings of those wounded in the present war, and to the application of all practical measures to this end. At the time of his death he was engaged in the organization of a large base hospital of the American army at Favanay, France. He was born in Russia, was graduated from Long Island College in 1904, and was one of the leading physicians of New York city, contributing untiring services to the Neurological Institute, to Bellevue Hospital, and to the Montefiore Home and Hospital; and

Whereas, The members of The New York Neurological Society mourn the loss in the death of Dr. Morris Jacob Karpas of a dear colleague, ever kind and courteous, and attached to many of them by close ties of personal friendship; therefore be it

*Resolved,* That The New York Neurological Society offer to the family of Dr. Morris Jacob Karpas deep sympathy and condolence in their sorrow, and express the hope that they will find comfort in the consciousness of the nobility of his death and the strength of his patriotism, and in the remembrance of his splendid usefulness to his fellow men in the important activities which he so well and thoroughly performed; and furthermore be it

*Resolved,* That these resolutions be spread upon the minutes and that a copy be transmitted to the family of the deceased.

For The New York Neurological Society:

FREDERICK TILNEY, President.  
CHARLES E. ATWOOD, Secretary.

**American Association of Clinical Research.**—The tenth annual meeting of the association will be held at the Hotel McAlpin, New York, Saturday, October 19th, under the presidency of Dr. Roger M. Griswold, of Kensington, Conn. On account of so many members of the association being in active service overseas, it was found necessary to compress the proceedings into a one day session. Dr. James Krauss, 419 Boylston Street, Boston, is permanent secretary of the association and will be glad to furnish information regarding the meeting to any one interested.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, October 14th, County Medical Society (directors); Tuesday, October 15th, West Branch of the County Medical Society; Wednesday, October 16th, County Medical Society (business meeting); Section in Otolaryngology and Laryngology, College of Physicians; Thursday, October 17th, Academy of Stomatology, Section in Ophthalmology, College of Physicians, Northeast Branch of the County Medical Society, North Atlantic Tuberculosis Conference; Friday, October 18th, Logan Medical Association.

**Assistant Physicians Wanted in State Institutions.**—Among the positions for which the New York State Civil Service Commission will hold examinations on November 9th is that of assistant physician in state hospitals and other positions of a similar nature in various State and county institutions. The salary in the state hospitals is \$1,200 a year, increasing \$100 each year to \$1,600, with maintenance. The examination is open to men and women who are licensed medical practitioners in New York State who have had six months' experience on the resident staff of a general hospital, or who have been engaged in the practice of medicine for one year. For application form address the State Civil Service Commission, Albany, N. Y.

**Volunteer Medical Service Corps Classification.**—The Committee on Classification of the Council of National Defense announces the classification for the organization of physicians who volunteer for service in the corps:

*Class I.*—Physicians who were first recommended by the Central Governing Board to apply for commissions in the Medical Reserve Corps of the Army, Reserve Force of the Navy, or for appointment in the Public Health Service. They include physicians under fifty-five years of age, who are without an obvious physical disability which is disqualifying, and who are not more than one dependent in addition to self; or who have an income or whose dependents have an income sufficient for the support of dependents other than that derived from the practice of their profession.

*Class II.*—Physicians under fifty-five years of age who are without an obvious physical disability which is disqualifying, and who have not more than three dependents in addition to self. These will be recommended by the Central Governing Board, when the need exists, to apply for commissions.

*Exceptions in Classes I and II.*—There are several exceptions provided for because of evident essential needs. Whether a physician's services are essential to his community will be established by the Central Governing Board on recommendation of representatives of the board appointed by it to make a survey of local conditions. Whether a physician is essential to an institution with which he may be connected will be established after conference between representatives of the Central Governing Board and representatives of the institution. Whether a physician is essential to a health department will be established by conference between the Central Governing Board and the head of that health department. The question whether a teacher in a medical school is essential to that position will be established by the Central Governing Board and representatives of the institution. Conference between the board and accredited representatives of industries concerned will determine whether others employed as teachers in addition to self are essential in those positions. A physician essential on his local or medical advisory board will not be requested to assume conflicting duties.

*Class III.*—Physicians under fifty-five years of age who are without an obvious physical disability which is disqualifying, but who have not more than three dependents in addition to self; and who are the physicians included among the exceptions from Classes I and II, namely, those essential to communities, institutions, health departments, medical schools, or industries. They will be recommended by the Central Governing Board to apply for commissions when the emergency is so great as to demand their services.

*Class IV.*—Physicians who are ineligible for commissions in the Medical Reserve Corps of the Army, or Reserve Force of the Navy, but who are available for all other services. The physicians in this class include those over fifty-five, those having an obvious physical disability which is disqualifying, and those rejected for all government services because of physical disability.

Physicians not professionally eligible for the Medical Reserve Corps of the Army or for the Reserve Force of the Navy, or for appointment in the Public Health Service, will be recorded but not admitted to the Volunteer Medical Service Corps.

The editorial note which appears in another column makes it quite clear that the corps is a *volunteer* corps and that no one is under compulsion to join it.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### STROPHANTHUS AND ITS ACTIVE PRINCIPLES VERSUS DIGITALIS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

Until recently the chief features differentiating strophanthus from digitalis as regards clinical use comprised merely the more rapid action of the former; a presumably less pronounced constricting action on the blood vessels in the case of strophanthus; a looser union of its active principle with the heart; and a much less marked proclivity to "cumulative action." Strophanthus was also believed more prone to cause diarrhea than digitalis, and was known to possess local anesthetic and mydriatic properties—which could not, however, be clinically availed of, owing to its marked toxicity. It was held less likely than digitalis to constrict the coronary vessels in full doses and, according to Cushny, strophanthin failed to raise the pressure in the pulmonary artery, whereas digitalis sometimes did raise it. Altogether, definite knowledge of the comparative action of the two drugs, while somewhat greater than that in respect to the other members of the digitalis series, was quite insufficient, and the main indications for strophanthus in preference to digitalis were practically confined to cases in which a rapid effect on the circulation was desired and cases in which digitalis had failed or caused untoward side effects, and other measures had, therefore, to be tried. The former procedure was itself interfered with, moreover, by reason of the fact that strophanthus was considered uncertain in action when taken by mouth, and even more irritating than digitalis when administered hypodermically.

Of late a beginning, at least, seems to have been made on the task of more precisely defining the pharmacodynamic and clinical relationships of the two drugs. In this the increasingly widespread use of the active principles from different species of strophanthus has no doubt played an important part, accuracy of observation with such principles being more readily secured than in the case of the less readily absorbed preparations of the whole drug. At the same time it is well known that the various strophanthins commercially available may differ markedly in composition and strength. The official definition of strophanthin as "a glucoside or mixture of glucosides obtained from *Strophanthus kombé*" itself suggests an indefinite composition, incompatible with a constant degree of activity. For this reason the most reliable studies of strophanthin action are, in general, those conducted with ouabain, or gratus strophanthin, which, while unofficial, occurs in a definitely crystalline form of constant pharmacodynamic activity. Ouabain prepared by the Thoms method appears to be more toxic than that prepared by the method of Arnaud (Pratt, 1918), but when either of these products is used, identical results from that product even in the hands of different observers are to be expected.

From the clinical viewpoint, the most positive stand in differentiating the action of strophanthin from that of digitalis has been taken by Vaquez and Lutembacher, 1918, of Paris. These observers have been led to ascribe the former occasionally fatal results from intravenous strophanthin therapy to the multiplicity of products labeled "strophanthin" on the market, and believe that in the exclusive use of Arnaud's ouabain, given intravenously, but in a dose not exceeding half a milligram, no undue risk is entailed.

Vaquez establishes a sharp contrast between ouabain and digitalis as regards their actions on the contractility, tone, and conductivity of the heart. He lays stress on the following sequence of events frequently met with in mitral valvular disease: For a considerable time digitalis proves effectual in removing all symptoms, without the assistance of any other remedy. Then, from one day to the next, in the absence of any noticeable change in the morbid condition, of any excessive pleural or peripheral fluid accumulation, or of any intercurrent infection, digitalis becomes ineffective, no matter in what form or dose it is given. This Vaquez and his associates ascribe to loss of myocardial tone—a function of the heart upon which, from his viewpoint, digitalis has no hold under clinical conditions, in spite of prevailing opinion to the contrary. They agree with the conclusion of Merklen that when digitalis is given to patients with pronounced cardiac dilatation, edema often persists and cardiac insufficiency becomes worse even though the drug has slowed the heart rate. This is accounted for by what Merklen terms the dissociated action of digitalis. By increasing the duration of diastole and causing the ventricle to distend more completely during this period, the strain upon the ventricle, it is asserted, will exhaust it if the myocardium no longer possesses sufficient tonicity. Under such conditions, according to Vaquez, the active principles derived from strophanthus yield unexpectedly good results. Ouabain administered by mouth induces, in his experience, unpleasant side effects—presumably manifestations of gastrointestinal irritation—before its action on the heart has begun. Intravenous injection, with due care to introduce all of the solution into the vessel, lest a sharp local reaction ensue, is therefore the route to be preferred. Usually half a milligram of ouabain in one mil of water is given. A quarter of a milligram is hardly effectual, but may be tried where the case is not urgent or for the purpose of testing the patient's sensitiveness to the drug and obviating all chance of overaction from a subsequent dose of half a milligram. Doses exceeding half a milligram expose the patient to malaise, nausea, and even vomiting.

Apart from certain special circumstances, Vaquez administers the second injection of ouabain twenty-four hours after the first, and follows it by a third and a fourth injection at like intervals. Giving more than four injections is seldom indicated and is



possibly harmful. The main indication for ouabain in preference to digitalis is a combination of cardiac insufficiency, as shown by the usual symptoms and signs, with loss of tonicity of the myocardium. This indication exists chiefly in two conditions—acute dilatation of the heart and progressive dilatation definitely rebellious to other remedies. Vaquez even asserts that ouabain, while acting selectively on the contractility and tonicity of the heart, exerts on the conductivity only a negligible action from the clinical standpoint.

Quite recent studies by Pratt seem to support Vaquez's view of a qualitative difference between the clinical effects of strophanthin and those of digitalis, at least in so far as their action on the contractility of the heart is concerned. Further reference to these observations will be made in the succeeding issue.

(To be continued.)

**The Relation of Food Idiosyncrasies to the Diseases of Childhood.**—Fritz B. Talbot (*Boston Medical and Surgical Journal*, August 29, 1918) says that it was formerly the custom to determine gross errors in diet by the microscopic examination of the stools, to see if there was too much fat, starch, or meat passing through the digestive canal undigested. It is now possible, by means of the "skin test," to find out which particular food is at fault. The "skin test" is the linear incision, which breaks the skin of the forearm just enough to draw serum but not blood. To this scarification is applied the food protein to be tested. If the patient is sensitive a characteristic urticarial wheal, surrounded by a red roseola, appears, the reaction coming in from two to ten minutes, and fades in one half to two hours.

A careful study of anaphylactic cases has shown that many individuals have a hereditary predisposition to sensitization. In twenty-eight cases of asthma studied by the writer, sixty-two per cent. gave a family history of anaphylaxis. In cases, therefore, that give a pronounced history of hay fever, asthma, or eczema in the direct ancestors, special care should be taken when introducing a new foreign protein into the diet. It should be given in such a manner that it will cause immunity and not sensitization. For example, if a nursing infant, with a family predisposition to sensitization, is given cow's milk at intervals of ten days or longer, instead of daily, it might become sensitized to cow's milk, in the same manner that animals are experimentally sensitized.

During infancy and childhood practically all cases of sensitization are due to foods, since food is the commonest foreign protein with which they come in contact. During growth, however, a child adapts its body and habits to surrounding conditions, and by the time he has reached puberty, he has either learned the particular foods he cannot take without feeling ill or has taken small amounts of that food at frequent intervals and has gradually become "used to it," that is to say, become immunized. By the time puberty is reached, therefore, the idiosyncrasies to food are relatively uncommon.

In infancy and childhood, asthma, recurrent bron-

chitis, eczema, and gastrointestinal indigestion are the diseases which are most commonly due to foods. It is wise, however, to bear in mind that although the cause of these diseases in the cases herewith reported has been proved to be anaphylaxis, this explanation cannot be given as the cause for all cases of these diseases. It must also be remembered that although at first sight the problem may seem a simple one, it is, on the contrary, most-complicated. The commonest example of anaphylaxis, which has no doubt come within the experience of every one, is idiosyncrasy to eggs. This is characterized by violent vomiting, and sometimes diarrhea, whenever the patient takes eggs, especially when raw.

**Abdominal Surgery as a Factor in the Treatment of Pulmonary Tuberculosis.**—Norman H. Beal (*Canadian Medical Association Journal*, July 1918) says that in undertaking surgery in these cases every detail should receive careful consideration, as the result may finally depend on apparently minor factors. Among these are the following: 1. *Place of Operation.* It is advisable when possible to operate upon these patients in the sanatorium where they are being treated for the lung condition, rather than in a general hospital. Dr. Craig is having a small operating plant installed in the new Reception Hospital of the Queen Alexandra Sanatorium, and we believe this might be imitated elsewhere with advantage to the institutional case where surgical treatment is indicated. 2. *Time to Operate.* This is an important question. In acute cases no choice is given. In chronic cases, however, where a tendency is shown to improve and relapse, the tide of improvement should be taken at the flood, and before relapse sets in the operation should be performed. 3. *Preparation of Patient.* Most surgeons are against purging and starvation in any operation, but in these cases there can be no room for discussion. The diet should not be restricted except the meal previous to operation, when clear broth should take the place of this meal. The bowels should be opened only with a laxative. In some cases an enema alone is preferable. 4. All details of the operation should be carefully planned so that no time is lost, which is an important element in these cases. The patient should be carefully guarded from exposure during the operation and in the corridors to and from the operating theatre if recovery rooms are not close at hand. Iodine preparation of the field of operation is preferable to chilling the patient's body with various solutions. 5. *Anesthesia.* Ether is certainly not the anesthetic for these cases. Nitrous oxide is the best general anesthetic, and if it is not available, chloroform carefully administered. The anesthetist should protect his hands by wearing rubber gloves in these cases. This is very important, as the expectoration during anesthesia from open pulmonary cases is a source of danger which should be guarded against. 6. In the aftertreatment the physician should share in the direction of the case. Nourishment should be commenced at the earliest moment possible, and pushed vigorously. Fresh air and sunlight should be withheld only until the patient recovers from the narcosis. Hence the advantage of the facilities for operating in sanatoria rather than caring for these patients in general surgical wards.

**The Newer Treatment of Burns.**—Oscar M. Shere (*Colorado Medicine*, June, 1918) found that the results from the use of Colonel Hull's paraffin formula were very satisfactory, but that the healing was slow and epithelialization was delayed. The formula was also quite painful for some time after application. To overcome these defects modifications were tried, and it was found best to vary the formula of the paraffin mixture according to the stage of the burn. The basic formula employed was:

White vaseline, .....	oz. xv;
Liquid petrolatum, .....	oz. ii;
Oil of eucalyptus, .....	oz. i;
Paraffin (m. p. 42.7° C.), .....	oz. xvi;
White wax, .....	} of each, .....
Pix burgundica, .....	
	oz. ½.

For the first few days of treatment one dram each of menthol and thymol iodide are added to counteract the pain of the application and to combat infection. During the next stage of treatment the essential consideration is promotion of epithelialization, and for this purpose scarlet red is incorporated in the basic formula to the amount of half of one per cent. When the epithelialization is nearly complete the scarlet red is replaced by bismuth subgallate in the proportion of one to ten, for its drying and astringent action. Blisters should not be interfered with, the burn being simply irrigated with warm Dakin's solution and dried with plain, sterile gauze or warmed air. Then the first formula should be applied with a brush at a temperature of about 110° F. and covered with two or three layers of plain gauze, to which further coats of the paraffin are applied. This is then covered with fluffed, dry gauze and a bandage. Redressing is done daily. The other formulas are applied similarly when the proper stages are reached.

#### Glucose Intravenously as a Therapeutic Measure.

—Lawrence Litchfield (*Journal A. M. A.*, August 17, 1918), points out that in combating serious diseases we have to deal with the effects of dehydration, intoxication from retention of waste products, and with nitrogen starvation, beside the specific effects of the invading organisms. A number of factors interfere with the maintenance of an adequate supply of water or promote its excessive loss. While the intoxication and loss of nitrogen are of importance, the rôle of dehydration seems to be the least generally appreciated. The picture produced by these three conditions includes: Rapid respiration; rapid, small, thready pulse; low systolic blood pressure; dry tongue and skin; sunken eyeballs; pinched features; reduced intraocular tension; cold bodily surface; apathy; oliguria; constipation; restlessness and irritability; hallucinations, delirium, and coma; and very rapid loss of weight. Such a picture may be encountered in empyema, meningitis, typhoid fever, Shiga dysentery, peritonitis, brain abscess, pneumonia, etc. The problem is to supply an adequate amount of fluid to make up for all that has been lost, and at the same time to supply energy and spare the body nitrogen. This can best be accomplished by the intravenous administration of hypertonic glucose solution. Ordinarily from 200 to 300 mls of a twenty-five per cent. glucose solution should be given intravenously per hour. A litre or

more can be given to an adult at this rate. The solution should be freshly prepared and made with freshly distilled, sterile water. The temperature of the solution should be about 100° F. and can be conveniently maintained by keeping a length of the tube lying in a waterbath. The effects of this form of treatment have been excellent in a series of very severe cases of pneumonia and other infections, marked improvement in the patient's condition usually coming on even during the injection.

**Broken Sleep.**—Guthrie Rankin (*British Medical Journal*, July 27, 1918) calls attention to the importance of this condition in these strenuous times, especially among those of middle age, and urges the desirability of aiding them to secure their needed rest by hygienic and drug treatment. In addition to the general hygiene of the bedroom and the use of light, but warm covering, including bed socks where necessary, the person should be encouraged to engage in no serious work after his evening meal, but to play some game or read some entertaining, light book before going to bed. He should also secure some out door exercise daily. If there is some constipation this should be relieved by abdominal massage in the morning warm bath, by the daily use of a tablespoonful of liquid petrolatum before breakfast, and the use once or twice weekly of the following pill:

Hydrargyri chloridi mitis, .....	0.065;
Extracti colchici, .....	0.02;
Extracti rhei, or	} .....
Extracti colocynthidis, .....	
	0.18.

This pill is designed to promote the efficiency of the liver. Gastrointestinal fermentation should be prevented by periodical courses of the following capsule, taken morning and afternoon for about two weeks:

Carbonis, .....	} .....
Retanaphtholis, .....	
Fellis bovis, .....	
Guaiaiac, .....	
	0.18 (gr. iij).

The evening meal should be light and consist of a cup of clear consommé, fish, chicken, or eggs, green vegetables as a puree, omelet, custard, or junket. A glass of light claret, Moselle, or Chablis often promotes digestion. A useful nightcap after getting into bed is one of the following: An ounce of brandy or whisky in hot milk, Benger's food, or arrowroot. If it is not possible to do without hypnotics under such a regimen, they should be employed, and whatever one is chosen, it should be given for three or four nights in succession to break the sleepless habit. The bromides are the simplest and should be given in doses of two grams (thirty grains); if that is not enough 0.6 gram (ten grains) of chloral hydrate may be added. This dose should be given half an hour before bed time and can be repeated safely in two hours if necessary. Other useful hypnotics with their suitable doses include: Chloralamide, two grams (thirty grains); chloralose, 0.4 gram (six grains); medinal, 0.5 gram (seven grains); adalin or bromural, 0.6 gram (ten grains); trional or chloretone, one gram (fifteen grains); and sulphonal, 1.3 gram (thirty grains). Paraldehyde is of value, but its disagreeable odor and taste make it less suitable than the others. At times it may be necessary to give a few doses of



morphine, fifteen milligrams (one quarter grain), with atropine. A combination of two of the hypnotics is often more efficacious than one singly and the following are specially suitable: trional, one gram (fifteen grains), with codeine, 0.03 gram (one half grain); chloralamide, 1.5 gram (twenty grains), with potassium bromide, two grams (thirty grains); aspirin, 0.6 gram (ten grains), with Dover's powder, 0.5 gram (seven grains); bromural, 0.6 gram, with morphine, ten mgm. (one sixth grain); and zinc valerate, 0.3 gram (five grains), with heroin, eight mgm. (one eighth grain).

**Treatment of Tuberculous Arthritis of the Hip Joint.**—H. W. Meyerding (*Minnesota Medicine*, August, 1918) describes the treatment of hip disease at the Mayo clinic. The acute stage in children is treated by the Jones abduction frame, whereas in adults this stage may be treated by Buck's extension in bed, with a sandbag support for the leg. In the subacute stage, in cases without drainage, a cast of the Lorenz type may be applied with the use of crutches and the elevation of the sound limb by means of a patten. Finally a Thomas splint is used for three or four months, at the end of which period, when weight carrying is permitted and causes no pain, crutches are allowed with the gradual application of more and more weight to the affected leg. Ninety per cent. of his cases showed deformity, the flexion abduction type being practically always present; nineteen per cent. had ankylosis, and the average shortening was two and one fourth inches. In sixty per cent. the right hip was the seat of deformity, ten per cent. required aspiration, and fourteen per cent. required curettage or sequestrectomy. Patients with deformity and those in the subacute stages were treated by brisement forcé, plaster of Paris, and crutches. Osteotomy of the Grant type was done in the cases with ankylosed deformity.

**Intravenous Treatment of Cerebrospinal Meningitis.**—W. W. Herrick (*Journal A. M. A.*, August 24, 1918) says that one of the most important factors in the treatment of this disease has been the recognition that it is primarily a meningococcic sepsis with secondary localization in the meninges. Of 265 cases studied by the author the diagnosis was made before the meningitis developed in over forty-five per cent., that is, during the initial sepsis. The characteristics of the stage of sepsis should be recognized that treatment may be begun as early as possible. Briefly there is a prodromal period of a few hours or days marked by languor, malaise, and infection of the upper respiratory tract such as tonsillitis, pharyngitis, or laryngitis. Then the weakness increases and apathy develops. There is tonsillitis, diarrhea, or conjunctivitis, and the temperature rises to 100 to 102°. A bursting frontal headache is usually present. The tongue is coated, the oral secretions are very viscid, and the pharynx and tonsils are red. The dull apathy with capacity to be roused temporarily, unmodulated voice, and the absence of the use of the facial muscles of expression are very typical. A petechial rash appears in about half of the cases and an ill balanced condition of the deep reflexes is also characteristic. With such symptoms lumbar puncture should be performed at

once. The fluid will be found nearly normal upon examination, but it should be centrifuged and the last mil of the sediment should be evaporated on a slide and searched for the organisms. If none is found a second puncture a few hours later will generally show them. Treatment should be begun at once and should aim at sterilizing the blood stream as promptly as possible. To desensitize the patient one mil of horse serum, or the serum to be used, should be injected subcutaneously, and one hour later the first dose of serum should be given intravenously. The dose should be from 80 to 150 mls, the first fifteen mls being given at the rate of one mil per minute. Then, depending on the severity of the case, the dose should be repeated at intervals from eight to twenty-four hours, from four to twelve doses being required. As soon as meningeal symptoms appear lumbar puncture should be made about half an hour after each intravenous injection and enough fluid withdrawn to reduce the pressure to normal and a dose of not over thirty mls of serum given intraspinally. Under this treatment meningococci disappear from the blood stream in twenty-four hours and from the spinal fluid in forty-eight hours. The intraspinal treatments should never be continued beyond eight or ten, when, if meningococci still persist, drainage alone with intravenous treatment should be continued. Relapses should be treated as are primary attacks. This plan of treatment very greatly diminishes the frequency of complications and has reduced the mortality in severe cases from sixty-five to seventeen per cent. when treated early, and from forty-two to nineteen per cent. when treatment was begun late.

**Intradural Vaccination against Smallpox.**—Louis T. Wright (*Journal A. M. A.*, August 24, 1918) discusses the several methods of vaccination and points out their various disadvantages, including specially the moderately high proportion of failures and infections. In the hope of securing a larger proportion of "takes" the intradermal method was tried along with the incision method on 227 soldiers who had recently been unsuccessfully vaccinated by the incision method. In this group the intradermal method gave good "takes" in seventy per cent. as compared with eight per cent. for the incision method. Of the sixty-seven men who failed to show "takes" by the intradermal method all but four showed the immunity reaction or vaccinoid. The method used employed a virus treated with a mixture of one part of phenol with forty-nine parts of glycerin and fifty parts of water. This virus was diluted with an equal volume of sterile, distilled water just before using. With a sterile tuberculin syringe and a fine needle one tenth mil of this diluted virus was injected intradermally over the insertion of the deltoid. Usually two injections were made about an inch apart. The only difference in the reaction produced was the constant appearance of a circle of vesicles about the site of the insertion, measuring about a centimetre in diameter. The method was found to be easy, rapid, much more certain than any other, less likely to lead to infection, and the only one in which a definite, known amount of virus was used. Its use also gave a fair index of the relative immunity already present.

**Extraction of a Bullet from the Inferior Vena Cava.**—P. Duval and H. Barnsby (*Presse médicale*, July 11, 1918) report the case of a man hit by a bullet in the left anterior axillary line at the level of the seventh rib. Slight hemoptysis was the only symptom at first, but on subsequent days pains in the cardiac region, made worse by motion, were experienced. X ray examination revealed, at the right of the sternum, a bullet dancing up and down through a distance of twelve centimetres like an egg shell on a jet of water. A median sternopigastic incision was made from the fourth rib to a point midway to the umbilicus, the sternum divided, and two lateral flaps turned back. The pericardium was opened, and after several x ray examinations the bullet seized when half way in the auricle from the vena cava. A nonperforating purse string suture was then passed around the base of the missile, the vein incised at this point, the bullet quickly seized and withdrawn with forceps, and the purse string promptly drawn tight. A lateral suture completed the hemostasis, and the pericardium, diaphragm, peritoneum, and sternum were sutured. Recovery followed uninterruptedly. The bullet is believed to have entered through the left lung and passed through the left ventricle, the interventricular septum, and the tricuspid orifice into the right auricle and inferior vena cava.

**Antianaphylactic Treatment in Asthma, Skin Disorders, and Gastrointestinal Disturbances.**—J. Danysz (*Presse médicale*, July 18, 1918) has concluded, from the study of much literature, that all the phenomena termed skepto- or tachyphylaxis, anaphylaxis, anaphylatoxic crises, antianaphylaxis, vaccino-, bacterio-, proteoso-, and serotherapy, and even modern chemotherapy, are dependent upon reactions of like nature, and that all therapeutic methods derived from them should be grouped together as antianaphylactic procedures. Whatever be the antigen, the organism remains in a state of latent anaphylactic hypersensitiveness just as long as it produces and contains antibodies in excess. The hypersensitiveness is always specific in that there will always be a reaction to the antigen which induced it, but it is not exclusively specific, as the reaction may likewise be awakened by other antigens or by sensory or psychic excitants. Thus, a tuberculous subject is hypersensitive not only to tuberculin but also to mallein, to a number of other antigens of microbic or alimentary origin, to changes of temperature, etc. In the last analysis it may be conceived that idiosyncrasies, diatheses, and predispositions of all sorts are due to antigens and a state of anaphylactic hypersensitiveness which may be inherited or individual and more or less lasting or evanescent. Undoubtedly in the great majority of cases the alimentary tract is the focus of formation of the antigens; hence it is in the intestinal flora that the antigens required for antianaphylactic treatment of gastrointestinal, pulmonary, or cutaneous disorders should be sought. In a man of forty-seven who had suffered five years from asthma every night, marked improvement followed two series of ten injections of a bacterial preparation isolated from the intestinal flora and sterilized by heat. The improvement began with the first injection.

In a patient who had had a phlyctenular eruption for fourteen years, similar treatment caused the eruption and attendant itching to disappear. A case of perianal eczema and three out of four cases of psoriasis were similarly cured, the exception being a case in which the preparation was ingested instead of injected. A salient feature in all these cases was that virtually three fourths of the total benefit accrued within twenty-four hours after the first injection. The treatment is conceived of as removing the excess of antibodies which is the immediate cause of the attacks of dyspnea or skin lesions. Similar results were obtained in numerous cases of dyspepsia with epigastric pain and of painful enteritis or enterocolitis with constipation or diarrhea. The treatment is much facilitated by the fact that it is not necessary to employ precisely the specific material for injection. In most cases studied it was found sufficient to grow on ordinary agar, in separate colonies, all the aerobic organisms that would develop under these conditions, mix them in their approximate proportions in the feces, sterilize the emulsion by heat, and administer it by injection or ingestion.

**Etiology and Treatment of Enuresis.**—Joseph I. Grover (*Journal A. M. A.*, August 24, 1918) bases his conclusions upon a study of about 200 cases in children between four and twelve years of age. He believes that the condition is never a disease entity, but is merely a symptom of an underlying, general neuromuscular fatigue. The fatigue is chronic and the patients are all of the overactive, nervous type. There is often an element of marked mental strain from too prolonged school work. The treatment is exclusively dietetic and hygienic. All food between meals is forbidden, even bread and butter and milk, and the following foods are excluded from the diet: Soups, coffee, tea, cocoa; sweet, salty, and highly seasoned food; ice cream, candy, cakes, and pastry; jellies, jams, etc.; condiments, bananas, and raw apples. To simplify the digestive work at night meat, eggs, and vegetables are forbidden at supper. The diet consists of milk, butter, eggs, meat, fish, breadstuffs, cooked cereals, macaroni, vegetables, orange, stewed fruits, and simple, unsweetened desserts. No fluids are given after 4 p. m.; the child must be in bed by 7 p. m., and no active play is allowed after 4 p. m. If very nervous, school is temporarily prohibited and a nap required every afternoon. Moving pictures, music lessons, and evening study are prohibited. Absolutely regular hours are established for urination at night, namely, 7 and 10 p. m. and 6 a. m.; and in some cases with small bladders, 2 a. m. for a while. The day wetters are made to urinate at regular times by the clock, the intervals being lengthened to increase the capacity of the bladder until a satisfactory régime is established. Rewards are offered for following the directions. The results of such treatment are surprisingly good as shown by the fact that nineteen per cent. of the patients did not wet again after their first visit, twenty-three per cent. did not wet once after the first few weeks or months, thirty-one per cent. were reduced to a maximum of wetting once a week, and only twelve per cent. were not benefited at all.



# Miscellany from Home and Foreign Journals

**Significance of Heart Murmurs that May Be Found on Examination of Candidates for Military Service.**—Lewellys F. Barker (*Canadian Medical Association Journal*, July, 1918) says that experience at a medical advisory board, where the hearts of 2,500 drafted men between the ages of twenty-one and thirty-one, indicates: 1. That many organic murmurs (diastolic murmur of aortic insufficiency, presystolic murmur, and snapping first sound of mitral stenosis) are often entirely overlooked by examiners in local boards, for they are not infrequently detected in men referred to the advisory board for defects other than those of the cardiovascular system. 2. That many extracardiac (cardiorespiratory) murmurs and accidental intracardiac murmurs are suspected by medical examiners to be murmurs of serious import. 3. That the hearts of some of the men presenting organic murmurs are better prepared to stand exertion than are the hearts of some men presenting no murmurs. 4. That good response to the exercise test by no means rules out the existence of organic disease of the valves of the heart. 5. That many men with organic disease of the valves of the heart need not be unconditionally rejected, though according to present regulations they must be, for many of them are entirely capable of undertaking special service not involving severe exertion, and some of them could, without harm, even be given duties requiring considerable bodily exertion. Experience in the armies in Europe would indicate that mild stenotic lesions stand strain better than lesions causing valvular insufficiency. The lesions of *barrage* are less serious than the lesions of *fuite*. 6. That, on the whole, while the study of cardiac murmurs is of great importance in estimating the fitness of a candidate for military service, still greater importance attaches to the study of the condition of the cardiac muscle and to the estimation of its ability to bear strain.

**Albumin Content of Cerebrospinal Fluid.**—L. Boyer (*Paris médical*, June 15, 1918) recommends, for quick and accurate results, the diaphanoscopic method. The spinal fluid is treated with a solution precipitating albumins and then compared with a scale of standard solutions of albumin treated with equal amounts of the precipitant. The precipitant preferred is made by mixing thirteen grams of crystalline salicylic acid with fifteen mils of pure sulphuric acid in the cold in a porcelain dish. The mixture liquefies, then crystallizes. It is fused again with gentle heat, allowed to cool, enough distilled water is added to make 100 mils, and the resulting solution is filtered. The standard albumin preparations are made preferably with a mixture of blood serum from several persons. To one mil of serum are added seventy-four mils of normal saline solution, thus forming a 1 in 1,000 albumin solution from which greater dilutions, viz., 0.2, 0.3, 0.4 in 1,000, up to 1 in 1,000, are made by adding suitable amounts of normal saline. In each of ten small tubes of equal size, preferably discarded surgical gut tubes, are placed two mils of one of these

dilutions of the albumin solution and one mil of the precipitant solution; the tubes are then sealed and labeled, constituting permanent albumin standards. For receiving the spinal fluid another tube of exactly the same size is used, with 2, 3, and 6 mil marks filed on it. Spinal fluid is introduced up to the first mark, precipitant solution up to the second, and the tube stoppered, shaken a few times, and compared with the standard albumin tubes, likewise previously shaken. The comparison may be made either by looking through the tubes toward the source of light or by reflection, the tubes being well illuminated and looked at against a dark background. Where the opacity of a specimen is greater than that of the standard 1 in 1,000 solution, saline solution is added up to the 6 mil mark and the figure resulting from the comparison multiplied by two.

**Acute Mastoiditis as a Complication of Infectious Disease.**—George H. Lathrope (*Journal A. M. A.*, August 10, 1918) reports from Camp Shelby a striking variation from the general experiences of the other southern camps in reference to the occurrence of streptococcus infection. While pneumonia and empyema were very prevalent and fatal in other camps and were due very largely to infection with the *Streptococcus hemolyticus*, at Camp Shelby the streptococcus of this type was uncommon and relatively few cases of pneumonia or empyema occurred. On the other hand acute mastoiditis was quite prevalent and was generally due to infection with the *Streptococcus viridans*. In 123 cases of this condition studied in the base hospital there was invariably a preceding involvement of the middle ear, but often the mastoiditis came on so rapidly as to make it seem almost synchronous with the otitis. Measles directly preceded the mastoiditis in forty-four of the cases, respiratory diseases in twenty-eight, purulent otitis media in forty-three, mumps in six, and scarlet fever and erysipelas in one each. The importance of measles and the respiratory diseases, including mumps and scarlet fever in this category from their involvement of the upper respiratory tract, was very evident. In seventy-three per cent. of the mastoid cases cultured directly at the time of operation the organism was a streptococcus and this was in pure culture in over half of the cases. There were only five instances of infection by the hemolytic type, the remainder having been due to the *Streptococcus viridans*. The *Staphylococcus aureus* was found in pure culture in thirteen cases. In seventeen of the streptococcus cases there was a mixed infection with the staphylococcus. In every one of the deaths, numbering twelve, the streptococcus was present, once with the staphylococcus, once with miscellaneous other organisms, seven times pure *Streptococcus viridans*, and three times pure *Streptococcus hemolyticus*. The occurrence of streptococcal infection was far more frequent among the measles cases than among these following other diseases, indicating the greater dangers associated with the complications of measles than of the other diseases considered.

**Diaphragmatic Movements in Acute Abdominal Inflammation.**—Llewellyn Sale (*Journal A. M. A.*, August 17, 1918) presents his conclusions from a careful study of twenty-five soldiers admitted under the suspicion of having some acute abdominal inflammation, the majority having been clear cut cases of appendicitis. Control examinations were also made in normal subjects. It was found that in the majority of cases of proved acute appendicitis the movement of the right half of the diaphragm was decidedly limited, as shown by fluoroscopy. This limitation was found to occur in cases in which the peritoneal surface of the diaphragm was not inflamed, as well as in those in which it was involved. This limitation of movement was found to be confined to the side corresponding to the abdominal inflammation. The occurrence of the limitation in the absence of involvement of the diaphragmatic peritoneum could not easily be explained, since the phrenic nerve was known to have no inhibitory fibres. It was suggested that the inhibition might have been in part voluntary. With the limitation of movement there was also often a diminution in the breath sounds at the base of the lung, or even their total absence. The degree of limitation of movement was not found to run parallel to the severity of the acute inflammatory process in the abdomen, though its occurrence appeared to be a very valuable confirmatory sign of such inflammation.

**Neurocirculatory Asthenia.**—William H. Rohey and Ernst P. Boas (*Journal A. M. A.*, August 17, 1918) studied this condition, which has also been called, "soldier's heart" and "the effort syndrome," in an American camp, and found that in the majority of the cases the patients gave a history of similar attacks having occurred in civil life before coming into military service. A family history of nervous disorders was also very commonly elicited and was a factor of importance in the diagnosis. It was found that some of the cases became evident immediately, while others were manifest only after a few weeks of intensive training. From a very careful study of the cases it was found that the condition was essentially of neurotic origin and occurred in persons with fundamentally unstable nervous systems. The instability of the nervous system resulted in a similar instability of the vasomotor system. A considerable number of the worst cases were found by the psychiatrist to have constitutional psychopathies, to be mentally inferior, or to have psychoneuroses. In all of the patients the systolic blood pressure was usually found to be elevated and to show a marked tendency to rise rapidly after exercise. The diastolic pressure was usually normal, but often dropped almost to zero after exercise, or quite so when the fourth phase was taken as the reading. The application of Barringer's tests of the heart's functional capacity showed the hearts to be practically normal in that respect. Treatment of the cases according to the methods of graduated exercise and training, as advocated by Lewis, utterly failed to bring about any improvement in the constitutional cases, which constituted the great majority. Time and money could be saved by the prompt recognition of these cases.

**Recurring Hemoptysis after Wounds of the Thorax.**—Courtois-Suffit (*Bulletin de l'Académie de médecine*, July 23, 1918) notes that while in the majority of instances hemoptysis after penetrating war wounds of the thorax continues only a few days, not rarely it persists two weeks, a month, or even longer. Petit de la Villéon and Giroux have reported cases in which it continued for six months to a year. Especially noteworthy is the recurrence of the bleeding at long intervals and without apparent cause. Among thirty-seven cases of penetrating chest wounds under the author's observation, four exhibited this recurrent form of hemoptysis. In one instance recurrence of bleeding took place nearly thirty months after the injury. The attending symptoms in such cases, viz., dyspnea at rest or on exertion, at times pain in the chest, coupled with occasional respiratory modifications, suggest the possibility of tuberculosis as the cause of the recurrent hemoptysis. Careful investigation of the author's patients showed, however, that this is not the case. There were no constitutional symptoms, clinical and x ray examinations were negative, and tubercle bacilli were lacking. Tuberculosis must be an extremely rare complication of penetrating wounds of the lung. The cause of the recurring hemoptysis is not as yet definitely known. In two cases a shell fragment and splinters of bone were demonstrated in the lung tissue, but in the other two there were no foreign inclusions. In the latter the condition may perhaps be ascribed to a latent inflammatory process. Loeper, Verpy, and Cosnier have shown that the sputum of cases of thoracic wound sometimes contains, over a year after the injury, cells suggesting a silent inflammatory process which cannot be detected by clinical or x ray procedures.

**Lead in the Kidney One Month after Cessation of Exposure to Lead.**—E. Lenoble and F. Daniel (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 21, 1918) report the case of a painter, aged twenty-two, admitted to a hospital with pains in the extremities and vomiting. Albuminuria had been present for six months. There was herpes zoster of the left cervical plexus, with headache. The blood pressure was high. Incessant vomiting was followed by anuria and death. The kidneys were found small and granular, with the calyces and pelvis filled with pus. Twenty grams of the left kidney were treated repeatedly with nitric acid and evaporated. The residue was mixed with soda and ammonium nitrate, heated to dryness, and then taken up with water acidulated with nitric acid, and the resulting solution filtered. Passage of hydrogen sulphite into it caused a precipitate subsequently identified as lead sulphite. The patient had not been at work for a month. The cerebrospinal fluid at this time did not contain even a trace of lead. In a previous research the authors had found lead eliminated from the cerebrospinal fluid in ten days, on an average. The case reported is held to be of medicolegal significance in that, in the absence of any symptom positively showing that death had been due to lead poisoning, chemical investigation revealed the poison. In some cases of mineral poisoning the cause can be chemically discovered long after cessation of exposure to the toxic agent.



**Dyspepsia among Prisoners in Germany.**—

F. Ramond and A. Pettit (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 7, 1918), from examination of prisoners returned to France from Germany as a result of a visit of the Swiss medical commission to various German prison camps, state that practically 100 per cent. of the prisoners develop dyspeptic disturbances in these camps owing to the unjustifiably scanty and inappropriate food distributed there. As soon as the men reach these camps, whatever be their age or previous condition of health, they are seized with heaviness of the stomach after meals and a tendency to burning sensations after two or three hours. Then appear colicky pains with abundant and often fetid diarrhea—manifestations of an acute or subacute gastroenteritis. Most of the prisoners later return almost to a normal condition, experiencing merely gastric disturbances of bearable degree and at rather long intervals; this is accomplished, however, only by exclusive feeding upon the contents of a food parcel from home for two or three days, thus giving the stomach a rest from the usual harmful fare. Some of the prisoners, on the other hand, develop more serious disturbances. Of these, some show hypochlorhydria; others, more numerous, hyperchlorhydria. A few, afflicted with obstinate constipation as a sequel to the initial enteritis, exhibit all the characteristics of dyspepsia due to constipation. Most striking, however, is the considerable proportion of confirmed gastric ulcers resulting; one tenth of the patients under the observation of the authors had had repeated melena and were admitted with a more or less advanced pyloric stenosis. Four patients of this type required operative intervention.

**Prophylactic Inoculation against Pneumococcus in 12,519 Men**—

Russell L. Cecil and J. Harold Austin (*Journal of Experimental Medicine*, July, 1918) in order to determine the best dose and interval of injection studied the agglutinins and protective power of the serum of forty-two volunteers who were vaccinated against the pneumococcus, types I, II, and III. A definite immune response was obtained to types I and II. The degree of response seems to be dependent upon the total dose of each type of pneumococcus given. Although there is some response to two and one half billion cocci of each type, a more constant and greater reaction followed the administration of thirteen billion. When subcutaneous injection is used the manner in which the dose is divided apparently has little effect on the degree of immune response, provided the total dose is the same, but it was found that smaller doses frequently repeated gave less general and local reaction than one massive dose. At Camp Upton 12,519 men were vaccinated against pneumococcus types I, II, and III. Three or four doses, at intervals of from five to seven days, were given, with a total dose of six to nine billion of types I and II, and four and a half to six billion of type III. It was possible to observe the men for only ten weeks at the camp, but during that time no cases of pneumonia due to these three types occurred among the men who had re-

ceived two or more injections of vaccine. On the other hand, among the 20,000 men who were not vaccinated there were twenty-six cases of pneumonia due to these three types. A point of interest for which no explanation is offered is that the incidence of pneumococcus type IV pneumonia and streptococcus pneumonia was considerably less among the vaccinated troops than among the unvaccinated. The reactions were generally milder than to typhoid vaccination. In some instances small sterile infiltrations which disappeared spontaneously followed the injection of large doses of the vaccine. This was interpreted as an expression of cutaneous hypersusceptibility. The results of this work would indicate that prophylactic vaccination against pneumococcus types I, II, and III is practical, as it will apparently protect against pneumonia caused by these types. The duration of the immunity still remains to be determined.

**Typhoid in Immunized Soldiers.**—

Samuel Bradbury (*Journal A. M. A.*, August 17, 1918) encountered four cases of proved typhoid fever in a company of soldiers, all of whom had been immunized only five months previous to this finding. Owing to the exigencies of active military operations the source of the infection could not be traced with absolute certainty, but all the evidence pointed to the mess sergeant who had had typhoid fever in 1915. He was captured before his stools could be obtained for examination, but all other sources of infection were ruled out. It would seem, according to the author, that the immunity in these four men, out of a company of 175, had not lasted five months. But their infection might also be explained on the basis of their having had six weeks of very hard work with long hours and irregular meals, and also because they may have been exposed to a very large infecting dose of bacilli.

**Value of Tests of Kidney Function.**—

L. F. Frissell and K. M. Vogel (*Archives of Internal Medicine*, July, 1918) report a series of 112 definite cases of nephritis, in which over 1,400 test observations were made, covering more or less completely the entire series of ordinary tests—phenolsulphonephthalein, nonprotein nitrogen, urea nitrogen, McLean's index of urea excretion, etc. In general, the results proved strikingly consistent, and the high percentage of fatal cases—sixty-one per cent.—was in accord with the indications derived from the tests. The curves for nonprotein nitrogen and urea nitrogen showed a rapid rise during the three months preceding death, though during earlier months they tended to maintain a constant level. The results seemed to prove that the delicacy of the index of urea excretion is much greater than that of a simple blood urea determination. The kidney functional tests are deemed to have a real prognostic value, particularly if the results are constantly abnormal on repeated examination. By plotting the curve of a very long series of cases, it should be possible to arrive at an average expectation of life as indicated by any individual determination. The value of diet and drugs may also in future be shown by these methods more clearly than in any other way.

# Proceedings of National and Local Societies

## THE AMERICAN PEDIATRIC SOCIETY.

*Thirtieth Annual Meeting, Held at the Curtis Hotel, Lenox, Mass., May 27, 28, and 29, 1918.*

*(Concluded from page 619.)*

### **Is the Present Frequency of Acute Otitis and the Subsequent Mastoid Operation in Some Measure a Reproach to the Pediatricist?—Dr.**

THOMAS S. SOUTHWORTH, of New York, said that the presence of middle ear trouble, often necessitating mastoid operation, would, when one considered the growth of preventive measures in other directions, appear to be a reflection upon therapeutic and medical research in general, and upon pediatricians in particular, since these affections were so common in childhood. There was here a territory partly occupied by the otologist and partly by the pediatrician. Possibly because of this divided responsibility the field had not been covered as thoroughly as it would have been had it lain only at one door. The majority of these cases of otitis appeared in pediatric practice and the pediatrician had the opportunity to foresee and prevent them. During the past winter the writer had twenty-five cases of acute otitis media in a service averaging eighty infants under fifteen months of age. These had been under the close supervision of an otologist who had found in five of them indications of mastoid involvement; yet all had escaped mastoid operations, and discharge had ceased in all of the infants save one, which at the time of writing was nearly well. The warning against blowing the nose in the recumbent or supine position was one of such eminent and evident wisdom that the writer now included it in routine directions in all cases of acute infectious disease in which there was danger of middle ear involvement through the Eustachian tube. The pediatrician should consider the following questions: 1. Are there any therapeutic measures which tend definitely to prevent middle ear infections in acute nasopharyngeal conditions? 2. Are there any abortive measures which are reasonably efficient in beginning otitis media? 3. Could not some such measures be devised by well directed research? 4. Are we correct in assuming that immediate early paracentesis is always indicated in all cases of effusion into the middle ear? 5. To what degree and under what circumstances after paracentesis is the pediatrician justified in counselling delay, in the presence of the classical indications for mastoid operation? 6. Is the frequency of acute otitis and of mastoidectomy inevitable, or is it due to a complacent neglect of further research in this field?

The members of this society from their wide experience should contribute something toward the solution of these problems.

Dr. SAMUEL S. ADAMS, of Washington, said it had been his experience that the otologist advised the general practitioner against putting various remedies into the ear because he claimed that they did not allay inflammation and they obscured the field of vision, thus making examination difficult;

yet he had known otologists to put those things in the ear themselves. The preparations usually employed for this purpose were preparations of carbolic acid, adrenalin, and cocaine. The speaker had used five or ten per cent. solution of carbolic acid in glycerine, and felt that with it he had pretty certainly allayed earache, where there was inflammation of the middle ear, with the membrane red and inflamed but not bulging. When the membrane was bulging, he believed one should call in a skilled otologist.

Dr. GODFREY R. PISEK, of New York, said he had put these questions to the otologist and had found that the otologist was not always certain in his own mind as to the indications for operation. If he found a sagging canal he was ready to operate. Some otologists asserted that every discharging ear was partly a mastoid infection, and that drainage did little good unless the mastoid was opened. He thought that otologists were inclined to lean to the side of operation as being the safest procedure.

Dr. FRITZ B. TALBOT, of Boston, stated that the problem of prevention of mastoid troubles lay in the prevention of colds, which were the cause of most ear troubles. He considered it important, as a preventive measure, that babies' as well as older children's noses should be wiped instead of blown.

Dr. ISAAC ABT, of Chicago, said that as soon as one got a nasopharyngeal inflammation he was likely to have a middle ear congestion, and the tympanic membrane became reddened. Some otologists immediately punctured the membrane. That was a technical error. The membrane should only be punctured when it bulged, or where there was reasonable suspicion of pus in the middle ear. So far as mastoiditis was concerned, pathological studies showed that in the exanthemata and grippal diseases there was more or less inflammation of the mastoid and antrum. Many of these cases recovered without operation.

Dr. HENRY HELMAN, of New York, said that some years ago he used to have three or four mastoid operations a year, while now he had only about one mastoid in ten years. Some children blew the nose and that tended to cause infection of the middle ear. Some sniffed salt water, which was a very dangerous procedure. He was inclined to be conservative. It seemed to him that he had seen as many mastoids follow incision of the drum as where the drum was allowed to remain red for some time.

Dr. L. EMMETT HOLT, of New York, said that from his experience in the Babies' Hospital, where he believed they had had only one mastoid operation in three years, he had come to take a very conservative stand in regard to mastoid operations. He felt that many unnecessary operations were done on ears, and that it was well for this society to enter a protest against too many mastoid operations.

Dr. ROLAND G. FREEMAN, of New York, said that he did not agree that operations were done too frequently. He had never known an instance when an ear was operated on when the drum was not red and bulging.



Dr. HOWARD C. CARPENTER, of Philadelphia, in speaking of the prevention of otitis, warned against digital examination of the nasopharynx for adenoids. By putting the fingers into the nasopharynx one might stir into activity an inactive infection. In reference to what had been said about blowing the nose, he thought both sides of the nose should be open while the nose was being blown. He also felt a conservative position in regard to mastoid operations, should be taken.

Dr. HENRY DWIGHT CHAPIN, of New York, stated that in young babies it was almost impossible to see the ear drum, and when nothing was seen it was assumed that nothing was present. He believed that many patients were operated upon who would get well without operation, but no one seemed to be able to say which would get well without operation. It seemed to him that in blowing the nose it was better to keep the mouth open than to try to keep one or both nostrils open.

Doctor KERLEY, of New York, stated that he had seen many mastoids operated upon, but he had never seen one operated upon where there was not pus and inflammation of the mastoid cells. He could not say that these patients would not get well without operation, but he always felt better when the operation was done. The mastoid operation was not a serious operation, and the vast majority of patients recovered. It was just as well to open the mastoid and drain posteriorly as to run the chance of getting adhesions and chronic deafness.

Dr. LANGLEY PORTER, of San Francisco, said that one way to prevent infection of the nasopharynx was to instruct mothers and nurses having colds to wear respiration veils.

Dr. ALFRED F. HESS, of New York, said that in an institution with which he was connected where there were 400 children under five years of age, in the last five years they had had four cases of mastoiditis, one being a case of pneumococcus meningitis following ear trouble. They had had no case of sinus thrombosis. The plan they had carried out was to puncture red and bulging ear drums. In regard to prophylaxis, one thing to be considered was whether one was dealing with local or systemic disease. This was true regarding diphtheria; children immunized with toxinantitoxin would not get nasal diphtheria, and consequently this one source of middle ear infection would be removed.

Dr. WILLIAM P. NORTHRUP, of New York, called attention to the frequency of otitis media following measles and said that the pediatrician could be of help by watching out for otitis media during measles. The point for which he should look especially was whether there was a rise in temperature during measles or pneumonia.

Dr. HERBERT B. WILCOX, of New York, called attention to the possibility that frequent irrigations of the ear might devitalize the superficial layer of epithelium covering the drum, so that this was elevated like a blister, and if this happened it might be sufficient to merely incise this superficial layer and not cut through the entire drum. He said that the otologist had one complaint to make against the pediatrician or general practitioner and that was that he might open the drum and evacuate the

pus and then neglect to make a culture. Later, if an otologist were called in he would have difficulty in interpreting the condition because he did not know what organism was causing it.

**The Relative Morbidity of Breast and Bottle Fed Babies.**—Dr. H. M. McCLANAHAN, of Omaha, stated that he had sent a questionnaire to members of the American Pediatric Society and other prominent pediatricians throughout the United States inquiring as to their experience regarding the relative susceptibility of breast and bottle fed infants, both in reference to contagious and infectious diseases, and also in reference to general infection and the relative rate of growth and development of breast and bottle fed infants. Seventy answers were received, among them being very comprehensive data on 700 cases from Doctor Sedgwick, of Minneapolis, and a table from Doctor Pisek. An analysis and summary of the data accumulated showed: (a) That superiority of breast milk might be due to chemical and biological differences which rendered it more readily usable by the infant. As a result it had a more natural energy which it could apply to the invading organism. (b) Breast milk might contain natural antibodies or protective ferments, both specific and nonspecific. (c) Breast fed infants were less susceptible to infection, with the exception of influenza and tuberculosis. (d) Breast fed infants resisted infection more quickly and with less injury than bottle fed infants. (e) Breast fed infants had less morbidity than properly fed bottle infants; badly fed infants had a still greater disadvantage.

**The Disadvantages of Low Fat Percentages.**—Dr. ALFRED HAND, JR., of Philadelphia, stated that he looked upon anything less than two per cent, as a low fat percentage, from two to three as moderately low, from three to 3.5 as a fair percentage, and from 3.5 to 3.8 or four as normal; anything above four he considered as a high percentage in the feeding of infants. It seemed that for a while past the advantages of low fat feeding, especially in hospital work, had been overemphasized. While a very easy way to upset a child's digestion was to feed a food too rich in fats for his digestion, the result of such feeding was scarcely ground for branding that child as having fat intolerance for the rest of his life. The writer had seen very few cases of permanent or prolonged fat intolerance. If a low fat percentage were fed for a long period, the general nutrition of the infant was more or less permanently damaged. The main way in which this was brought about might be summed up in the term "rachitis." Children brought up on condensed milk and other proprietary foods with low fat and high carbohydrate content showed as a rule distinct evidence of rickets. Constipation and failure to gain in weight were the two conditions that might be troublesome with the feeding of low fat percentages and low protein as well, unless the carbohydrates were raised considerably above the amount existing in either human or cow's milk. As a temporary measure this might be of value but it was of more lasting benefit to overcome the constipation and increase the weight by raising the fat percentage as rapidly as possible. Two factors that seemed

to influence the handling of fat in the dietary were climate and the breed of cows. A child that might show intolerance to fat in the summer, when cooler weather came would handle even a higher percentage of fat with ease. The milk of cows that had five per cent. fat was not nearly as suitable for infant feeding as that containing four per cent. The writer cited typical cases in which a low fat content was given evidently to the detriment of the baby.

#### **Ascending Infection of the Urinary Tract.**—

Dr. HENRY F. HELMHOLZ, of Evanston, Ill., reported his work with a series of rabbits that were infected by the injection of a pure culture of colon bacillus isolated from a spontaneous case of pyelitis in a rabbit. In a series of thirty-two intracystic injections fifteen of the animals showed definite pyelitis. Of this entire series of animals only one showed abscesses in the kidney. The presence of the pyelitis was controlled both pathologically and histologically. The evidence obtained showed that in all probability there were two routes by which infection was accomplished: a, by way of the lymphatics, from the bladder to the ureter and to the kidney; b, by direct extension up the lumen of the ureter.

**The Acidotic State of the Newborn.**—Dr. J. P. SEDGWICK and Dr. M. SEHAM, of Minneapolis, presented this paper, which was read by Doctor Seham. He stated that 300 determinations of alveolar carbon dioxide tension on seventy-five newborn infants were studied with respect to the effect of muscular exercise, ingestion of food, and age. Twenty-five phenolsulphonaphthalein tests were made on the newborn, which showed from thirty to 60.75 per cent. excreted in three hours. The alkali tolerance of newborns was also tested. These observations warranted the conclusion that there was no definite evidence from these experiments that the newborn was in a state of so called acidosis. The carbon dioxide tension readings were about normal. Fifty per cent. was the average phthalein excretions in three hours, and it took less sodium bicarbonate to change the urine acid to alkaline than in the adult. A standard for the determination of alveolar carbon dioxide tension in newborns was established.

**Immunity Reactions in Hydrated and Concentrated Tissue.**—Dr. FREDERIC W. SCHULTZ, of Minneapolis, said that it was an old clinical observation that certain types of organisms succumbed more readily to the invasion of disease than others. This had gradually crystallized into the expression that apparently the fat plethoric organism showed on the whole a lesser degree of resistance than did the lean fairly emaciated organism. That hydration or concentration of tissues bore some definite relation to immune reactions unfavorable in the hydrated and favorable in the concentrated tissues was the idea which had been repeatedly expressed in the literature. To demonstrate the truth of this impression parallel series of guineapigs were taken as near as possible in age and weight. The animals were kept under the best conditions possible. In the fat series the attempt was made to cause increase in weight as rapidly as possible through the use of liberal carbohydrate feeding, particularly

maltose. The lean pigs were kept on a balanced ration, just sufficient to sustain them. The weight loss was brought about gradually before immunization and generally amounted to twenty-five to thirty-five per cent. of the original body weight. The lysin reaction was compared in fifteen fat pigs and eighteen lean pigs. The animals were immunized against blood cells by intraperitoneal inoculations. The precipitin reaction was carried out on eleven fat and eleven lean animals. The agglutinin reaction was carried out on seven fat and seven lean animals. Tables presented showed that the lysin reaction was negative or nearly so in practically all of the fat animals, but was positive, sometimes to a marked degree, in over sixty per cent. of lean guineapigs. The precipitin reaction was uniformly negative in both the fat and lean series. For some unaccountable reason the guineapig serum did not give the precipitin reaction. This was strange in view of the agglutinin reaction, which while present in only eleven per cent. of the fat animals, was present in over seventy per cent. of the lean animals. While the drawing of definite conclusions from a study of this kind was certainly unwarranted it seemed that if immunity reactions were a good criterion of tissue resistance the rather striking behavior of both lysin and agglutinin reactions would seem to indicate that there was a difference in favor of concentrated tissue and that the theoretical considerations expressed by Czerny and other observers were substantially correct.

**A Comparison of the Carbon Dioxide Tension of the Alveolar Air, the Bicarbonate of the Blood Plasma, and the Hydrogen Ion Concentration of the Urine in Infants with Acidosis.**—Dr. OSCAR M. SCHLOSS, of New York, said that the cases observed occurred as a complication of gastrointestinal disorders and were of the type described by Howland and Marriott. In the present study an attempt was made to compare the reaction of the urine, the carbon dioxide tension of the alveolar air, and the plasma bicarbonate, with special reference to the diagnosis and treatment of acidosis. The results of their observations seemed to show that the plasma bicarbonate was probably the most accurate index of the alkaline reserve of the blood and was used as a standard by which other methods were compared. The reaction of the urine in infants was definitely influenced by diet and was more acid than that of adults on a mixed diet. This was probably due to the fact that the diet of infants was poorer in bases. Correspondingly the carbon dioxide of the alveolar air and the plasma bicarbonate were correspondingly lower. In acidosis the urine was always very acid but in moderate degrees of acidosis the urine was no more acid than in some normal infants on an acid producing diet. Urine with a hydrogen ion concentration of six or less excluded the possibility of acidosis. The carbon dioxide of the alveolar air corresponded very closely to the plasma bicarbonate in normal infants and in cases of acidosis before sodium bicarbonate was administered. In acidosis after the plasma bicarbonate had been brought to normal by sodium bicarbonate the carbon dioxide of the alveolar air was often much too low. This was probably due to continued irritability of the respiratory centre.



Dr. W. McKIM MARRIOTT, of St. Louis, said that his experience had been the same as that of Doctor Schloss. The failure of the alveolar carbon dioxide to indicate the presence of acidosis after sodium bicarbonate had been given, had also been observed. In regard to the reaction of the urine as a guide in acidosis to the amount of sodium bicarbonate to be given, care should be exercised in taking the alkaline reaction to litmus or the mistake of giving too much bicarbonate might be made. It was better to use an indicator that would change somewhere near the normal acidity of the blood. They had found cresol purple to be such an indicator.

**A Protective Therapy for Varicella, and a Consideration of Its Pathogenesis.**—Dr. ALFRED F. HESS and Dr. LESTER UNGER, New York, reported that during the past year varicella was widespread in New York and made its appearance in the admitting pavilions of the Hebrew Infant Asylum. An opportunity was thus afforded to attempt immunization. In all about thirty-eight children three or four years of age were vaccinated intravenously. None of these patients developed any local or general signs, nor any eruption suggestive of varicella. They were all in the course of the epidemic, unavoidably, in contact with one or more cases of chickenpox, but in spite of this proximity only one developed the disease; this one thirty-six days after the time of inoculation. Vaccinations of this kind induce neither local nor general reaction. The acquisition of immunity likewise indicates that the specific virus is contained in the vesicles. A simpler method of therapy, the application of the lymph to the broken skin or mucous membranes, failed to bring about satisfactory immunity, although it also occasioned no disorder. These investigations have a secondary bearing as to the natural portal of entry of the varicella virus into the body. As the skin and mucous membranes in this connection can be excluded, it would seem most probable that the virus enters by way of the respiratory tract, and that contagion comes about through the air. This mode of infection would account for the almost unexampled communicability of the disease.

**Intrathecal Injections of Normal Horse Serum in the Treatment of Chorea.**—Dr. LANGLEY PORTER, of San Francisco, read a paper on this subject.

Dr. OSCAR M. SCHOLOSS related some of the results obtained in Doctor LaFetra's service at Bellevue Hospital where it had been attempted to follow out Doctor Goodman's treatment for chorea. They tried that treatment in twelve cases and those twelve cases did no better than twelve control cases that received no serum. Some choreics might have become better after the first, second, or third dose, but one frequently saw the same improvement in other cases that had not received the serum treatment.

Dr. CHARLES HERRMAN, of New York, asked whether a certain amount of spinal fluid was removed before the serum was employed. If the spinal fluid was withdrawn and improvement followed, it might possibly be due to relief of intraspinal pressure.

Dr. L. E. LAFETRA, of New York, said in speaking of Doctor Goodman's method of treatment, that it was not altogether a simple matter to draw off the

blood, keep it sterile, and then inactivate it. For some reason no success could be recorded in getting the brilliant results that Doctor Goodman had obtained, and he did not feel justified in continuing to use the treatment. Doctor LaFetra would like to see others try Doctor Porter's method, for he thought there might be some advantages in using other than an autogenous serum.

Doctor PORTER, in closing, said that in reference to what had been said of the psychological element in these cases of choreas he would like to quote from his paper. "Never can the psychical disturbances of chorea be overlooked and it might well be that the results which followed the use of sera are evidence of a successful, if unwitting, application of suggestive therapy." He formerly believed that chorea and rheumatism were an entity and that if the tonsils were removed the root of chorea was also removed. In connection with that belief he had had an interesting experience. A little patient was brought to him from a distance and he explained to the mother his belief that if the tonsils were removed the child would be improved or cured. The mother took the child home and had the tonsils removed and a week later wrote him that the child had shown no symptoms of chorea since coming out of the anesthesia. On the basis of such an experience one might think that anesthesia was a cure for chorea. The case simply served to show how fallacious are some of our conclusions in regard to the effect of various remedies employed for the relief of chorea. This report was only preliminary, but he felt that the severe cases were certainly benefited by the injections of horse serum. He hoped that others would follow up the treatment and find out what it was worth. He felt that it was better to withdraw more of the spinal fluid than the amount injected. All of these cases showed high intraspinal pressure. There was nothing to lead one to believe that there was an infection as the cell count and the globulin of the spinal fluid were normal.

**Medical Prophylactic Work in the Army; Its Application to the Civil Population.**—Dr. PAUL

ARMAND DELILLE, *Médecin Major de l'Armée Française*, related the history of the development of preventive work in tuberculosis and of child welfare work in France, and told what remained to be done in these directions at the present time. He showed that it was in France that the modern movement for the protection of infants and young children originated. After describing the work of the various agencies organized to protect the newborn, he stated that they had two laws designed to protect early childhood. The first law, the *Loi Roussel*, aimed to protect children placed by their parents in nursing homes. Every child confided to a wet nurse, to an ordinary nurse, or to another woman for its care, came automatically under government supervision. This surveillance was accomplished by the prefects in each department, who corresponded to the governors of States in the United States, and who were assisted by local committees. Every woman wishing to care for a child must furnish a certificate testifying to her qualifications. The second law, that of Senator Paul Strauss, was adopted shortly before the war, in

June, 1913, with the addition of certain amendments in June, 1914. It had to do with the protection of the mother during her pregnancy and of the mother and child for the first four weeks after birth. It permitted the mother to have complete rest and to begin the nursing of her child under the best possible conditions. Any woman worker, employee or domestic, or even one insufficiently supplied with funds, was authorized to leave her work without giving any indemnity, and the government provided a certain allocation during the four weeks preceding and following confinement. There also existed a law for the aid of large families. In addition to the Consultations de Nourisson or Baby Clinics and the Gouttes de Lait, there had been established since the beginning of the war Chambres d'Alaitement or "Rooms for Nursing" in the munition manufactories and other institutions producing war materials, where women were employed. In each factory there were set aside one or more rooms, well aired and kept perfectly clean, where the working women brought their children in the morning and returned at regular intervals during the day to nurse them. There was also added a room for the sterilization of milk in case supplementary feeding were necessary. There might also be added a restaurant where the mother might receive well chosen and well cooked meals at a low price. For the older children there were established "garderies" with rest rooms and play rooms, and a dining room where a diet was provided suitable to the child's age. Since the beginning of the war the problem of the protection of infancy had been made much more difficult owing to the fact that physicians from the age of twenty-five to fifty-five years had been mobilized, that money formerly given to agencies working for the reduction of infant mortality had been diverted to the war requirements, and that the birth rate had markedly fallen since the beginning of the war. Since 1916, a large number of societies had been formed to handle the problem of infant mortality. There had been opened in Paris, Lyon, and other large cities, asylums for pregnant women, day nurseries, etc. In order to furnish an efficient personnel for these organizations, there had been founded in Paris, under the auspices of the "Ligue contra la Mortalite Infantile," a Central School of Puericulture and lectures had been given on this subject for several years in connection with other organizations. The writer had himself given such a course. In 1917 the American Red Cross had arrived in France with its special department, the Children's Bureau. This had had a most astonishing success and had been able to group under its standard the best elements of the city, religious, civil, and political.

In speaking of the problem of tuberculosis among children Dr. Major Delille told of the various institutions for the treatment of active tuberculosis among children, mentioning more particularly the Rollier method established at Leysin in the mountains of Switzerland, by which children were exposed entirely nude, by successive stages, to the rays of the sun. He described the operation of the Grancher system which aimed to prevent tuberculosis among children, by preventing the propagation

of tuberculosis, in giving to its children a good moral education, and in bringing them back to the life of the country. The organization took children from three to fifteen years of age from families in which there was tuberculosis and placed them in healthy peasant families in the country. The children were seen daily by a physician who made the rounds of his special territory in a small motor car, seeing them in their foster homes and in the schools. Before the war the Grancher Society was caring for 810 children; the number was now reduced to about 400. The American Red Cross had been interesting itself in this work.

**Child Welfare Work in France.**—Dr. WILLIAM PALMER LUCAS, director of the Children's Bureau of the American Red Cross in France, described the work being done by the American Red Cross in France. He stated that this work was divided into groups, some working for the French army, some working for our own army, and some working for the civil population. This latter work was also divided into several groups, such as the work for the refugees who were continually coming into France, the tuberculosis work which was being carried on in cooperation with the Rockefeller Foundation, and the child welfare work. Doctor Lucas described his work in a hospital at Toul which was later occupied by soldiers. They then retired to a hospital farther back. When the maternity hospital at Nancy was bombed and then taken over for military purposes, fifty of the maternity cases were transferred to their hospital, so that they had a maternity as well as a children's hospital. This hospital had in connection with its work a number of traveling dispensaries that went out on certain routes among the villages and towns, making visits on stated days. With the present scarcity of physicians in France these traveling dispensaries fulfilled a very important function. Doctor Lucas described the work being done at Evian, which he said was much more spectacular than that just described. The refugees from Belgium and occupied France were returned to their country by a roundabout journey through Switzerland. These repatriates were mostly old people and children, since the Germans had taken all able bodied people who could do any useful work. The hospital at Evian accommodated 200 patients, and had in connection with it a dispensary. Since they had been at work there they had examined 38,000 patients. It was the Ellis Island of France. They had there a very remarkable system for cleaning up and disinfecting the people who passed through this station. There were about 500 persons arriving daily and as the town was small these had to be handled very expeditiously to avoid excessive congestion. Here they weeded out all cases of contagious disease and all cases of tuberculosis. There were similar groups of Red Cross workers at Lyon, Bordeaux, and Marseilles. Of special interest was the work in the contagious hospital at Evian. They formed cubicles by hanging sheets between the beds and by this method and careful nursing they had had only 2½ per cent. of cross infections, and had it not been for one case of measles in which a mistake was made they would have had less than one per cent. of



cross infections. The Red Cross Bureau of Child Welfare started in May, 1917, with only eleven members and had today 400. They started their work in one room of ordinary size and today they had for the Paris workers an entire floor of a large business building. There were at the present time fifty or sixty doctors, 150 nurses, and a number of other helpers engaged in the work. Doctor Lucas spoke at some length of the effect of the work of the Red Cross in strengthening the morale of the French people and said that even if the actual work that it accomplished was not valuable, although they all knew that it was of the greatest value, nevertheless it would be worth while, if only for its stimulating effect on the French people.

**The Massachusetts Child Conservation Committee.**—Dr. R. M. SMITH, of Boston, described how, through the work of a central committee, an educational campaign had been carried out in the State of Massachusetts and subcommittees formed in towns throughout the state for carrying on child welfare work.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**Commozione Cerebro-Spinale.** By Dott. F. PEDRAZZINI, Studio Anatomico, Clinico e Sperimentale. Dall'Istituto Anatomico-patologico dell'Ospedale Maggiore e dall'Istituto di Fisiologia sperimentale di Milano. Milano: Ulrico Hoepli, 1918. Pp. xv-170.

This is a brief but very full treatise based upon the principle of the conformation of the structure of the organism to its functional necessities. In this light the author has discussed the subject of cerebro-spinal concussion and the injuries resulting therefrom, particularly those unaccompanied by any anatomical evidence such as fracture. His discussion is based upon clinical experience, his own and that elsewhere recorded, as well as his own experimental work. He calls attention to the provision in the structure of the cranium and the spine, along with the anatomical provision through the divisions and appurtenances of the brain and spinal cord, to the adaptability on the part of these structures to the injuries to which the central nervous system is subjected. Of chief importance is the alteration in pressure of the cerebrospinal fluid and the adjustability of the cavity of the cerebral ventricles, and of the dural sac through its compressibility and extensibility. These anatomical factors are applied by the author to protection against injury actually sustained, in which a disturbance of these anatomical and physiological factors takes place. He relates them also to serious diseases of the central nervous system in which injury may have been sustained without fracture. He makes special reference to injuries sustained during the present war and asserts that in all these disorders this conception of injury should be taken into account. This necessitates a medical therapy instead of the surgery indicated by fractural injuries. And along with this, psychotherapy called for by psychic symptoms resulting

from these injuries must not be neglected. Various forms of such therapy are reviewed by the writer.

**Twenty-seventh and Twenty-eighth Annual Reports of the Eye, Ear, Nose, and Throat Hospital of New Orleans, La.** January 1, 1916, to December 31, 1916. New Orleans, 1918.

The city of New Orleans may well be proud of its eye, ear, nose, and throat hospital. To judge by the reports before us the work done in it is fully and favorably comparable to that performed in our largest medical centres, such as New York, Philadelphia, and Chicago. The connection of its various departments with such men as Souchon, Matas, Dyer, and Lynch is a sure guarantee of the high scientific standing of the institution, and the numbers of both clinical and hospital cases run into the thousands embracing every variety of pathological conditions of any importance in the domain of eye, ear, nose, and throat. The statistical data would furnish abundant food to the inquiring mind, for the dead figures are full of vital importance to the medical sociologist or ethnologist.

## Births, Marriages, and Deaths.

### Married.

LEWIS-CRAGIN.—In New York, N. Y., on Thursday, October 3d, Dr. Raymond W. Lewis, United States Navy, and Miss Alice Gregory Cragin, daughter of Dr. Edwin B. Cragin and Mrs. Cragin, of New York.

### Died.

BADGER.—At Skowhegan, Me., on Friday, September 27th, Dr. Omar Badger.

BENNETT.—In Philadelphia, Pa., on Wednesday, October 2d, Dr. John K. Bennett, aged forty-nine years.

BROWN.—In Nahant, Mass., on Wednesday, October 2d, Dr. William F. Brown, aged sixty-one years.

COBLEIGH.—In Clinton, Mass., on Saturday, September 28th, Dr. H. R. C. Cobleigh, of Berlin, Mass., aged thirty-two years.

COHEN.—In Boston, Mass., on Thursday, September 26th, Dr. Hyman Cohen, aged thirty years.

DEWITT.—In Towanda, Pa., on Tuesday, October 1st, Dr. William A. Dewitt, aged forty-one years.

DOERR.—At Camp Humphreys, Va., on Thursday, October 3d, Lieutenant Colonel Charles E. Doerr, Medical Corps, U. S. A., aged thirty-five years.

DUCLOS.—In Bridgeport, Conn., on Thursday, September 26th, Dr. William Duclos, aged forty-three years.

FLODEN.—In New York, N. Y., on Monday, September 30th, Dr. Max M. Floden, aged thirty-two years.

HAIGHT.—In Cedarhurst, Long Island, on Monday, September 30th, Dr. David L. Haight, aged seventy-nine years.

HARRINGTON.—In Norwich, Conn., on Tuesday, September 24th, Dr. Robert E. Harrington.

HARTLEY.—In Philadelphia, Pa., on Saturday, October 5th, Dr. William K. Hartley.

KAUFMAN.—In Brooklyn, N. Y., on Tuesday, October 1st, Dr. Irving Harry Kaufman, aged thirty-two years.

KENDRICKSON.—In Boston, Mass., on Sunday, September 29th, Dr. Joseph T. Kendrickson.

MARA.—In Boston, Mass., on Thursday, October 3d, Dr. Frank T. Mara, aged fifty-eight years.

SALVIN.—In Boston, Mass., on Wednesday, September 25th, Dr. Louis W. Salvin, aged thirty-one years.

SCHICK.—In Philadelphia, Pa., on Thursday, October 3d, Dr. William B. Schick, aged fifty years.

STARK.—In Norwich, Conn., on Thursday, September 26th, Dr. Clinton E. Stark, aged sixty-five years.

WELLS.—In Annapolis, Md., on Sunday, September 29th, Dr. George Wells, aged seventy-five years.

WOLFE.—In Philadelphia, Pa., on Monday, September 30th, Dr. Thurston Wolfe, aged seventy-six years.

YATES.—In Pawtucket, R. I., on Monday, September 23d, Dr. Cora Geneva Yates, aged sixty-six years.

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## Original Communications

### ERRORS IN DIAGNOSIS OF PULMONARY TUBERCULOSIS.\*

BY ABRAHAM TRASOFF, M. D.,  
Philadelphia,

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If I were to be asked: "What is the most important error one should avoid in the diagnosis of pulmonary tuberculosis in the army?" my answer would be: "The mistake of the overzealous in declaring a normal chest tuberculous." Such confidence in one's ability and such proficiency in diagnosis, undoubtedly imply a thorough knowledge of the normal as well as of the pathological lung—a comparatively rare combination in physicians. Few men, unfortunately, fully realize the importance of thoroughly knowing the normal chest in its manifold variations, in order to diagnose abnormalities, if present.

This lack of knowledge of the normal has its foundation in the medical schools, where insufficient training in the examination of the normal chest is given. The student—spurred on by his instructors—becomes more interested in the abnormal pathological conditions, and attains some ability in detecting these, without, unfortunately, acquiring similar facility in diagnosing a normal state. As he leaves the medical school to enter his service as hospital intern, he again is confronted with abnormal conditions only. And when, finally, he begins to practise medicine, he certainly has little opportunity to see many normal cases. As a result, he fails to acquire a knowledge of the "normal abnormalities"—if I may so express myself.

In civil life a mistake in diagnosis, whereby a patient is declared tuberculous, may be pardoned, as Colonel Bushnell truly remarks, since the treatment prescribed—rest and good food—will benefit even the nontuberculous, although many unnecessary and undesirable hardships may follow in the wake of such an error. In military life, however, mistakes of this nature are of greater significance. When the man power of the country is to be utilized for the benefits each can contribute during its emergency, it would be criminal to allow innumerable normal, healthy young men to go about idle, or perhaps to fill up sanatoria, merely because some few signs they presented were misinterpreted as evidence of tuber-

culosis. Such a condition of affairs occurred in France during the first year of the war. About 80,000 soldiers were discharged as tuberculous—of whom more than half were returned to full military duty in a very short time, with no abnormal findings, or with a diagnosis of some minor bronchial ailment. My personal experience as examiner for tuberculosis for the last ten months has led to the same conclusions. Often, especially in the beginning of my career as examiner in the army, owing to a rapid examination, I was inclined to declare a man tuberculous, for one can hardly afford to spend much time on these examinations, whereas at a later date, I would be astonished at the absence of the signs I formerly elicited, and mayhap wonder at my own suspicions.

It is not my intention to discuss the diagnosis of pulmonary tuberculosis in this short paper. That subject has been fully treated in textbooks and discussed in the literature, and little can be added. What I purport to do is to outline, as briefly as possible, some of the physical signs frequently encountered in the normal chest—a knowledge of which may obviate an incorrect diagnosis of pulmonary tuberculosis.

For the sake of simplicity, I have listed these signs under the four main methods of physical examination: Inspection, palpation, percussion, auscultation.

1. *Inspection.*—(a) Diminished expansion. This may be voluntarily simulated, if bilateral. (b) Dyspnea, tachypnea, jerky respirations. These, too, are often simulated. Especially is this encountered in a certain number of men who try to impress the examiner with their "illnesses" in order to evade military service. In my experience with this type of person, I found it a simple matter to demonstrate their malingering by diverting their minds to some ordinary topic of conversation—upon which their breathing becomes absolutely normal. (c) Drooping of a shoulder. This is very often occupational. (d) Asymmetry of the chest. This is a very common condition, due to: 1. Congenital malformation of bony framework. 2. Absence of muscle or part of it. 3. Atrophy of muscle. 4. Hypertrophy of left chest—in left handed persons. (e) Multiple scars on neck—evidence of a healed cervical adenitis. Such a finding does not signify that the man is suffering from pulmonary tuberculosis. On the contrary, it points rather to a greater resistance to the infection. (f) Clubbing of fingers and curving

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of nails (pulmonary osteoarthropathy), though very suggestive of chronic cardiopulmonary disease, does not, *per se*, indicate pulmonary condition. I often encountered it among negroes with normal heart and lungs.

2. *Palpation*.—This method is least used in our examination—especially when it is rapidly made. (a) Diminished expansion, and asymmetry of chest may be ascertained by this method. (b) Muscular rigidity, a condition frequently met with in pulmonary tuberculosis, may sometimes be found due to a transitory spasm of the muscles. (c) Tachycardia, so common among recruits, is frequently due to either vaccination or inoculation. Nervousness often plays a great rôle.

3. *Percussion*.—(a) Position. It is very important to have the recruit, or soldier, absolutely relaxed. Excessive muscular strain will result in an abnormal note. (b) Technic. I am not going to discuss technic in this short paper. Every examiner should familiarize himself, thoroughly, with the proper technic in standard textbooks on physical diagnosis. I only wish to state that one can elicit various abnormal notes in a normal chest, due to faulty technic. (c) A note of the same resonance throughout the entire chest is not to be expected. In the interscapular regions, as well as over the upper lobes posteriorly, there will be an impairment of resonance, in comparison with the note elicited over the anterior aspect of the chest, and the bases of the lungs. This difference is due to the greater musculature over the regions named. For a similar reason one must allow for difference in the percussion note between thin chested and muscular subjects.

4. *Auscultation*.—This method is, and should be the most important part of the physical examination. Most errors of commission can be ascribed to faulty interpretation of auscultatory findings. (a) Improper breathing. One can easily imitate: 1, bronchial breathing; 2, harsh inspiration; 3, prolonged expiration; 4, cogwheel breathing; 5, sibilant and sonorous râles. Such errors can be obviated by having the patient breathe through his mouth, somewhat more rapidly and more deeply than normal. (b) Muscular development. Harsh breathing is frequently met with among thin chested persons—particularly if the subject has engaged in athletic sports. Among negroes, too, harsh breathing is quite common. (c) Extrapulmonary adventitious sounds: 1. Muscle sounds. These often resemble crepitant râles, are dull, rumbling, or rhythmic in character and bear no relation to any phase of respiration. 2. Atelectatic râles at the apices. These usually disappear after a few forceful inspirations. 3. Marginal sounds. These are best heard in the infraaxillary regions between the anterior and posterior axillary lines—and occasionally at the bases posteriorly. They are usually best heard at the end of inspiration and are of a dry crackling quality. 4. Clavicular and sternocostal clicks, and stretching of the ligaments of the shoulder joint, while raising the shoulders, will often impress the inexperienced ear as râles. 5. Deglutition, after coughing, often resembles râles. 6. Creaks, heard in the interscapular and scapular

regions are, probably, fascial in origin. 7. Skin conditions, viz., rough and scaly skin (ichthyosis) and the presence of fine hair, may at times be misleading. 8. Presence of râles above of the clavicles with no other associated signs, does not, as a rule signify the presence of tuberculosis. 9. Harsh breathing at the left base is not to be considered abnormal. 10. The psychic state of the recruit must be considered in order to account for some apparent abnormalities.

Above all, and where mistakes are most frequently made, is in the diagnosis of fibrosis of the right upper lobe. This term is more misused than any other in physical diagnosis. I must confess that I, too, was guilty of this offense, during the first few months of my career as examiner. The normal, physiologic difference between the right and left upper lobes should be constantly kept in mind. To diagnose fibrosis of the right upper lobe on the slightest impairment of resonance, some increased whisper, and prolonged expiration over an area extending down to the second or even third rib, would mean to reject about forty per cent., or more, of our healthy manhood.

One fact must be borne in mind: When a man is diagnosed tuberculous, rejected, and returned to his local board for reclassification, he is placed in Class 5. Thereafter no practical benefit can be expected from him by the government, although he may be in no worse physical condition than the men who are serving in full military duty.

I lay claim to no originality in the material here presented. I am greatly indebted to various men, of national and international reputation—Colonel Bushnell, Pottenger, Riviere, Minor, Fishberg, and many others, for information on the subject of tuberculosis. I have endeavored to combine all their observations, in so far as I found they applied in my experience, and to present them in a small article, so that other examiners in the army as well as in civil life, might find the information at a glance.

## THE ENDOBRONCHIAL TREATMENT OF BRONCHIECTASIS AND BRONCHIAL ABSCESS.\*

*A Preliminary Report.*

By EMIL MAYER, M. D.,  
New York.

In yielding to the request for a preliminary report on the endobronchial treatment of hypersecretion in the bronchi, I do so with much diffidence—as my time of observation has been short, but with the hope that, through the interchange and discussion of experiences in the bronchoscopic treatment of similar cases, it may lead to conclusions which will result in benefit to these unfortunate sufferers whose constant cough, expectoration, and malodors render them doubly unhappy.

About one and a half years ago my then associate at the hospital, Dr. Sidney Yankauer, stated that he believed it would be possible to clean out a

\*Read at the First Annual Meeting of the Association of American Peroral Endoscopists, Philadelphia, May 31, 1918.

lung abscess by suction, wash it out, and apply medication through the bronchoscopic tube. With his masterly mechanical genius he made and perfected a double tube, the outer one to be attached to the suction apparatus on the left, the inner one to the irrigating apparatus on the right.

The method of treatment is as follows: A hypodermic of half a grain of morphine with atropin should be administered half an hour before treatment is begun, followed by thorough cocaineization, with cotton applicators, of mouth, tongue, pharynx, and larynx, from ten to twenty per cent. The patient should lie on his back with his head supported by a trained assistant, the bronchoscopic tube inserted, and a spray of two per cent. cocaine and adrenalin thrown into the bronchus to allay coughing. The excessive secretion in the bronchi is then withdrawn through the tube, by the suction apparatus, and ten ounces of warm salt water slowly introduced through the inner tube is at once withdrawn through the outer one. This method is to be used in the first or second bronchoscopy. The patient, showing no intolerance to the introduction of the fluids, finally receives a solution of iodine and carbolic acid (iodine two drams, carbolic acid fifteen mm. to one pint of water) in place of the salt water. This method of treatment was repeated twice weekly in each case, and as far as I know, with no serious results.

One of the patients is reported to have had a pneumonia after he had been washed out many times. The occurrence of that affection was not, in my opinion, a result of the washing, for he has since been washed repeatedly without creating the slightest disturbance.

In January of this year, Doctor Yankauer having entered the service of the government, I assumed charge of the laryngological department, by request of the board of trustees of the hospital, and these cases came under my care. I learned that those then under observation showed signs of improvement. In many instances the odor, which was overpowering when treatment was first begun, had practically disappeared; the amount of secretion was decidedly less in most of the cases; and in all the ease of expectoration was undoubtedly increased.

As the treatment of these cases would in all likelihood run over years before lasting results might be noticed, I realized the danger of incurring drug habits by the oft repeated use of morphine and cocaine twice weekly for an indefinite time, and consequently decided upon weekly treatments instead. This course, though undoubtedly prolonging the treatment, had with it the element of safety, by not engendering a habit that might be more serious in its results than the disease treated.

In each instance a record was made on the patient's chart each time he was treated in this manner, and in order to ascertain the number of treatments it became necessary to consult the records in the hospital. As this had to be repeated in each case, it meant a great deal of additional labor. I therefore devised a chart on which was placed the patient's name, the date, and the particular form of treatment used. As this was noted at each treat-

ment we were able in a moment to note what had been done for each patient, how many patients had been treated each day, and how many had received a given form of treatment. This table is herewith presented:

Name.	Sex.	Feb. 1.	Feb. 8.	Feb. 11.	Feb. 15.	Feb. 18.	Feb. 26.	Mar. 5.	Mar. 12.	Mar. 19.	Mar. 26.	Apr. 2.	Apr. 9.	Apr. 16.	Apr. 23.	Apr. 30.
B. M.	F.			I				T <sub>2</sub>								
B. S.	M.		S	S		I										
H. S.	M.		I	I		I	T <sub>2</sub>									
J. J.	M.		I	I		I										
J. H.	F.		I	I		I	T <sub>2</sub>	T <sub>2</sub>								
Sy. A.	M.					I	T <sub>2</sub>	T <sub>2</sub>								
G. J.	M.	B	S	S		I	T <sub>2</sub>	T <sub>2</sub>								
R. L.	M.					I	T <sub>2</sub>	T <sub>2</sub>								
F. H.	M.															

Bronchoscopic treatment; B, bronchoscopy; S, saline; I, iodine (figures indicate ounces); T tablet; T<sub>2</sub>, one half tablet; T<sub>2</sub>, two tablets.

A few of the cases were selected to receive dichloramine-T, in the form of chlorazene tablets, beginning at first with a solution of one tablet in ten ounces of water. The bronchus in these cases was first washed out with the salt water. A half ounce of this solution was used in the beginning, increasing to one, two, and finally to four ounces. No ill effects were noticed after its use.

In the three months I have been able to observe these cases, I have been ably assisted by Dr. L. G. Kaempfer, who had cooperated with Doctor Yankauer throughout the entire previous time. I feel greatly encouraged, in the first place, by the almost complete cessation of odor, and this, from the treatment thus far instituted, seems mostly to follow the use of iodine. There is also a diminution in the amount excreted; at any rate expectoration is very much easier. A very decided improvement in the physical condition of these patients was observed. As most of them have received treatment at various clinics without any improvement they are quite eager to accept this new form which gives them some hope of being able to mingle with their fellow men on terms of equality, and, perhaps, of ultimate cure.

So my report here is one of distinct progress, and is coupled with the belief that we have been able to demonstrate the ability of the bronchi to withstand the introduction of quantities of fluid without harm.

It is with the hope that some other drug or method may be suggested that would accomplish more than we have thus far been able to, that I present this report which otherwise would not have been made—certainly not at this time.

40 EAST FORTY-FIRST STREET.

#### Gastroenterostomy with and Without Suture.

—Doctor Estape (*Revista de Ciencias Medicas de Barcelona*, May, 1918) in comparing the suture with the button method describes excellent results with the Jaboulay button, which is a modification of the Murphy appliance. He has used this button in over a hundred cases and he has come to look upon it as the method of choice.



## NEUROTIC SYMPTOMS REFERRED TO THE EYES.\*

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"The eyes," quoted a patient, "are the windows of the soul." If this is true, it should not be surprising to find that neurotics, with their well known tendency to shift responsibility when their souls are in disorder, should complain of eye difficulties instead of soul conflicts. The psychoanalyst is struck by the large percentage of patients suffering from neurosis who have worn or are wearing glasses, or refer their symptoms to their eyes. They describe their disability as weak eyes, blurring or dazed vision, astigmatism, eye strain, etc., and usually have been treated for such by physicians.

The eyes in such cases have been used for erotic gratification to an extent which the patient considers incriminating. It has become almost axiomatic in psychoanalytic experience to find that no organ, not specifically sexual, can be utilized intemperately for erotic satisfaction without impairing to some extent its ability to fulfill its normal duties. When there has been excessive utilization of eyes, for purposes which the patient believes incompatible with their proper function, subjective ocular disability is apt to result.

From the category of cases I wish to describe, it is necessary to exclude those where there have been scant complaints referable to the eyes, but in which glasses have been prescribed without adequate reasons, as a wild hazard that the neurotic symptoms might be alleviated in this way. Such a case is exemplified in a young man, a doctor's son, whose father in his perplexity over the son's nervous condition, consulted his colleagues, one after another, until an ophthalmologist suggested that the condition originated in eye strain which glasses would rectify. Upon analysis it developed that the "nervousness" euphemistically designated a stubborn fear of insanity, which had followed upon a fear of hypnotization, which, in turn, rested upon a masturbation complex. Since childhood he had been in the habit of stealing his mother's and the servant girl's shoes, against which he would masturbate. Subsequently, he would look at the shoes of women longingly for erotic gratification until he became ashamed to look at them. Headache and eye symptoms developed, but the former was more prominent in this case. In many respects the mental mechanisms paralleled those which will be described more in detail in connection with another case which follows. Needless to say, the fear of insanity was not altered by the attempt to correct the headache, merely one of its symptomatic by-products. However, it became possible for the patient permanently to discard the glasses as his mental disturbance came under control.

Frequently, patients report that the ophthalmologist, at the time of applying the glasses, had himself expressed doubt as to the physical validity of the disability and even as to the wisdom of his

course, and had cautiously suggested that the glasses be worn tentatively. In such cases, however, after once adopting glasses, the patient seldom discontinues their use, because of the psychic comfort he derives from them.

Occasionally vague conceptions as to the subjective psychic reaction to the avowed visual defect crept into the consciousness of my patients. One woman remarked, "I always see better when I feel mentally better." Again, when eyeglasses were prescribed for the sister of a doctor, in the vain hope that her headaches, due to a neurotic condition, might be alleviated, she felt that the "glasses formed a veil which permitted her to see without being seen;" and another patient under similar circumstances accepted glasses because he thought they "formed a shade" which would "obscure the dark circles under his eyes" which he attributed to masturbation. The facility with which these eyeglass wearers are able to see clearly after their neurosis has been cured seems corroborative of the nervous origin of the eye disorder. Mental adjustment appears to render further adjustment of glasses superfluous. It has been said that there are none so blind as those who won't see—and many a person possesses, more or less consciously, extremely good reasons for not wishing to see, and even more particularly for not desiring to recognize that he is, or may be seen. In this latter type, the glasses sometimes afford a psychic equivalent of blinding the patient's appreciation of the dangers of reality.

CASE I.—A male, American, aged twenty-four years, was referred to me primarily because of a terrifying sensation of pressure between the symphysis pubis and the umbilicus which occurred about six o'clock every morning. For the purpose of this presentation it is not necessary to trace the origin of this manifestation, but he numbered among his various neurotic symptoms also a blurring of vision and aching eyes, for which he had worn glasses for several years. It is the origin of the ocular disturbance, which became apparent during the analysis, that is pertinent.

From the age of nine to twelve the patient had masturbated nightly, but then discontinued because he had been told that masturbation caused insanity. At eighteen he resumed the habit, and for the two years prior to consulting me he had been indulging frequently in masturbatio frustrata, i. e., exciting himself to the point of orgasm but never allowing orgasm to occur because of the belief that the ejaculation itself was the specifically noxious feature of masturbation which produced insanity. Later, through a childish but nevertheless persistent misinterpretation of a chance remark, the patient gained the idea that the nerves of the body were gathered together in the greatest number in the glans of the penis. The penis became for him the nerve centre, and he inferred that during the phenomenon of erection of the penis the nerves were stretched. He had also learned that many nerves were in the eyes. Naturally this would be impossible without a complementary pull at the distal attachment of the nerves, namely, at the eyes. So, according to his reasoning, it followed that with the contraction of the penis after erection and consequent release of tension on the eyes, the latter would pop forward and become bulging.

For some years he had noticed a feeling of vertigo, most pronounced after masturbatio frustrata. When the symptom became intolerable, he consulted several physicians, who told him that the vertigo was merely nervousness. From other data he had determined that nervousness was but an euphemistic synonym for insanity. Insanity (nervousness, i. e., a disease of the nerves), he had been told, was a brain disease, and he therefore inferred that the brain must be situated where the nerves were most numerous, namely in the penis.

On the other hand, he had been told that insanity showed

\*Read before the Section in Neurology, New York Academy of Medicine.

itself in bright eyes, and he further reinforced his theories by the belief that masturbation, in addition to producing insanity, also caused bulging eyes. Thus in the patient's psyche rested the consciousness that he had indulged in all the factors necessary for the development of eye trouble. From these corroborative and interlocking bits of misinformation, it is not strange that he should have become convinced from frequent and prolonged examinations before the mirror that his own eyes were both bright and bulging—in other words, the brightness revealing incipient insanity (vertigo = nervousness, nervousness = insanity), and the bulging indicating the masturbation (masturbation produces bulging and vertigo, vertigo is nervousness).

He felt convinced that he justly deserved the affliction of the eyes, for through the abuse of his penis, the nervous centre, due to repeated stretching, he had necessarily affected the complementary nervous centre, the eyes, causing them to be bright and prominent. Having concluded that his eyes were revealing the results of his practice, before long he experienced an indistinctness of vision, for which he sought relief from an ophthalmologist. Glasses were applied, which the patient was wearing when he came for analysis.

During analysis it became obvious that the patient suffered from a deep seated fear of insanity which he thought his eyes revealed, and unconsciously he began to refer all his symptoms to his eyes. This convenient displacement naturally proved much less embarrassing to him in applying for medical treatment than his sexual difficulties would have been. At the same time the glasses guarded from the world the knowledge of his impending insanity, as through them the bulging and brightness were diminished and obscured to persons looking at him. The visual difficulty was the first of his many symptoms to yield to analysis, as the displacement came very close to being conscious, and for three years, he has been getting along perfectly well without glasses.

It has been pointed out that displacements of this type to the eye could not occur so readily, were it not for the great libidinous value which is attached to the eye. This circumstance is further enhanced in the male by a number of physical resemblances between the eyes and the genitals, particularly the testicles, through their form, changeable size, mobility, great value to the individual and their sensitiveness.<sup>1</sup>

Misconceptions of a type similar to those in the case just cited, based on erroneous childish misinterpretations, are not so infrequent as those who are conversant with physiology might be inclined to believe. Thus a patient, a librarian, aged twenty-four, also an eyeglass wearer, suffering from a severe ocular locomotor disorder, had since girlhood paid especial attention to the interpretation of character through the eyes. Her knowledge of eyes, however, not only constituted a means of judging others but became a boomerang of self reproach, in that she felt that her own character, which she believed unrighteous, was revealed through her eyes. In this connection she significantly remarked: "When I talk with people I'm always thinking of their eyes to tell if their thoughts are pure, but I am worrying more what they see in mine." Evi-

dently what she thought they beheld was not entirely in accord with what she would have desired them to see, for she further commented: "It hurts to look oneself in the eye. Particularly it hurt me, because I knew what was there. I was so sick and tired of myself."

So too, the sense of sexual guilt based on certain early homosexual experience, is revealed in the following remark: "When I saw myself in a mirror during my bath, I thought it was not right. It reminded me of Liza in Pygmalion, who was not good; and I thought that I was not good." The defensive action of the eyes in guarding against aggression is expressed by the statement: "When I was a child and we played kissing games like post-office, if I were chosen I went out of the room with the boy and just stared at him. He wouldn't kiss me."

On the other hand, she felt herself able to determine a person's character by his shoes, but only if the persons were actually wearing them. When sitting in the subway she would study the shoes of the people opposite her to make character analyses. It is not surprising, in view of the importance she attached to shoes, that she spent a hugely disproportionate amount of her meagre income on expensive shoes. In analytic terms her fine shoes compensated for her unsatisfactory morality.

The whole ocular locomotor complex reverts to an idea of physical connection between the feet and the eyes, analogous to the stretching concept in Case I. When a child of perhaps six, she had broken open the abdomen of her bisque doll and there had discovered an elastic cord lying on the back of the doll. On pulling the elastic, she found it attached to both the legs and the eyes and concluded that they must always move harmoniously in the human being. In later years, when she found difficulty in making her eyes behave in conformity to her ideals of morality, she stumbled and staggered so that she could barely cross a room if she felt herself under observation.<sup>2</sup>

CASE II.—A Russian Pole, aged twenty-four, referred by Dr. I. Strauss, complained of uncontrollable and feverish blushing and the feeling that he was an outcast whenever he came into the society, even that of his own people and friends. These symptoms had naturally greatly interfered with his advancement in business and with his social enjoyments. As the analytical basis for these complaints ramifies interminably, I shall mention only that portion of his history seeming to account for his eye symptoms, for which he had long worn glasses.

From the age of five the patient has been an insatiable voyeur—a condition, in this case, coupled with an immutable foot fetishism. Although this did not constitute one of the specific reasons for the patient's seeking medical aid, it nevertheless tormented for him a very vital problem, as it diverted much of his energy from work and normal pleasures. He often spent hours walking the fashionable thoroughfares, following a pair of well fitting shoes on a woman. His interest in shoes had arranged itself into definite levels of satisfaction—thus a low heeled oxford shoe would hold his attention only transiently, whereas a high heeled low shoe aroused him more. The low heeled boot excited him more than the high heeled oxford, but in the high heeled boot rested an irresistible attraction. When the fancy high boot, short skirt mode became fashionable about 1915, he spent days in the torturing pleasure of following one pair of shoes after another up and down the streets.

<sup>1</sup>An analogous association between the eyes and the genitals on the basis of both being sensitive organs which might conceivably persist unmodified to adult life, was reported to me by a mother. She had reminded her nine year old boy whom she found playing with his genitals, with the warning that he should never touch those parts except when necessary for urination as they were the most delicate organs of the body. To her surprise he vigorously defended himself by retorting, "Mother, how can that be so? The teacher told us the other day that the eyes were the most delicate organs of the body."

<sup>2</sup>The analysis of another ocular locomotor syndrome appears in the *NEW YORK MEDICAL JOURNAL*, July 22, 1916.



His first recollection of emotional interest in shoes dates back to the age of five, when a young woman, who had come from the country to be married, stopped at his home for a brief repose before the ceremony. Dressed in her wedding gown, she lay down on a couch, where she fell asleep. While she rested, the patient stealthily crept to the couch and kissed her shoe, a high black shoe, which she had left exposed. This original fixation may possibly account for the peculiar levels of satisfaction in the form of shoes. Even at so early an age a sense of guilt overwhelmed him, implicating, of course, some previous analogous though forgotten experience for which he must have been censured.

This patient has never masturbated in any of the familiar forms, but apparently has secured very complete and constant gratification from voyeur experiences. Thus, as a boy from the ages of ten to seventeen, he slept in a room adjoining that of his older sisters, whom he would stealthily watch at their toilets. This would produce prolonged erections without emissions. About his thirteenth year, the odor of one particular sister's high shoe so aroused him that he would kiss the shoe passionately. Shortly after his emigration into America, at the age of seventeen, he became an assiduous frequenter of the burlesque performances, which seemed for a time to satisfy his desires. In order to gratify his craving to see more fully, he purchased opera glasses, which he used even when his seat was near the stage. At this period, and subsequently, he also used these glasses for spying on the neighbors, so that complaint was lodged against him with the police.

Up to his nineteenth year, whenever he experienced ardent sex desire, he found it possible to appease it by accosting some street prostitute and asking her if she would disrobe for him. The usual affirmative reply sufficed to relieve him temporarily. So, too, a visit to a house of prostitution, where he would pay some woman to disrobe, proved adequate for sex relief. When he indulged in intercourse for the first time at nineteen he found himself compelled to kiss the shoes of the woman before relationship, and subsequently discovered that he was impotent unless the woman kept on her shoes.

On the whole, normal sex relationship appealed to him comparatively little, as his voyeur experiences were more exciting and emotionally gratifying. They have led him into all sorts of perilous climbing expeditions over fire-escapes in order to spy, and also to elude his pursuers who at times gave chase after they had detected him at their windows. Once, when watching a woman disrobe from a neighboring fire escape, he became so excited that he sent a brick crashing through her window and fled precipitately. On another occasion he avoided arrest, after being caught by a life guard under the bath houses at the beach, by volunteering to accept summary punishment at the hands of his captor.

Hand in hand with his spying proclivities are exhibitionistic tendencies almost as pronounced, which likewise revert to vivid childhood impressions. As a child he was considered an exceptionally good looking youngster and called the red cheeked beauty by his teacher. He made every effort to attract her attention, and at times would drop articles on the floor of the classroom, so that she would notice him and so that, at the same time, he might catch a glimpse of her shoes as he stooped to pick up the objects. There are many other tangible evidences of the close interrelationship between the voyeur and exhibitionistic tendencies exemplified upon the same sexual object. For example, when he follows a woman in the street, he experiences a strong desire to have her glance around and see him, notwithstanding his lack of personal physical attractions. However, he has adopted many artifices which he considers make him appear comely, or, correctly speaking, more conspicuous.

While the exhibitionistic tendencies have not been quite so dramatic as the voyeur, they have been extensive, and have at times violated the criminal codes against indecent exposure. A less obvious example of this tendency is evinced in his habit of always arriving late at a party or going away early, whether there was necessity for it or not, so that all eyes may be upon him in noticing his entrance or departure. So, too, he dislikes being in a crowd because he feels that he is so obscured by the number of people that his personality cannot be appreciated. When he once

attended a baseball game he could not enjoy it because of the recurrent idea of thousands of people applauding the players on the field, who were so conspicuous, while he remained unnoticed in the grandstand. He has never gone again.

*Analysis.*—It is not unnatural, perhaps, that one whose main recreations in life consisted in spying and pathological exhibitionistic activities, which led him into all varieties of unsavory encounters of which he felt thoroughly ashamed and alarmed, should be apt to refer symptoms to that organ through which the effects of such activities were transferred to his psyche. The next step would be to seek some means of protecting the eyes, and himself, against the results of such habits. About the age of twenty, a date which closely corresponds to some of his most disagreeable experiences, the patient began to notice difficulty with his vision. He found that he could not distinguish objects sufficiently well across the street, and therefore applied to an ophthalmologist, who prescribed glasses.

The reaction of the patient to the glasses is enlightening in that it appears to reveal what were probably the unconscious motives which led to their application. When he put on the glasses he thought of them as forming a partition between himself and the outside world. Thus he felt that they would be a protection, inasmuch as people could not see him so well while he was seeing them unchallenged, and he would not have to blush when he looked the world in the face. To his surprise he found that he could see too well with the glasses but, notwithstanding his annoyance at this, could not prevail upon himself to discard them.

Moreover, he felt a certain amount of embarrassment while he was wearing glasses and developed the habit of taking them off whenever he met any one whom he knew intimately, because he felt that such persons would think that it was not right for him to wear them. This attitude of mind, it seems to me, had its origin in the knowledge of his intimate self. He felt more or less conscious of the fact that the use of glasses was unwarranted by actual disability, and that this knowledge was projected on the intimates of his acquaintance. (They would feel that way, if they knew the truth). Moreover, his very peculiar custom of wearing glasses only on the street, due to the belief that people would consider it suspicious if he wore them in the house, seems likewise a projection to others of his own feeling of guilt, at the employment of glasses indoors—opera glasses—for forbidden purposes.

An interesting compensatory symptomatic habit in the whole affair appears in the frequency with which he broke his glasses, usually at least once a week. In the light of the patient's conflict, this frequent accident appears to me as symbolic, not only of unmasking himself, but at the same time of the desire to rid himself of the necessity for wearing his glasses, that is, breaking his glasses symbolically overcomes his sexual abnormalities. The patient also believed that the glasses enhanced his personal appearance and made him more conspicuous on the street (fulfillment of exhibitionistic desires).

In this case, then, the glasses accomplished a triple function, pandering to the patient's desire to see, to be seen, and not to be seen. According to the in-

terpretation which seems most plausible, the feeling that he is not seen also permits him to see better. The glasses prevented passersby from noting that he was eying them, and for just this reason he felt free to gaze at them without restraint, with the result that his undisturbed gaze, in contrast to his previous furtivity without glasses, led to the complaint that he saw too well. The feeling that glasses afford distinction, i. e., make one more apt to be noticed, is not uncommon among wearers of glasses. For some years now, subsequent to analysis, the patient has been able to perform his work, jewelry designing, which demands close application of the sight, without glasses, and he finds that he can see across the street sufficiently well for all legitimate purposes; and he has substituted more normal activities for the illegitimate ones.

CASE III.—A ticlike blinking of the eyes formed one of the minor symptoms of a male patient, aged twenty-six. This man, a very vain, physically rather undersized person, constantly wished to be admired and courted by both men and women (unconscious adult homosexuality with a number of actual homosexual experiences in boyhood). He had always considered his eyes his chief physical attraction, ever since his mother had first admired his pretty brown eyes when he was still quite a young child. He cannot recall any one else praising his eyes, though he occasionally would solicit such approbation by appealing to his mother for a compliment when she would comment on the beauty of his younger sister's wonderful black eyes. On such occasions she consoled him by saying that men's eyes need not be so attractive as women's, but that his were exceptionally fine for a man. In the course of the analysis, it was pointed out to the patient that his tic represented an unconscious effort to attract attention to himself through the eyes, and the symptom disappeared entirely.

Some time after the disappearance of the tic the patient related the following incident to me. He had, in a subway car, noticed a neatly dressed, middleaged woman across the aisle. She had stared at him rather intently, and he, inferring that her fixed gaze might be construed as an invitation to a flirtation, winked at her several times. She continued to stare, but with indignation and wrath in her eyes, and finally, just before she left the car, walked over to him and upbraided him for his insolence, saying, "How dare you wink at me?" Whereupon the patient replied suavely, "Why, madam, I did not wink at you at all. I suffer from a nervous trouble with the eyes." His retort apparently did not satisfy the irate woman, who struck him sharply across the face with her glove and left the car.

This incident is pertinent in connection with the patient's mental attitude at the time he made his remark. The thought almost simultaneously flashed through his mind that in case of arrest he could have me, his physician, appear in court and testify that he suffered from a nervous, involuntary uncontrollable blinking of the eyes. In this instance the patient consciously utilized the wink for the purpose for which he had developed unconsciously his blinking tic. When his conscious act had led him into a critical situation, his mind immediately discovered an excuse in the pathological symptom, unconsciously developed for the very purpose for which he had employed the wink, namely, to attract attention for flirting (sexual) purposes. Thus his malady, unconsciously originating for flirtation, but because of its unconsciousness releasing him of responsibility, is called upon as a propitiation for wilful offense—a type of mental defense reaction particularly frequent in neurotics.

In this presentation I have intentionally avoided reference to the eye as itself a symbol of the geni-

tal, though such instances have not been lacking. Thus, one patient, aged thirty, who had suffered many sex traumata as a very young child—including assault at five, witnessing parents in intercourse at six, and incest with her brother at ten—went to a free clinic of her own accord to have glasses adjusted for aching eyes at the age fourteen. At the time she went to the clinic she felt ashamed of being seen, and very guilty, as the dispensary had been endowed for the poor, and her family was considered wealthy. One of the symptoms of which she complained at the time of analysis was a twinge in the left eye whenever she told a lie—a symptom partially determined by the deception which she perpetrated at the dispensary. Even before she experienced the sensation of aching eyes, she had formed the habit of covering her left eye with her left hand. In addition to the almost universal connotation of 'wrong implied to left—left is not right—to this patient left indicated that she resembled her father, who was left handed. At the same time the father represented to her the personification of all that is gross, sensuous, and vulgar. Thus when she made a new acquaintance, she would use her right hand for shaking hands and her left for covering her eye.

The eye possessed a symbolization for this girl of the female sexual organs analogous to that previously cited for the male. The origin of the association appears in the following riddle which she thought very amusing as a child of twelve, and with which she enjoyed shocking her girl friends:

"Round like an apple,  
Shaped like a pear,  
Split in the middle,  
And all around hair."  
What is it?

When they appeared abashed, she would remark, "Why, that's the eye."

That this sex significance of the eye continued, is revealed by her remark, "When I was introduced to J. T. at sixteen, I covered my eye because I was ashamed to show my sex, I mean my sex feeling, you can see almost anything through the eye."

In another case, that of a young man of nineteen, referred by Doctor Strauss, for a compulsive fear of putting out his eyes, there was much to warrant the opinion that the eyes themselves symbolically represented the genitals and the fear indicated an unconscious wish for castration. In this case, there likewise existed a double determination, in that this individual was also unusually exhibitionistic; and blindness in his mind was intimately associated with the ideas of sympathy and attention lavished upon blind persons, together with the notion that blind people have splendid voices.

I have refrained from dwelling on the very powerful and extensive influences which the eye has exerted in superstition and legend from the earliest age, as the Cyclops, the Evil Eye, etc. So far as this brief presentation goes, I might recapitulate as follows: "The eyes," quoted a patient, "are the windows of the soul." "The glasses," mused another, "are shades for the eyes." Some people who live with untidy souls unconsciously find it feasible to put up shades.

249 WEST SEVENTY-FOURTH STREET.



# INTESTINAL STASIS, ILEOCECAL VALVE INCOMPETENCY, AND CHRONIC APPENDICITIS ROENTGENO- LOGICALLY CONSIDERED.

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## INTESTINAL STASIS.

It is due to the work of Lane that considerable attention has been paid to the subject of intestinal stasis, since it has caused many discussions and led to numerous controversies.

The prevailing opinion today is that the immediate factors which serve to bring about intestinal stasis are mechanical in nature. The origin of these factors, however, has been the subject of considerable dispute, the Lane (1) and Jordan (2) school claiming that they are due to various impediments along the intestinal tract. This is exemplified by bands, kinks, adhesions, membranes, veils, etc., which may take place anywhere along the intestinal tract, but chiefly at places of predilection, such as the duodenojejunal junction, ileocecal junction, cecum, ascending colon, the flexures, and at the junction of the iliac and pelvic colon. These bands form mechanical obstacles and cause obstruction in the drainage of the food and feces along the alimentary canal, with resulting stasis. This is characterized by constipation and an accompanying toxemia, and may also give rise to secondary inflammatory conditions involving the appendix, cecum, and colon. These bands usually occur at weak points and are formed in the lines of stress, to act as additional support, occurring more in some persons than in others—chiefly in the status enteroptoticus of Stiller. These bands may also be the result of local peritonitis as sequelæ to various conditions such as a typhoid ulcer, or a paratyphlitis resulting in adhesions, often matting together loops of intestines or kinking the lumen by bands, and thus giving rise to the condition of stasis and its accompanying pathology above mentioned.

The other school, with Case (3), Kellogg (4), and others at its head, deny that stasis, with the exception of a limited number of cases, is due to these mechanical obstructions. They argue that in many patients the bands and membranes are found without causing the symptoms of stasis. Also that some of these are congenital in origin, being often found in infants. They attribute the etiology of iliac and colonic stasis to a disturbance in the neuromuscular apparatus of these organs, being reflex in origin, or, as some claim, due to endocrine changes. The result is a disturbance in the physiological function of the large intestine as well as the terminal ileum and ileocecal valve.

In order to fully understand this disturbed function it is necessary to make a brief survey of the morphology of the large intestine as well as the physiology of the peristaltic movements. The colon is a tube of different calibres at various locations. It assumes in the human body more of a rectangular position, beginning with the cecum in the right

iliac fossa, the caput cecum reaching, in the upright posture, the iliopectineal line. At the inner portion of the cecum, about two or three inches from its lower border, the ileum enters into it. Three quarters of an inch below the entrance of the ileum the appendix takes its origin. The cecum usually has an upward mobility of about two or three inches. The capacity of the cecum and ascending colon is far greater when compared with a similar length of any other distal portion of the large intestine, exceeding it several times. The ascending colon merges into the hepatic flexure which reaches as high as the costal margin. Here the colon is folded, as a rule, upon itself, varying with the type of individual, sometimes with the appearance of a double barreled shot gun, and often pulling down the proximal portion of the transverse colon as low as the cecum. It is here that adhesions may take place and assume the form of veils or Jackson's membranes, which can be ascertained on röntgenoscopic examination by testing the separability of the folded flexure.

The transverse colon varies again with the type of the subject. Its position is high in the status

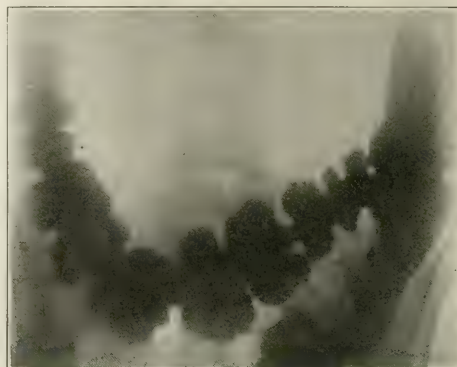


FIG. 1.—U shaped transverse colon; cecum prolapsed into the pelvis. Note the prolonged retention. This picture was taken fifty-five hours after the administering of the barium meal. The patient suffered from reflex cardiospasm; it was always relieved by cleansing of the bowels.

epilepticus, hugging the lower border of the stomach, which is likewise situated high in this type of subject, reaching sometimes several inches above the interspinous line. In the tall, slender person, or the status of Stiller, the transverse colon assumes the V or U shape type (Fig. 1), reaching a number of inches below the interspinous line, sometimes reaching as low as the os pubis. The transverse colon has the greatest range of motion, upward and downward, of any organ in the human body.

The splenic flexure is higher than the hepatic flexure, and reaches as high as the lower border of the spleen. The descending colon is narrower. It has a capacity of less than one third when compared with an equal length of the cecum and ascending colon and about one half of that of the transverse colon. As it descends to the iliac fossa it is called the iliac colon. It joins the pelvic colon in the

pelvis. The mesocolon at this junction is short; hence there is a limitation of motion of the colon in this region. The pelvic colon is very variable as to length, and has a free range of motion.

Considering peristalsis, Cannon (5) observed in his studies on the lower animals that the prevailing peristaltic motion was in the opposite direction, i. e., antiperistalsis, also called anastalsis. He noticed



FIG. 2.—Mass movement. The mass of feces has just rounded the splenic flexure and is being pushed into the descending colon; note the sausage shaped form and disappearance of the haustral markings.

the formation of constriction rings which pulsed and from which a series of waves started, always going in the opposite direction from the transverse colon toward the cecum. Since then observations have been made in man, which corroborate to a certain extent the findings of antiperistalsis. This motion is usually confined in man to the right half of the colon, the tonus or constriction ring being noticed in the proximal portion of the transverse colon close to the hepatic flexure, from which a series of shallow waves pass downward and backward along the ascending colon toward the cecum. About four or five of these waves are seen per minute, for a period of five or six minutes. Their function is to cause a greater retention of semi-fluid fecal contents in this region for the absorption of water and also of any food that may have been left unabsorbed in the lower ileum.

As further proof of the antiperistaltic movement of the large bowel in man, it is worth while to mention here that it takes place in all such plastic operations as ileosigmoidostomy, performed by Lane and others for the relief of intestinal stasis. The feces are carried back from the sigmoid stoma by antiperistalsis toward the cecum and may be retained in the large bowel for days, thus forming a great obstacle for the successful establishment of the new

route and defeating the essential scope of the operation. Aside from this, the movements in the colon may be described as follows: 1. The haustral markings described by Schwartz; 2, the mass movements described by Holzkecht in 1909; and 3, the pendulous or oscillating movements described by Rieder.

The large intestine is mostly in the quiescent state throughout the day, except for a few moments several times a day, when movements take place which deal chiefly with the onward propulsion of feces. The time at which these movements take place is usually associated with the introduction of food into the stomach, respiratory movements, or, sometimes, emotional causes. When observed roentgenologically the distal colon assumes the shape of a segmented tube, the so called haustral markings which are the result of the circular muscle fibres contracting upon the longitudinal; the longitudinal bands, being shorter than the circular, cause a certain folding, or the formation of plicae or sacculations. These sacculations are continuously present and are somewhat analogous to the segmentation of the small intestine as regards function. A constant churning takes place here, subdividing the fecal mass in small separate scybala, exposing as many surfaces as possible for the complete absorption of fluids. The consistency of the feces in these regions is usually solid. When a mass movement (Fig. 2) is to take place the bowels suddenly lose these haustral markings and are formed into an ovoid, cylindrical, or sausage shaped mass with smooth edges. A firm contraction takes place in the circular fibres, which is passed along, with the re-



FIG. 3.—Distended cecum and stasis beyond sixty hours.

sult that the contents are pushed steadily by an even pressure from behind forward, thus advancing along the gut, and bending around the flexures as it traverses them. This whole procedure takes place in a few moments, traveling about twice as fast as the peristaltic wave of the stomach. The



distance of the shifting may be from eight to fourteen inches or more. Immediately after this has taken place a gradual readjustment of the haustral markings is seen and the bowel returns to its previous condition. All this takes place without any consciousness on the part of the subject, except in



FIG. 4.—Ileocecal incompetency. Note leakage of enema into ileum, filling up practically the whole of small intestine; appendix is also filled and seen curled up. This patient had marked symptoms of intestinal toxemia.

pathological conditions, such as colitis, when he experiences the griping pains of colic. The movements of Rieder do not deal with the propulsion of the mass, but are various oscillating motions recognized as preparatory to mass movements. The total time of emptying the large intestine is considered to be about thirty-six hours, a stimulus for defecation only taking place when the mass has reached the rectal ampulla, thus causing the irritation of the sensory nerves.

A disturbance in function manifests itself invariably at first in increased tonicity and spasticity along the colon. The starting point is usually at the constriction ring in the proximal portion of the transverse colon, above mentioned. With increased tonicity at this point a greater number of antiperistaltic waves take place, both in frequency and in depth; they travel backward along the right half of the colon toward the cecum. The result is longer retention of the fecal contents, fermentation, putrefaction, gas formation, distention of the cecum, leading gradually to a permanently distended and atonic cecum (Fig. 3). The transverse colon later, under the influence of the same disturbing factors, assumes also a greater tonicity of its muscular walls and gives rise to the well known spastic type of colon. This is characterized by a narrowing

of the haustral sacculations, giving, instead of the broad haustral markings, the appearance of a narrow strip which varies according to the intensity of the spasticity. The result is a prolonged retention of the hardened fecal scybala, which is a typical finding in the spastic type of constipation, also called hyperkinetic constipation. Usually these changes are found throughout the entire distal colon. The vicious circle is hereby established, the greater the retention of the fecal contents the greater the spasm of the tonus ring and the greater the frequency of the antiperistaltic waves, continuously damming back the contents in the right half of the colon.

#### ILEOCECAL VALVE INCOMPETENCY.

As a result of increased pressure and distention of the cecum, another pathological factor is introduced. The ileocecal valve becomes incompetent and allows the fecal contents to escape from the cecum back into the ileum. According to Cannon (5) the ileocecal valve is proved to be competent. With the exception of two cases, in hundreds of experiments he made on the lower animals, he found no incompetent valve.

Looked upon from an anatomical standpoint, the ileocecal junction becomes a sphincter, in virtue of the inward obliquity of the insertion of the terminal ileum into the cecum and the invagination of the several inner layers of ileum. When the pressure in the cecum is at a normal ebb this anatomical position is preserved, but with greater distention of the cecum with gas and fluid, the walls are actually pulled apart in a lateral direction, thus causing gapping, and thereby destroying the valvular effect.

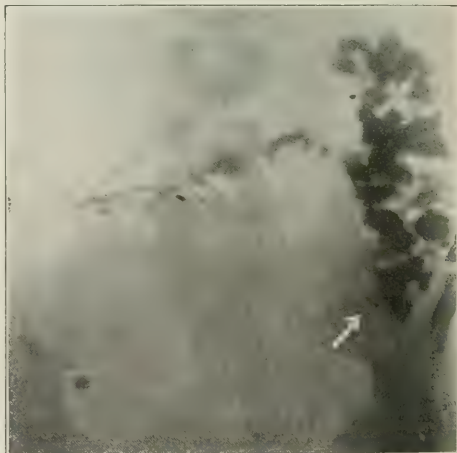


FIG. 5.—Infective colitis; diarrhea associated with stasis in the cecum and ascending colon; a fixed and tender appendix; relieved by the removal of the appendix.

The terminal ileum tries at first to overcome this by a hyperperistalsis and a hypertrophy of the muscular fibres. When this fails leakage takes place.

The function of this valve is twofold: a sphincter action which opens on the contraction of the termi-

nal ileum, and a valvular action which is purely mechanical, guarding against a reflux of the cecal contents back into the ileum. It derives its innervation from the splanchnic and not the vagus fibres.

Case (6), and later Holzknicht, and others demonstrated the filling of the ileum after a barium



FIG. 6.—Adhesions at the ileocecal junction; note the defective filling at the ileocecal junction associated with the distended right colon and chronic appendicitis. Corroborated by the operative findings.

enema (Fig. 4). In a large number of patients suffering from gastric disturbances they were able to establish, in this country as well as abroad, an incompetency of the valve, occurring in one out of every six cases that were presented for examination. The proper technic is of course essential in giving these enemas, both in using the proper quantity of fluid as well as regulating the pressure by using a height not exceeding two feet.

There has been considerable skepticism among surgeons as to the variable symptoms ascribed to ileocecal incompetency. Some observers have gone so far as to ascribe epilepsy and insanity to it. Such cases, however, have only been reported sporadically and are very few. One doubts, of course, if such far reaching degenerative changes are due to this condition, but the presence of toxemia in these cases must not be minimized. When it is recognized that the rich flora of the cecal contents, with an abundance of putrefactive and toxic agents, are suddenly gushed into the ileum—which under normal conditions is practically sterile—it is inevitable that toxemia should result. The mucous membrane of the small intestine differs considerably from that of the large intestine by being highly vascular, and specially adapted, through the presence of villi, for rapid absorption. The extent of the symptoms will, of course, vary with each subject, depending upon personal immunity, i. e., upon the intrinsic power of detoxication or neutralization of these poisonous agents, and also upon the sensitiveness of the pa-

tient to the various toxins. The symptoms will also vary with the stage of the disease and the amount of absorption. If one watches these cases clinically, invariably there will be found disturbances in nutrition. There is loss of weight; pallor; cold and clammy extremities; discolorations of the skin; nervous disturbances, such as headache, dizziness, slight tremor, sleeplessness, and giddiness; and dyspeptic symptoms, such as fullness and pressure after meals, flatulence, occasional vomiting, and sometimes hyperacidity, but later a subacidity. A splashing sound over the cecum can invariably be elicited on palpation.

The symptoms above enumerated are evidences of a severe grade of toxemia, from the combined factors of colonic and ileac stasis, but arising chiefly from the regurgitation at the valve. In extreme cases of patency the feces are dammed back high in the ileum, causing a condition that is often spoken of as "being fed on one's own feces." It is not unusual to find the fluid after a barium enema to reach as high as the first portion of the duodenum.

Kellogg (4) devised an operation for the correction of the sphincter, by passing a few purse string sutures around the orifice of the ileocecal junction. It has since been successfully practised by many surgeons, especially in conjunction with appendicitis, in the chronic cases, and in all forms of plastic surgery in this region.

In the discussion of the etiology of spastic constipation several direct and reflex factors must be considered. A distended ampulla recti, such as results from the frequently unheeded call for defecation, the so called dyschezia, will invariably give rise to secondary reflex manifestations along the large intestine from an increased spasticity. In hyperthyroidism a similar increase in the tone of the bowel takes place. Cathartics have a similar effect.

In colitis due to stasis resulting from infections traveling by extension upward along the cecum and giving rise to irritation and low grades of infection, the same condition of spasm is found (Fig. 5).

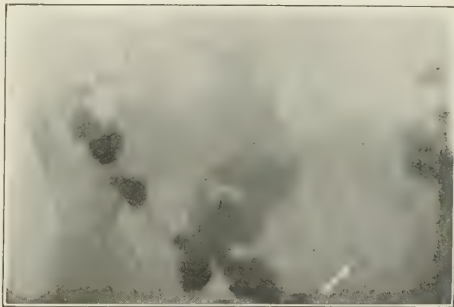


FIG. 7. Appendix filled beyond sixty hours; adherent in the pelvis.

When the irritative process becomes intensified, diarrhea may take place with discharge of mucus containing leucocytes. In the later stages we have the atonic form of constipation spoken of as the dyskinetic type, when relaxation and atony of the bowel wall take place (Fig. 1).



## CHRONIC APPENDICITIS.

In considering the subject of intestinal stasis we must include the condition known as chronic appendicitis, for the appendix takes part in the same general changes mentioned above. Since the advent of the study of the appendix by the aid of the röntgenoscopic method, much has been learned in explanation of many diverse abdominal symptoms previously grouped with the neuroses and often

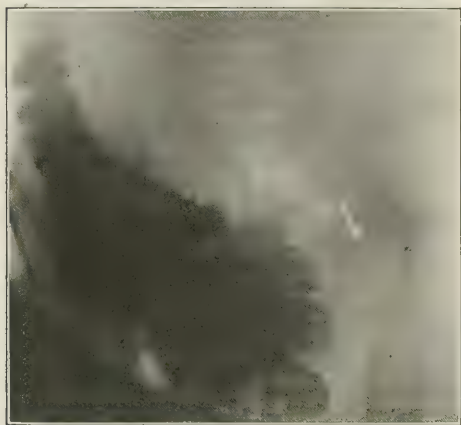


FIG. 8.—Retained feces in the appendix; the right colon and transverse colon are empty.

mistaken for gastric ulcer. The first röntgenoscopic examination of the appendix was made in France by Béchère, followed in England by Jordan, and then taken up in this country, and later by Groedel in Germany. The real credit, however, for the proper study and interpretation of the normal and abnormal conditions belongs to Americans.

Case (7), in 1912, and later George (8), and Quimby (9), were the first to take up the work in this country. These observers succeeded with greater ease in the visualization of the appendix. This was accomplished by the different opaque meal used. Instead of using the thick farinaceous bismuth paste, of the European countries, the buttermilk and barium suspension was employed for the morphological studies of the gastrointestinal tract. By possessing a greater liquidity it is better able to fill the lumen of the appendix. The infrequency of observing a filled appendix abroad caused Groedel to regard a filled appendix as diseased. This was refuted in this country, especially by George, by the greater frequency of filled appendices, which gave better opportunity to study and differentiate the normal from the abnormal.

The appendix today is regarded as the remains of a vestigial organ, devoid of function, and, as is well known, is not indispensable to the human body. There are, however, some observers who attribute a specialized function to the appendix in view of the nature of its mucous membrane and its richness in lymphoid tissue, this function being analogous to the rich lymphoid tissue of the cecum which is phago-

cytic in action, in order to protect the body against microorganisms in the ileocecal region.

Corner (10), perhaps, sums it up most satisfactorily. He draws attention to the fact that lymphoid tissue is the characteristic finding at the cecum, and that in the lower vertebrate kingdom the vermiform appendix is represented by a mass of lymphoid tissue situated at the cecal apex. As the vertebrate scale is ascended this lymphoid tissue is collected in an especially differentiated portion of the intestinal canal—the vermiform appendix. When for any reason there is a disturbance in the mucous membrane of the appendix, by disappearance of the lymphatic tissue, there arise symptoms of disturbed digestion which are of a reflex nature. It is a more or less common experience in the profession today to find persons suffering from a chain of symptoms which can be traced to the appendix, even though there are no histories of recognized clinical attacks of acute inflammation. Moynihan speaks of these symptoms as those of appendix dyspepsia.

The appendix has often been compared with the tonsil, and is often spoken of as the abdominal tonsil, for the reason that it may undergo fibrosis without an acute attack. In like manner changes may take place in the appendix; first affecting the mucous membrane, with a disappearance of the lymphoid tissue; later fibrotic changes reaching into the muscular coats, thus interfering with the efficiency of the peristaltic action. The tube then becomes incapable of emptying itself. The inspissation of the contents leads to the formation of concretions which are pathological. The appendix becomes a breeding ground for bacteria. In time subacute inflammation takes place, resulting in peri-appendicular adhesions, which process later spreads further up to the cecum and colon, giving rise to typhlitis, paratyphlitis, and colitis.

From the various observations made up to the present time, the chief points of information obtained from röntgenoscopic examination are:

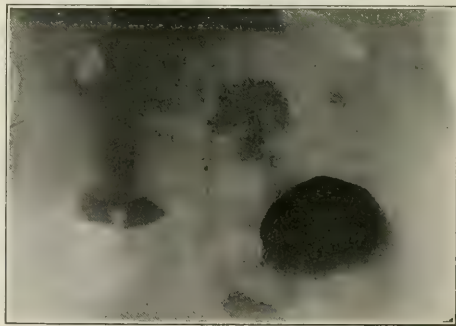


FIG. 9.—Reflex pylorospasm; and large retention in the stomach beyond six hours; taken from same case as Fig. 5.

1. *Size, as to length and calibre.*—Normally the appendix appears narrow and ribbon shaped, lying within the inner border of the cecum and directed downward. It varies in length, the average size observed being from three to five inches. It may be anything from a stub to ten inches long.

2. *Appearance*.—Normally it appears of uniform diameter, perhaps slightly tapering toward the tip. Under abnormal conditions it may show irregular filling, being constricted in certain portions and appearing segmented (Fig. 6). Or it may appear "vacuolated," i. e., the barium only filling certain parts of the lumen, the rest being filled by fecaliths or concretions. It may appear kinked or looped.

3. *Direction*.—Under pathological conditions it may point anywhere, toward the liver, underneath the cecum, then spoken of as retrocecal, toward the umbilicus, or the left iliac fossa.

4. *Fixity*.—Under normal conditions it is freely movable. When diseased it may become adherent anywhere along its course. The tip however is chiefly involved. It may become fixed to the gall bladder, or sigmoid, or it may become matted together with the cecum or ileum. The fixity can be easily determined by palpation with a gloved hand, when instead of a free mobility only the shaft will move, the tip remaining in one position (Fig. 7).

5. *Tenderness*.—This is elicited by direct palpation of the visualized organ. A positive symptom is, of course, of considerable importance.

6. *Emptying time*.—Normally the appendix begins to fill about six hours after a barium meal is taken. It can, however, best be studied after ten hours when the ileum is usually empty. A normal appendix should empty anywhere from twenty-four to forty-eight hours. A delay after the second day is called stasis and is distinctly pathological (Fig. 8). Some appendices do not fill, and cannot therefore be studied roentgenologically. Some do not fill on account of atresia of the lumen, due to previous inflammatory conditions, or due to a blockage of the lumen, which is filled with concretions. These are distinctly pathological cases and one can draw conclusions by inferences such as stasis in the ileum beyond ten hours, cecal stasis beyond forty-two hours, adhesions between the terminal loop of the ileum and cecum, or an incompetent ileocecal valve; all of which invariably are accompanying factors. Tenderness and lack of free mobility found in the cecum will also help one to reach a conclusion.

There are a certain number of appendices which do not fill and still cannot be classed as pathological. In these examinations, the right lower quadrant bears no pathological sign, from a roentgenological standpoint. Various theories have been advanced for the lack of filling, such as physiological involution, which takes place mostly after middle life; or a strong valve of Gerlach which guards the appendicular orifice. In connection with this mechanism at the orifice of the appendix it is interesting to note that some observers are still of the opinion that a normal appendix should not fill, that the valve and the muscular tissue surrounding the appendicular orifice is sufficient to cause, in the normal state, a blockage of the entrance of cecal contents, only permitting the escape of the normal secretions into the cecum. When, however, distention and increase of pressure in the cecum occur, then the mechanism gives way, and we have a patulous appendix.

Squires (11) classifies a patulous appendix as diseased, and outlines several stages. He main-

tains that an appendix will produce symptoms even without stasis, that in the first stage there occurs a hyperperistalsis of the appendix, which he has observed by watching the appendix at several hour intervals and has noticed various contortions and positions assumed by the appendix in the attempt to empty itself, the feces acting as an irritant. In this stage there is no stasis and no local symptoms, but there may be found symptoms which are reflex and will manifest themselves in disturbances of the stomach and duodenum. Pylorospasm, hyperperistalsis, hypersecretion, and hyperacidity may be the result, and the history of moderate dyspepsia can be elicited. In the later stages there begins to be a gradual failure of peristalsis in the appendix and, not being able to evacuate its contents, stasis takes place, the degree varying according to the stage of the disease. It is at this stage that local as well as general symptoms take place; these are attacks of colic, local tenderness, and the general reflex gastrointestinal disturbances before mentioned.

The importance of the reflex disturbances in the stomach and duodenum, even in the early stages of appendicitis, should not be overlooked. One is impressed with the frequency with which one finds duodenal irritation, pylorospasm, and often a fairly sized residue in the stomach (Fig. 9). Frequently one is led to the diagnosis of a peptic ulcer, only to find on the operating table simply a diseased appendix.

In the diagnosis of diseased appendices by the roentgenoscopic method, the observation of the functional responses in the stomach, duodenum, and intestines—the so-called indirect examination—should not be neglected. One should not hesitate to reach a conclusion even though the classical signs of a diseased appendix—such as direct visualization of a kinked, tender, and adherent appendix with stasis—are lacking. Here the weight of evidence should be taken into account, and when the secondary reflex disturbance before mentioned is present, plus even slight evidence of disturbance in the right iliac fossa, perhaps even an occasional attack of colic with indefinite clinical history of fullness and pressure after meals, etc., with cecal and iliac stasis, one can with impunity make a diagnosis of chronic appendicitis. All other conditions, however, such as ulcer, gall bladder, and neurosis must first be excluded.

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## PAGET'S DISEASE OF THE BONES.\*

*With a Report of Two Cases.*

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The term osteitis deformans had long been used in the description of the large and very confusing group of hypertrophic osteopathies, and although Czerny first mentioned it in the description of a case of osteomalacia, in 1873, it was not until 1877, when



FIG. 1.—Case I, showing enlarged head.

Sir James Paget called attention to the distinct disease now bearing his name, that the term osteitis deformans designated a definite clinical picture. Malpighi, in 1697, and much later Virchow, described cases of leontiasis ossea, which most observers, especially Price (1), M. Koch (2), and Bartlett (3), are inclined to consider, in view of pathological find-

ings, in similar cases, as true instances of Paget's disease. Wrany (4), in 1867, reported a case of spongy hyperostosis with involvement of the skull, pelvis, and left femur, which was undoubtedly one of the earliest and most authentic cases of osteitis deformans described in the literature. For a most exhaustive study of the literature of the subject, the reader is referred to excellent articles by Packard, Steele, and Kirkbride (5), and Da Costa, Funk, Bergheim, and Hawk (6).

Since 1882, when Sir James Paget (7) read his second paper on this subject, there have been reported cases which have been rather more than less similar to the cases he described. But few cases have been shown to present new symptoms, and, although the pathology has been looked into more deeply, and the radiographic findings are now available, the diagnosis in early cases is as frequently overlooked as heretofore.

Osteitis deformans is a chronic disease usually coming on late in life, and it is claimed that it does not shorten life. The etiology is in dispute. In twelve authentic cases, which constitute about five per cent. of all the cases reported in the literature, has heredity been shown to have exerted any influence. Most of the French writers insist on associating Paget's disease with syphilis. Some consider it a paralytic condition, others hold hereditary lues a predisposing cause. Acquired syphilis has been mentioned as a possible etiological factor. Menetrier and Gauckler (8) reported two cases which came to autopsy with findings of undoubtedly acquired

syphilis, and in cases where lues could not possibly have participated in the causation of this affection, Jaquet (9), Menetrier and Duval (10) find anti-luetic treatment extremely beneficial in removing distressing symptoms of this disease.

Pathological conditions exist chiefly in the long and flat bones. These show an increased production and deficient calcification of new bone which later hardens progressively, especially on the surface, and takes on a massive rugged appearance. This causes an increase in size, and also gives rise to the various deformities of the affected bones. Many observers think that the deformity of the long bones is due to gravity and muscle traction. Jewels Vincent (11) emphasizes early nervous symptoms of the disease, such as muscular cramps, fatigue, pain, exaggerated reflexes, and occasional incontinence of urine and local hyperesthesia, and is inclined to the hypothesis of trophoneurosis, but in the few autopsies made, a thorough study of possible pathological changes in the nervous system has not been undertaken.

The disease is essentially a chronic inflammatory process affecting several bones. The order of frequency of involvement is usually given as skull, tibia, femora, pelvis, spine, clavicles, ribs, and radii. The shape of the face becomes roughly triangular, the chin forming the apex of the triangle, and the enlarged head, the base. The superciliary ridges are very prominent. There is a bowing of the legs, both anteriorly and laterally. Stature is diminished. Kyphosis is usually present due to changes in the spine and pelvis. The clavicles are prominent. The mind, according to most observers, is unaffected, although Fits (12) reported a patient with marked mental disturbance who was subsequently confined to an asylum for the insane.

There have come under our observation two cases which differed in some respects from similar cases reported. The head in Case I was sixty-six cm. in circumference and that in Case II, sixty-four cm., the heads being similar in shape and general characteristics. The chin in both cases formed the apex of a triangle having the enlarged head as the base. The superciliary ridges were markedly enlarged in both cases. The neck in both cases was



FIG. 2.—Case I, showing triangular face and curved femora.

very short and there was a partial ankylosis of the cervical vertebrae, so that the head had very slight range of movement in any direction. The sternal ends of both clavicles were markedly enlarged and prominent. There was no other involvement of the upper extremities in either case. Each had a marked

\*From the Neurological Wards of the Central and Neurological Hospital, Blackwell's Island, N. Y.

kyphosis and there was marked anterior and lateral bowing of the femora in both cases, but the tibiae were not involved. Both patients stated that their statures had been shortened at least five inches. The onset in each case was between forty and forty-five years of age. The mentality in both was affected, but

more so in the first patient, who is older, and presents a later stage of the disease. General depression and confusion were present in both patients without special prominence of any one set of mental symptoms. Arteriosclerosis was marked in one and absent in the other.

Case I presented a systolic pressure of 235 mm. of mercury; Case II, 140 mm. of mercury. Repeated examinations of the blood for the Wassermann reaction were negative in both cases. In each the spinal fluid escaped under moderate pressure, and the Wassermann reaction and

cytology of the spinal fluid were negative. In both the urine showed changes suggesting the existence



FIG. 3.—Case I, showing kyphosis, curved femora, and enlarged head.

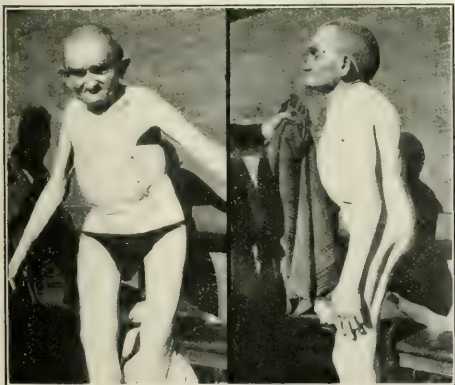


FIG. 4.—Case II, showing marked prominence of clavicles and superciliary ridges and curved femora.

FIG. 5.—Case II, showing kyphosis and enlarged head.

of chronic interstitial nephritis, and the Bence-Jones protein reaction was negative.

The blood picture in Case I showed an eighty per cent. eosinophilia on numerous examinations, while Case II presented a five per cent. eosinophilia on several examinations. We could not de-

termine the causation of the eosinophilia in either case, nor could we find eosinophilia mentioned in cases of Paget's disease described in the literature.

The x ray findings in each case showed marked evidence of rarifying osteitis in the femora and markedly thickened skull.

#### SUMMARY.

The cases above described show the following peculiarities: 1. Persistent eosinophilia; 2. definite mental symptoms; 3. tibiae not involved.

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NOTE.—We wish to express our indebtedness to Dr. Joseph Byrne, from whose service the material was taken.

## A TREATMENT FOR ACUTE ANTERIOR GONORRHEA.

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There are such wide variations in the reported results of treatment of acute anterior gonorrhea in the male with the various silver preparations at our disposal, that a study of the elements which combine to give success, the causes of failure, and an attempt to standardize a treatment offering the strongest hope of good results seems pertinent.

#### THE PATIENT.

Success follows care of patients who report early for treatment—either primary or second infection—reporting from a few hours up to three days after the first appearance of subjective symptoms—burning or discharge—provided there has been no treatment prior to the first visit and especially if the so called prophylaxis with two per cent. protargol injection has not been employed. Patients receiving the two per cent. protargol injection have damaged mucous membranes which offer slight resistance to the invasion and progress of gonococci. To sum up, the ideal case is one in which the inflammatory process has progressed only a moderate distance along the urethra, and the mucous membrane has not been impaired by irritants.

#### THE CHOICE OF SILVER PREPARATION.

The silver selected should be the one which is the least irritating to mucous membrane—argyrol<sup>1</sup> in freshly prepared solution is admittedly the preparation meeting this requirement. Supporters of its use state that it is nonirritating in all strengths—a claim not supported by clinical results, as can be deduced from an analysis of the action of argyrol solution. This action, when the solution is properly

<sup>1</sup>Silver nucleinate is not identical with argyrol. Its use in substitution for argyrol will produce disappointing results.



applied, is twofold. First and minor, germicidal—directly killing gonococci on the surface of the mucosa. Second and vastly more important, it forms a definite silver deposit in the protoplasm of the healthy living lining cell which raises that cell's resistance to bacterial invasion. In other words, a protective wall is raised against progress along the canal by the infection. If too much silver is deposited in the living cell either through employment of too strong a solution, its too frequent application, or its contact with the cell for too long a period, the action is irritant. The cell dies, is desquamated, and exposes a partially developed underlying cell to the action of the gonococci—the resistance being 1:0t only lowered but practically destroyed.

With the outlined conditions in favorable cases fulfilled, and the proper balance of strength of solution, duration of contact maintained, and frequency of application, it is not unusual to find a patient passing clear urine twenty-four hours after initial treatment; and it is to be confidently expected that practically all patients will pass clear urine within a week after the institution of treatment.

Opposed to these results we see men otherwise in the pink of physical condition, after two or three days of the routine army or navy treatment (two per cent. protargol injections), presenting a rapidly progressive infection involving the posterior urethra and developing one or more of the complications—prostatitis, seminal vesiculitis, epididymitis and gonorrheal rheumatism, with all the distress and disability that these involvements entail. At the end of weeks or months of most careful management and cooperation by the victim there is still discharge and involvement of nearly the whole genital tract. Such men would have made more rapid recovery had they received no local treatment in the first two weeks of their trouble.

#### METHOD OF TREATMENT.

Only freshly prepared solutions of argyrol made directly from the crystals, employing a strength of ten per cent. to fifteen per cent., should be used. No injections should be entrusted to the patient for personal use as long as discharge or cloudy urine is present. All the prepared solution the anterior canal will hold without distress should then be slowly injected with a plunger or bulb urethral syringe, as the patient is lying on his back, after he has urinated and the glans has been cleansed—care being taken that the urethral folds are fully distended. Two drams to half an ounce is the quantity required. Then the meatus should be gently but firmly closed with the fingers, and the injection retained in the canal for twelve to fifteen minutes, afterward being allowed to flow into cotton or other waste. The meatus should be covered with dressing until the next urination, to protect the clothes from being stained. Such injections should be used once daily, the classic restrictions in diet and activity ordered, giving internally only sufficient favorite medication to render the urine neutral or faintly alkaline. This routine should be continued for two or three days after the disappearance of discharge and free pus in the urine, as indicated by the appearance of the first urine in the two glass test.

It is well to consider the pathological condition of the canal at this time. It is incontestable that upon the appearance of pus at the meatus gonococci are present in intercellular spaces—possibly in the submucosa in some portion of the canal. Injections do not kill these bacteria. There is also a greater or lesser area of desquamated mucosa—ulcerated area—if that term is preferred—and possibly deep infection of some of the mucous follicles or glands of Littre. The plan for treatment of such a condition must be directed toward two aims: 1. To prevent reinfection of the canal from gonococci in the tissues, and, 2, to assist in reforming the mucosa destroyed. This is the time for mildly stimulant medication and injections. Now may be used, with cautious introduction, sandalwood oil or the balsams. The patient may be entrusted with a mild injection of protargol, one quarter per cent. (five grains of protargol in four ounces of solution), to be used one to three times daily and retained for ten minutes. The fact should be borne in mind that the margin between mild stimulation and irritation is narrow: and symptoms of overtreatment should be looked for, i. e., first a return of cloudy urine, and later, discharge. If no such symptoms appear, the protargol may be doubled in strength; but that should be the limit.

Then the more frankly astringent agents may be employed in the reverse order of their irritating qualities: zinc sulphate up to one grain to the ounce; lead oxide up to one grain to the ounce; zinc and lead combined to the same strength; zinc permanganate up to one grain in four ounces; nitrate of silver from one grain in two ounces up to two grains in one ounce. In no case should nitrate of silver be injected oftener than once in four days. The other solutions may be used daily or every other day. Should shreds and flakes persist in the third week of treatment, in a patient responding promptly and progressing without reinfection, it is almost positively an indication of deep involvement of some of the mucous follicles. Here again injections and internal medication are valueless, except for prophylaxis against reinfection, the anterior endoscope offering the only efficient means of attack. This is a chapter by itself and beyond the scope of the present paper.

Patients should be under observation for a total period of from five to six weeks and the urine free from flakes and shreds before discharge. After such a period it can be safely assumed that the virulence of gonococci in the submucosa is spent and that they are safely buried, except in the event of most severe traumatism which is not of frequent occurrence. So potent is the assistance given patients by the treatment outlined that a reinfection caused by the thoughtless drinking of beer five days after institution of treatment has subsided and clear urine again been passed twenty-four hours after the injection following the reinfection.

#### CONCLUSIONS.

Does it follow from the evil results quoted that prophylaxis, as officially practised, is a failure or even a detriment to the patient? Undoubtedly! But it does not follow that all prophylaxis is a failure.

As originated and practised for the last fifteen years by Dr. Winfield Ayres, prophylaxis is an unqualified success. After thorough cleansing of the parts—the meatus being held open with the fingers—Dr. Ayres drops into the opened meatus one drop of a five per cent. nitrate of silver solution from a dropper. The solution is gently rubbed into the fossa navicularis by rolling the lips of the meatus together between the fingers for a moment, and the excess solution is then wiped off. The reaction is prompt, destruction of all bacteria at the usual point of invasion (fossa navicularis and meatus) is absolute, together of course with the death of mucous membrane superficial cells, upon which the silver solution has acted. The regeneration of cells at the meatus, in the absence of bacteria, is prompt, and no damage has been done to the remaining mucous membrane in the anterior canal where the silver does not reach. The treatment is logical and efficient.

After infection the favorable results of properly applied argyrol treatment are rapid in direct ratio to the quantity or area of healthy mucous membrane in which the resistance to bacterial invasion can be raised by deposit of silver in the cell. With a large area of uninvolved mucous membrane (conversely infection extending only a short distance down the canal) there will be an almost immediate check of discharge and free pus. On the other hand, if there is only a small area of uninvolved mucous membrane near the triangular ligament, the treatment will probably fail to prevent posterior invasion of the canal—this being a direct result of too long activity of infection before the institution of suitable treatment.

There is a distinct shortening in the period of disability in the argyrol treatment of patients seen early, a decided addition to resistance, and a protection of deep structures from involvement. That this prevention of complications is worth while, no one who has had experience in attempting to clear them will deny.

There are many other valuable compounds of silver on the market. Each has its peculiar range of especially favorable action, and each finds its use indicated at some stage in the progress of treatment in the many cases which arrive too late for the exclusive use of argyrol to be essential, or in cases which, through injudicious treatment, have been hurried to the stage of deep complications which try the ingenuity of our most skilled operators.

No claim of discovery or pioneer work is advanced. The treatment outlined is one giving astonishing results, logically explained. Absence of gonococci in the original smear requires no change in treatment, but affords a shorter prognosis.

The general results of treatment of acute anterior gonorrhea in the male—a disease to a certain degree selflimited—shed no glory on the efforts of medical practice to control it. A large number of patients get well in spite of treatment rather than on account of treatment. There is the need and the means for a revolution in this condition of affairs. Let's have it!

47 IRVING PLACE.

## INFLUENZA WARNING FROM THE ACADEMY OF MEDICINE.

*Public Health Committee Issues Warning.—More Vigorous Measures Needed.—Maximum Morbidity Not Yet Reached.—Precautions Recommended.*

The Public Health Committee of the New York Academy of Medicine, after conferring with representatives of the Department of Health of the City of New York, hospital authorities, bacteriologists, and others in close touch with the situation regarding influenza, are of the opinion that, while there is no occasion for undue alarm on the part of the public, further vigorous measures should be taken by the Department of Health to prevent the spread of the disease, and, in collaboration with every available public and private agency, to ameliorate the condition of patients and of their dependents.

In the communities in which the disease has thus far appeared in epidemic form the rate of sickness has been high and the death rate not inconsiderable. In this city the unusually heavy demands upon private physicians, hospitals, dispensaries, and district nursing organizations indicate of themselves the presence of an epidemic which should be vigorously combatted. Many individual physicians in general practice report seeing from thirty to fifty cases a day and declare that they are so busy as to be unable to make prompt reports of influenza cases to the Department of Health. The pressure upon certain hospitals for the admission of influenza cases has been so great as to necessitate the temporary conversion of wards ordinarily used for surgical and other purposes to emergency wards for influenza and its sequelae. A number of the municipal hospitals have been overcrowded, either by placing mattresses on the floor, or in the case of one hospital by placing two or even three children in one bed. Some physicians and district nurses engaged in work among the poor report that in numerous instances, upon visiting patients to whom they have been called, they have learned of other cases in the same houses which were unattended and necessarily unreported. Reports are by no means exceptional of whole families which have come down with the disease; where this has happened among the poor, there has been not only a lack of medical care, but suffering from loss of income and lack of food. A block census made on October 9th of a typical upper east side tenement block showed that among 340 families numbering 1,445 persons there were 160 cases diagnosed by physicians as influenza, of which only nine had had hospital treatment. This means that in this block, up to October 9th, eleven per cent. of the population has been affected. If anything approximating this rate holds for the entire city, Greater New York has already had several hundred thousand cases of influenza; and the epidemic is apparently still on the increase.

Further evidence of widespread illness among the population has been obtained by inquiries variously directed. In a group of offices in one of the largest buildings in the financial district, more than a third of the office force was reported to be absent on ac-



count of illness on October 9th. Isolated factories in the Borough of Manhattan report from twelve to twenty per cent. of illness. The disease is prevalent today in all or nearly all of the military and naval centres in and around New York.

Returns from a group of more than fifteen large public hospitals show that from twelve to forty per cent. of the medical and lay workers in such institutions have been affected during the past two weeks. One hospital in Brooklyn reports fifty-six nurses down with influenza or pneumonia out of a staff of 120. Another, in Manhattan, reports fifty cases out of 300; another forty out of 200. These reports are similar to reports received from the military hospitals. In one cantonment hospital 100 out of 200 nurses have been ill. There is no reason for supposing that the epidemic will run a different course in New York city from that which it has pursued elsewhere.

The disease is of germ origin and probably is spread most commonly through germ laden droplets of mucus thrown into the air in unguarded coughing, sneezing, and spitting. The Public Health Committee therefore strongly endorses the educational propaganda which has been carried on by the Health Department of the City of New York and other health authorities throughout the country, warning the public against the dangers of overcrowding and lack of sunlight and ventilation, as well as those arising from ignorance or careless habits.

Experience both abroad and in this country seems to indicate that the epidemic runs its course in any given community in from four to six weeks. Occurring at this season, the epidemic in New York city will probably begin to decline in from two to four weeks. During this period the situation will continue to be critical and should be dealt with as effectively as possible.

#### RECOMMENDATIONS.

The following measures are recommended:

1. That the public should be sharply warned of the danger of close contact with unrecognized cases of influenza in crowded public places.

2. The community should stand squarely behind the Department of Health in its efforts to minimize overcrowding in public conveyances by conscientiously observing the prescribed hours for opening and closing of various classes of mercantile establishments.

3. The daily inspection of children on their arrival at schools as practised by the Department of Health, represents a principle which should find wider application. There should be a daily inspection of workers employed in all large establishments as they report for work with a view to the prompt exclusion and, so far as possible, the segregation of all suspects.

4. During the epidemic employers should voluntarily report all employees who are absent on account of illness; such reports will help the Department of Health to locate many neglected cases.

5. Gauze masks should be used by all physicians, nurses and others in attendance upon or in close contact with the patients suffering from influenza.

6. Measures should be taken to secure more complete and uniform reports of cases of influenza. The cooperation of physicians will be readier if it is made clear that the reports are desired as a basis for helpful action.

7. Nurses, social service workers, and others having cognizance of neglected cases should report them, and centres at which such reports can be readily made in person should be established.

8. The city authorities should strengthen their forces by arranging promptly for the close cooperation and, if necessary, the financial support of the United States Public Health Service, the Department of Civilian Relief of the American Red Cross, and of all agencies which are able to offer useful service in the emergency. A specific task should be assigned to each cooperating agency and its subdivisions.

9. Every report of a case, especially in the poorer districts, should be made the basis of action either by the Department of Health or by a cooperating agency, with the following objects in view:

- a. Removal to hospital where necessary and possible.

- b. Medical care at home. In the block canvass referred to above it was ascertained that, while a majority of the patients had been seen by a physicians once, few had had subsequent medical attention.

- c. Nursing care at home. The nursing program should include the use not only of graduate nurses, but of all women who have had sufficient nursing experience to be of service.

- d. The provision of food for the needy cases and for the neglected children of sick mothers.

- e. Temporary shelter for children whose mothers are sick at home.

- f. Inquiry into conditions among the close neighbors of stricken families, with a view to the prompt recognition of unreported cases.

10. Hospitals should be urged to obey the injunction of the Department of Health to discontinue all nonurgent medical and surgical work in order to afford partial segregation and medical and nursing care for influenza and pneumonia patients.

11. The overcrowding of hospital wards with cases of influenza and pneumonia should be discouraged. Where hospitals command sufficient personnel to care for larger numbers of patients than under normal conditions, such patients should not be crowded into existing wards, but should be placed in adjacent spaces, such as day rooms and corridors. It is essential to hospitals caring for influenza patients to maintain a proper system of bed spacing and screening.

12. Owners of apartment and tenement houses should provide heat for such buildings during morning and evening hours. The proper ventilation of apartments may thus be secured without undue exposure to cold. The prevalent idea that the Fuel Administration has forbidden the heating of apartment houses before November 1st is erroneous. The committee is advised by the Fuel Administration that reasonable discretion is all that is desired or expected.

# Medicine and Surgery in the Army and Navy

## THE FUNCTIONAL REEDUCATION OF THE WOUNDED.\*

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During the spring of 1915 it was my privilege to visit the great camps scattered throughout England and Scotland, in which Kitchener's armies were

tion, and recovery was retarded or prevented.

The solution of this grave state of affairs was found in the establishment of command depots under military discipline and medical direction, in which men reported for treatment instead of drill.

During the winter of 1916 we had about 4,000 men under treatment at Heaton Park, where I was the medical officer in charge. Eight others were soon established. There are now sixteen of these depots, with a capacity of 5,000 each. Their character has been somewhat changed since they were organized, by the founding of orthopedic centres and special hospitals for heart, mental, and nervous cases. The cases somewhat resembled those in the hospital of a great industrial plant—fractures, crushings, and lacerations are much the same whether caused by the explosion of a shell in the trenches or by an accident due to machinery.

### TYPES OF CASES TREATED.

The types of cases which were found particularly suited for this physical therapy treatment were:

*First.*—Cases of healed wounds, apparently small, but with considerable scar tissue under the surface, strangling the circulation and interfering with the nerves, though the latter might not actually be injured. The intense and wearing pain in such cases was a serious bar to the recovery of the nervous system.

*Second.*—Nerve wounds, ranging from mere bruising of the nerve to its complete severance. Where suture was necessary, healing was a long and slow process, and much treatment was necessary to overcome stiffness and atrophy.

*Third.*—Old and gangrenous scar tissue where sinuses were formed, followed by the extrusion of pieces of dead bone, buttons, cloth, etc. Before the war these cases were practically never treated by massage, but now such objects are frequently located and brought to the surface by this means.

*Fourth.*—Cases following operation on joints, tendons, or nerves, followed by ankylosis where not only medical but educative care is needed to prevent slow degeneration, resulting in a stiffened limb.

*Fifth.*—Functional or so called hysterical cases



FIG. 1.—Protractors for measuring angles of movement in the shoulder, elbows, wrist, knee, and ankle.

feverishly preparing for the fight in France and Flanders.

In the course of these inspections for the observation of physical training we found large numbers of men who had broken down under the intense strain they had had to undergo. The regimental depots were choked by them and by the men who were otherwise unfit and were awaiting discharge from the terribly congested hospitals. The latter were sending their patients, as soon as they could be moved, to the Red Cross Hospitals scattered throughout the land. These were usually country houses given for the purpose by their owners, the lady of the house frequently taking charge, assisted by her friends and neighbors. The already overworked local doctor was supposed to treat these patients, but too often hero worship and lax discipline were followed by physical and moral degeneration.

\*Delivered at the opening of the Clinic for Functional Reeducation of Soldiers, Sailors, and Civilians, at 5 Livingston Place, New York, Monday, July 15, 1918.

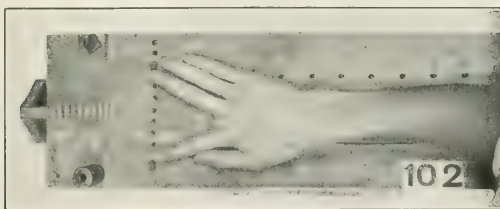


FIG. 2.—Finger board for stretching abduction of fingers.

when there was no nerve lesion and where under an anesthetic the muscles relax completely, only to become stiff again when the patient regains consciousness.

*Sixth.*—Cases of sheer exhaustion—men accus-



tomed to sedentary work, broken down after repeating, week after week, a twenty or thirty mile forced march, carrying sixty pound packs on their backs.

*Seventh.*—Cases constitutionally unable to stand the nerve strain of modern warfare. Nervous breakdown with marked neurasthenia. Shell shock is a loose term much used in this connection and

a comparatively small percentage were unable to do any military service and were classified as incurable.

#### THE MEANS EMPLOYED IN PHYSICAL THERAPY.

*Application of heat.*—The first object in physical therapy is to improve and heighten the circulation. This is done by the application of the following forms of heat:

1. Dry heat. The deep tissues and joints are reached by diathermy and the processes of repair hastened; also by the electric lamp or other forms of dry heat, by means of which a leg, or arm, or the whole body may be heated. There are two main forms of baking—that in which the light rays predominate, and that in which the heat rays are most prominent and effective.

2. Circulating bath. The French introduced a system of *eau courante* baths, whirlpools of running water, into which the limb is plunged for twenty minutes in preparation for massage. The object of the circulating water is to give the full effect of the temperature. In still water at 110° the limb soon becomes surrounded by a layer of water at its own temperature. The bath may be effervescent. This is one of the most valuable forms of hydrotherapy. Oftentimes a limb which is cold, blue, and intensely painful to the touch, will come out of the bath crimson, comfortable, and easy to manipulate without pain.

3. General douches. Rheumatism is a constant complaint of the malingeringer, and miraculous cures have been brought about by a cold douche ruthlessly and suddenly given. Sometimes only one or two baths are necessary. In other and more genuine severe cases the cure is not so rapid, but the relief is great.

4. The continuous bath. This is very valuable for functional heart cases. The patient is placed in the bath at a temperature of 94° for one hour; he is then wrapped in blankets and made to rest for another hour. It is very interesting to notice the daily lowering of the pulse from 150 to normal. Shell shock cases may also be treated in this way in a temperature of about 94° with a most marked quieting effect, and this treatment has long had an established place in the treatment of mania. All these forms of treatment are merely preparatory to the second and greatest factor in the cure.

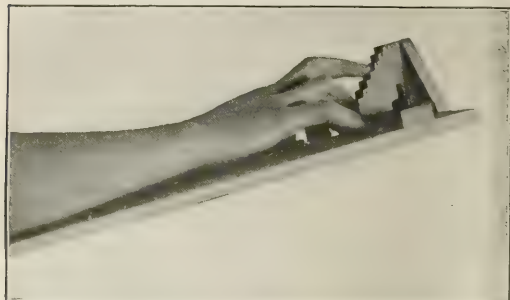


FIG. 3.—Finger board for stretching contractions and finger flexions.

covering any form of nervous disability from the concussion of an actual shell explosion close at hand to the state of fear in which a man can no longer stand remaining at the front.

*Eighth.*—Functional heart cases. The pulse in many cases ran up to 150 with extreme breathlessness on the slightest exertion or excitement. These afforded the most satisfactory cures, especially when treated by progressive exercise and hydrotherapy. At the command depot, Heaton Park, Manchester, in one class of eighty men who were taking baths and progressive exercises, about thirty per cent. of those under treatment were able to return to the fighting line.

*Ninth.*—Lastly, a large number of cases of weakness, the patients needing good food, rest, and progressive exercises to overcome their disability, made very satisfactory showing. Of about 3,000 men of this type discharged from Heaton Park in six months, about forty per cent. were able to go back to the front line, and the same number to clerical or other work connected with the army, while

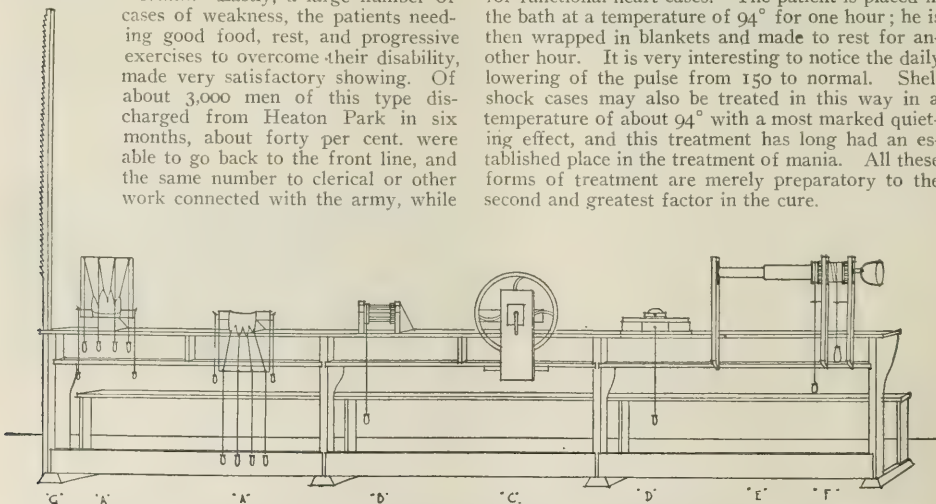


FIG. 4.—The arm table. A. Finger machines. B. Finger treadmill. C. Wrist circumductors. D. Wrist abductor and adductor. E. Wrist mill for flexion and extension. F. Pronator and supinator. G. Creeping board for shoulder abduction.

*Massage or passive movements.*—If only one means of treatment was possible, I would choose massage before any other; in the hands of a skilled masseur such a range of movement and of slow stretching of joints and scar tissue are possible. But though most other treatments lead up to massage,

tion and supination of the forearm in the case of an ankylosed elbow are of no use if the movement comes from the shoulder instead of from the elbow. Thirdly, the amount of exercise given to a limb must be measured. Psychologically it is important for the patient to understand on what he is working and how he is progressing. This measure may be done by means of a scale on the appliance telling, in degrees, the amount of movement and improvement, or the sense of hearing may be used as an incentive if the appliance can be made to click out, in degrees the progress achieved.

The patient should have a definite task set for each day to make him work a little harder. Many of these men get discouraged, and like children, they must have their progress proved to them. They should be led on from simple to more complicated tasks. The struggle for existence among his fellows must be prepared for, not acquiescence in a state of abject helplessness; the latter state is helped along by those sentimental people who ruin a man by destroying his self-confidence.

As more complicated movements are needed, head work and calculation enter into the treatment. Simple gymnastics, games, rhythmical movements, ball throwing, etc., lead to the teaching of a definite trade, by which the man will become self-supporting. All movements should be made useful as far as possible. For example, a carpenter should be encouraged to

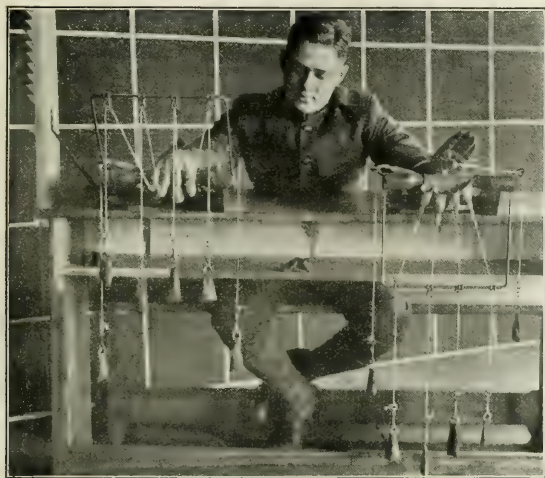


FIG. 5.—Pulley weights for exercising fingers in flexion and extension, right hand doing exercise 1, left hand with thumb attachment doing abduction.

and it is proving itself more and more invaluable, it is, after all, a purely passive thing.

*Active movements.*—At some time active movement on the part of the patient is necessary, and here is the weak and often absent link in the chain of treatment. When I first began this work, in 1915, I found the most of the machinery available for reeducation of weakened joints was unsuitable, very expensive, and frequently not to be had at all. Makeshifts had to be contrived out of such things as wood, wire, sewing machines, etc., and yet two thirds of the cases before us required this active movement.

Three main principles evolved themselves in the course of this treatment. In the first place, the contracted joints and tissues must be stretched as far as possible, but to stretch them suddenly, ignorantly, or without the patient's cooperation would be dangerous. The doctor must decide the extent of the operative treatment, but the patient may be trusted not to wrench his own joints if the apparatus is left under his own control. Secondly, all movements should be made accurately. For example, prona-

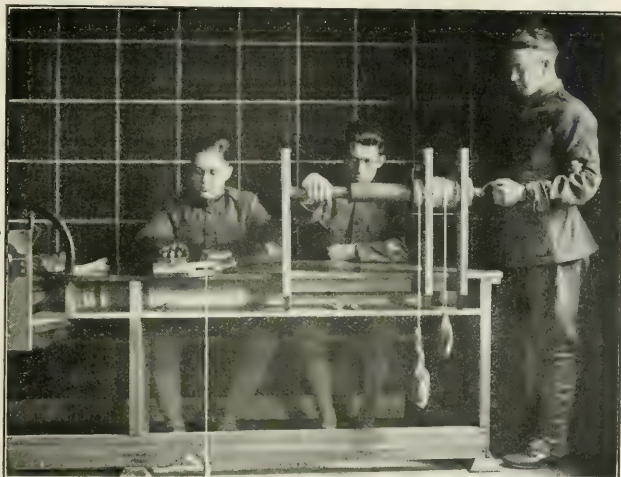


FIG. 6.—D, Wrist abduction in action. E, Beginning of wrist extension. F, Correct position of arm in pronation.

make the movements which he would use in working the saw or plane. There are now some fifty or sixty appliances out of which from fifteen to twenty have been adopted for the use of Canadian hospitals



and by the medical authorities at Washington. These practically cover all the voluntary movements of the main joints of the body.

To sum up, treatment begins with the preparation of the limb or joint by electricity, radiant heat, or hot baths, then massage or passive movements, followed by active movement.

*Measuring the range of movement.*—Before beginning the reeducation of the joint, the range of movement should be carefully measured. This is done by means of protractors of galvanized sheet iron, with the scale marked in degrees. Figure 1 shows the method of measuring movements of the shoulder forward and backward, the protractor being set with zero perpendicular to the joint, as checked by a plumb line. The elbow, wrist, knee, and ankle are measured by the second protractor made of galvanized iron strips, hinged and with a scale pasted on to a side place.

The appliances are used for two purposes: stretching and improving the strength. All the stretching movements are kept within the voluntary control of the patient; the ap-

is used for stretching the contraction of the fingers in flexion, and for stretching the abduction at the metacarpophalangeal joint. The exercises are undertaken as indicated. Each movement is repeated not more than five times.

Finger pulleys, such as are shown at A in Fig. 4

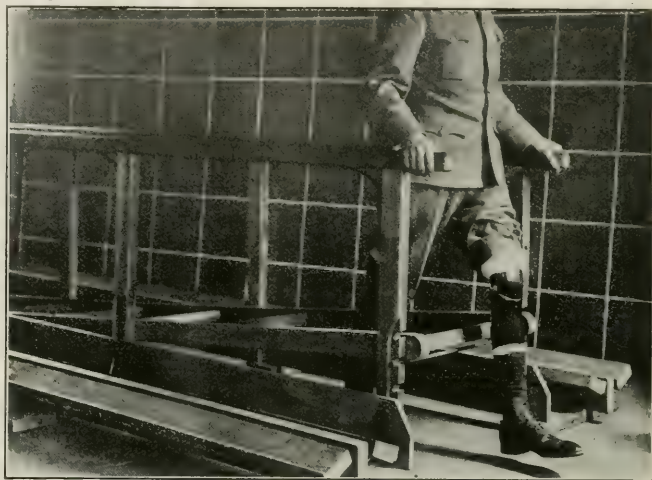


FIG. 7.—Amputated case practising walking through the ladder to exercise the stump and teach control. Inversion and eversion treads also shown.

and in Fig. 5, are used for the flexion and extension of the fingers. The wrist and arm are strapped at the elbow, the fingers are inserted into the glove stalls, and weight is added until it can barely be lifted by the voluntary power of each finger. The weights are increased as improvement goes on, and the movements are repeated to the point of exhaustion.

Many other movements are undertaken: thumb adduction and abduction; circumduction of the wrist, by turning the handle of a wheel; adduction and abduction of the wrist by means of a hand board; flexion and extension of the wrist with a roller and weight; supination, and pronation. Wrist abduction, wrist extension, and pronation are illustrated in Fig. 6.

#### REEDUCATION IN AMPUTATION CASES.

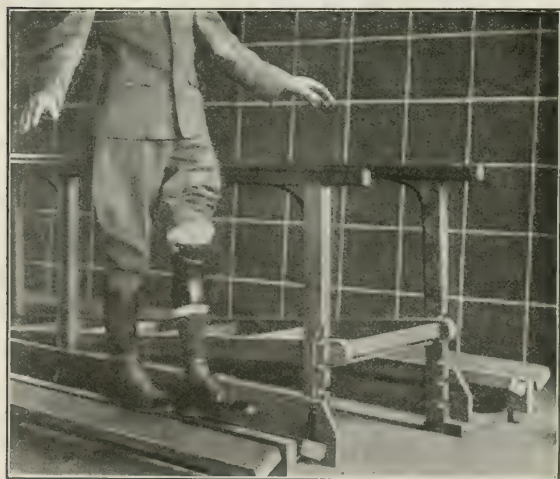


FIG. 8.—Amputated case learning control on the balance beam.

pliances for improving the strength can be loaded with increasing weights as the power to use them returns, and the patient can thus be kept interested in his progress.

The finger board which is illustrated in Fig. 3

himself, which may be done by suspending him by a belt under the arms, working from an overhead trolley or by grasping a bar, as shown in Fig. 7. This inspires confidence and prevents falling, especially in amputation at the thigh, where the balance is a very

difficult matter. The patient then advances to the use of sticks and progression on a smooth surface. It is most important that he discard crutches from the start. He then learns to walk on a smooth level surface with one stick only to clear obstacles, like the ladder rungs illustrated, and finally to walk through soft sand, on uneven ground, up and down inclines, and over obstructions. Further confidence may also be gained by using the eversion and inversion treads, and the balance beam, as shown in Fig. 8. From this he may go on to the playing of games by means of special attachments for arm or leg, such as have been designed at Hart House to allow the playing of tennis, billiards, and even bowling.

#### CONCLUSION.

These are but brief outlines of the methods followed in this work; methods which have been evolved by many workers and based on the vast experience of the war. They will serve to indicate the lines pursued in the reeducation of the wounded, a work which requires the constant exercise of inventive ingenuity, in order to meet the varying phases of the injuries received.

I sincerely congratulate the donors of the funds which have made the opening of this clinic possible, upon their wisdom in choosing a field in which their generosity will be productive of such vast and far reaching results. Through the work of this and similar agencies, many thousands of our young men will be won back to self-sustaining, self-respecting manhood who might, save for such aid, drift into the class of aimless, helpless, and hopeless dependents.

\* \* \* \*

#### CLINIC FOR FUNCTIONAL REEDUCATION.

The Clinic for Functional Reeducation of Disabled Soldiers, Sailors, and Civilians was opened at 5 Livingston Place, New York, on Monday, July 15th, with an introductory address by the president of the Clinic, Dr. W. Gilman Thompson. The Clinic was established primarily to care for the mutilated of the army and navy, and to provide instruction for medical officers in this special department of medical work. It will be, however, a permanent institution for the care of those who become disabled through accident, or in the processes of manufacture or transportation, or through explosions. There are about 200 major operations performed annually in the city of New York; for the subsequent special treatment of such patients no systematic care has yet been provided, such as will be afforded through the Clinic.

Doctor Thompson said: "The object of the Clinic is to put the disabled individual into the best possible physical condition by means of our special apparatus, so that he can eventually earn his own living. However, we are not going to enter at the present time, at any rate, the field of vocational training. That side of the work is being undertaken in the Red Cross Institute by Doctor McMurtree. The Red Cross has undertaken the teaching of various trades by which the men can afterwards earn their own living. Our work is to put these men into the best possible condition to earn a trade. That is its limitation at the present time."

An affiliation has been created between the Clinic and Cornell Medical College. The staff of the Clinic, while consisting in great part of the members of the faculty of the College, is not exclusively so composed, and officers experienced in the French and Canadian work of functional reeducation have been invited to give instruction.

The buildings of the clinic have been leased for a term of years from the New York Infirmary for Women and Children, which institution has temporarily suspended operation. Funds for the equipment of the clinic are ample, but those for its maintenance are available for a limited period only, and the generosity of the public is relied upon to continue it after the war, since the work done by the clinic is a great necessity for the permanent welfare of civilians injured in the performance of their work.

The equipment of the therapeutic building comprises the following departments:

1. Complete hydrotherapy outfit, with apparatus for pressure douches, needle baths, continuous baths, whirlpool baths, local baths for the arm or leg, with massage tables and electric light tables.
2. Mechanical apparatus designed by Professor R. Tait McKenzie, of the University of Pennsylvania, and Professor E. A. Bott, of Hart House, Toronto. This apparatus has been standardized for use in the medical department of the United States Army.
3. An electrotherapeutic department furnished with the electric apparatus for diagnosis and treatment of nerve, muscle, and joint disorders, which has been standardized for the United States and Canadian military hospitals.
4. A department for special therapeutic exercises and games, and for local massage. The massage tables are copied from the model of Professor McKenzie.
5. Workshops.
6. X ray department.
7. Rest and reading rooms for the patients, and an extensive outdoor garden where many of the exercises may be given.

In the main hospital building three wards are furnished for patients who are unable to walk, and an excellent operating room is provided where secondary operations may be performed.

All treatment is offered free to the poor, but hospital patients referred by the city authorities or by accident insurance companies, the War Risk Insurance Bureau, or similar organizations, are charged the rates for board, operation, or treatment which these organizations are accustomed to pay other hospitals and dispensaries of the city.

The chief speaker at the opening was Dr. R. Tait McKenzie, who had come from Philadelphia to describe and demonstrate the uses of his special apparatus. Following his address, which is given above, Doctor McKenzie demonstrated the use of the appliances, insisting upon the importance of the intelligent and logical order of the various treatments and movements. For the illustrations used we are indebted to the Macmillan Company, publishers of Doctor McKenzie's book, *Reclaiming the Maimed*.



## AN EMERGENCY HOSPITAL IN FRANCE.

*A Six Hundred Bed Hospital Erected and in Operation within Twenty-five Days.—Reserve Hospital for Chateau-Thierry.*

When the United States Marines and the Rainbow Division attacked Chateau-Thierry, all the hospitals available were quickly filled with wounded. Every available building had been occupied by the Medical Department and there was still need for additional beds. The American Red Cross in Paris received a telegram from the front reading, "We must have a six hundred bed hospital in double quick time." Fortunately, a deserted race track was found which furnished the necessary space. The reserve store houses of the American Red Cross contained all the material required to set up the desired hospital and to equip it, complete in every respect. Long motor truck trains conveyed the knock-down forms to the grounds. Framework, flooring, canvas, windows, and foundation supports, all ready to be put together at a moment's notice, were piled on the trucks. Every eighteenth truck carried a complete operating room and equipment and hauled a trailer on which a sterilizing room was carried for emergency needs. At the end of the twenty-fourth day, the entire hospital, complete in every detail was ready for occupancy.

The Army Medical Department arrived before daylight with bed and equipment, and by noon the hospital with six hundred beds was turned over to

would be difficult to duplicate, but which is characteristic of the method of the American Red Cross and of the Medical Department of the United States Army. We present herewith illustrations showing some aspects of this emergency hospital.

## MEDICAL NEWS FROM WASHINGTON.

*Surgeon General Ireland to Proceed to Washington.—Proposed Appointments on Retired List.—Reconstruction Work at Base Hospitals Progressing.*

WASHINGTON, October 15, 1918.

Major General Merritte W. Ireland, the newly appointed Surgeon General of the Army, has been

ordered detached from duty, as chief surgeon of the staff of General Pershing in France, and to Washington to assume duty at the head of the Medical Department. Major General William C. Gorgas, who retired as Surgeon General on October 3rd, is still in France, and no announcement of his assignment to other duty has been made as yet.

General Ireland's orders to proceed to this country and the appointment of Brigadier General Robert F. Noble, M.

C., as major general to succeed him in France, dispose of the speculation that assigned General Gorgas to duty as Acting Surgeon General and the retention of General Ireland in France.

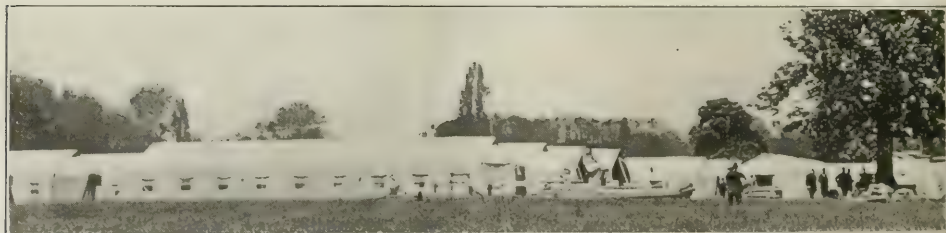
\* \* \* \* \*

A bill, introduced by Senator Sheppard, of Texas, is pending before the Senate Military Committee,



*Courtesy of the American Red Cross.*  
IN THE EMERGENCY RED CROSS HOSPITAL.

Patients were received from the Chateau-Thierry Front within twenty-five days after the erection of the hospital was requested.



*Courtesy of the American Red Cross.*

## AN AMERICAN RED CROSS EMERGENCY HOSPITAL OF SIX HUNDRED BEDS.

This hospital was erected and equipped and in full operation with 160 patients in it, twenty-five days after the request for it was received at Paris.

the surgeons, nurses, and hospital corps. By midnight of the twenty-fifth day after the order for the hospital was received in Paris, 160 young Americans, wounded, gassed, or sick, rested comfortably in clean beds. This is a record of efficiency which

authorizing the President to appoint to the rank of brigadier general on the retired list those officers of the Medical Department of the Army who entered the service of the United States over thirty-five years ago, and who, at this time, though retired, are

on active duty in war work, and who, under the rule of seniority, would have been entitled to promotion except for their automatic retirement for age by operation of law. It has been suggested that the bill be amended to include medical officers who were retired on account of physical disability incurred in line of duty, and who since have been placed on active duty and are rendering valuable service to the Government.

\* \* \* \* \*

According to Lieutenant Colonel Charles W. Richardson, M. C., acting director of reconstruction work in army hospitals, about eighty per cent. of

the wounded will be sent back to combat duty after treatment in the hospitals in France, and the remainder will be gathered in base hospitals there until they can be brought back to this country. It is with this twenty per cent. that the reconstruction work is chiefly concerned.

After arrival here, they will be distributed to the base hospitals throughout this country, each man being sent, when possible, to the station nearest his home. At present there are twenty-six of these hospitals, and more will be organized. Most of them have about 1,000 beds each, but some are designed to accommodate 3,000 patients. Reconstruction work is being carried on at all of these in-

stitutions, and at two or three special hospitals, such as the one in Baltimore, for the blind.

The patients are divided into three classes: Those that will be able to return to military duty; those that can be trained to render limited military duty; and those to be discharged when they are capable of self-support. The reconstruction division is coordinating its work with all other branches and forces for the good of the sick and wounded. The men are being classified into groups and trained with a view to their future usefulness, both in this war and in the time to come after the war.

The officers in the reconstruction division of the

Surgeon General's Office are Colonel Frank Billings, in charge; Lieutenant Colonel Richardson, acting chief of the division in the absence of Colonel Billings; Lieutenant Colonel James Bordley, Jr.; Majors M. W. Murray, A. C. Monahan, Frank B. Granger, Arthur Dean, M. E. Haggerty, and H. B. Price; Captain A. H. Samuels and First Lieutenant C. Willing.

\* \* \* \* \*



*Courtesy of the American Red Cross*  
ERECTING FRAME WORK FOR PORTABLE HOSPITAL.  
This hospital with beds for 600 patients was erected and equipped in twenty-five days.

efficiency of many governmental departments. The United States Public Health Service has mobilized for an active campaign against influenza. Experimental work is now being conducted.



*Courtesy of the American Red Cross*  
UNLOADING THE EMERGENCY HOSPITAL ON THE RACE TRACK GROUNDS.  
A complete 600 bed hospital furnished by the American Red Cross and erected back of Chateau-Thierry within twenty-five days.



## PHYSICAL TESTS FOR AIRMEN ARE NOVEL AND EXCITING.

The following authoritative statement from the War Department regarding the physical tests for aviators, appears in the September 21, 1918, issue of the *Official Bulletin*:

All men who have won their wings in the United States air service are now required to pass a new heart, lung, ear, and eye test to establish their physical and mental fitness when high in the air and particularly to indicate at what heights they are in a condition to fly. Cadets receive a test before they finish their schooling; flyers are given these tests periodically to eliminate any whose physical or mental efficiency has become in any way impaired.

These tests are the result of study and investigation by the Medical Research Laboratory at Hazelhurst field, Mineola, N. Y., whose staff has devised apparatus and determined upon a standard examination for classifying pilots. To stay in the rarefied air at an elevation of 20,000 feet for any length of time has been found to be a strain on even the most physically perfect. It has also been discovered that many of the most seasoned fliers cannot undergo the sudden quick changes in altitude occasioned by diving and climbing without physical deterioration. It was recognized as too great a risk to subject these men to actual flying tests. So the medical laboratory at Hazelhurst field undertook to devise some way of getting the same results by means of a ground test.

In the early tests the pilot was placed in a steel airtight cylinder from which the air was gradually exhausted and then replaced, to simulate a flight into the rarefied air of high altitudes and back to earth, but today the pilot sits comfortably in the same room with his examiners. His nose is clamped so that he can not breathe through it. Over his mouth is placed the breathing apparatus, which is connected by tubes with a tank of measured air, and with instruments that record every breath he takes. The air is analyzed at various stages of the run. As fast as he exhales the air is taken into a reservoir where it is cleared of carbon dioxide, and then returned to the tank. Gradually he uses up the oxygen and thus air conditions of high altitudes are duplicated. The higher one goes up, the rarer the air becomes; just so with the man under test.

The man under test is kept fairly busy, just as he would be piloting a plane. Before him on a table is a bank of small electric lights, one or another of which flashes every five seconds. These he must extinguish as fast as he observes them and before

they go out. He has but a few seconds. Below the lamps is a corresponding set of buttons which, when touched with a pointer held in the right hand, extinguishes the respective lights. Two observers watch him constantly and check his errors or delayed actions.

Another instrument before him is an ammeter which acts similar to a speed dial on a plane, and, accordingly, in the test must be kept at a constant point.

As time goes on (and the test lasts for about thirty minutes) the pilot becomes a bit groggy or sleepy from lack of oxygen, just as he would at the corresponding altitude, and this condition becomes manifest in changes in the action of his heart, eyes, ears, and brain. A few minutes after his release from the apparatus all signs of his recent fatigue pass away and he becomes normal again.



MAJOR WILLIAM F. CAMPBELL,  
M. C., U. S. A., of Brooklyn

## A BROOKLYN SURGEON ON THE WESTERN FRONT.

Major William Francis Campbell, M. C., U. S. A., of Brooklyn, professor of surgery in the Long Island College Hospital, is now at work on the Western battle front. When he first went over, about the end of July, he wrote, "I have been working with Dr. Joseph Blake (in Paris), but am transferred to more active service. I am very happy in the work because it is a man's job and it satisfies both mind and heart. I am glad I came. If you could only see our brave and patient boys, and know how much it means to them, you would realize how much we are needed here." From later letters to a Brooklyn friend, we quote the following: "(August) We have operated on 2,000 patients in eight days and we were then 200 behind our schedule. I personally operated in forty-seven separate cases in one day, with only two hours' sleep in twenty-four hours, and kept this up for five days. But it was all a great privilege to minister to our boys. They are the finest and the bravest bunch of kids I ever saw.

There isn't a single grouch among them. They lie on their stretchers and wait patiently for the surgeon's attentions. 'Take the other fellow, Doc.: I can wait,' is what you always hear as you go among the wounded. They don't seem to think of themselves, it's their pal comes first. Out here men lose all petty selfishness in the glory of their supreme sacrifice. (September 3) We are now working in teams on eight hour shifts—eight hours on and eight hours off so we just work and sleep (when not interrupted by shell fire). I have just enjoyed this big job and this wonderful adventure and am glad to have had this wonderful privilege." Major Campbell was rendered unconscious in Paris by a long range shell.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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and the Medical News  
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### SCIENCE AND ART OF MEDICINE.

Science is supposed to be classified knowledge, but what goes by the name of science in one age may become the foolishness of another time; the knowledge may not have been rightly classified, or the material carefully pigeonholed may prove not to have been knowledge. This uncertainty as to finality applies especially to the biological sciences, and should make those who deal with the human body cautious about being too dogmatic. The scientist is apt to become as dogmatic in his particular sphere as the theologian, and with much more likelihood of hindering progress.

In a recent gathering of medical men an eminent laboratory worker decried the use of vaccines in the treatment of hay fever, although the clinical results presented seemed, in many instances, to more than justify this means. He argued that as hay fever was not primarily a bacterial disease, no vaccine could be of help. The argument is, in a way, well taken, but, on the other hand, we do not know the nature of the anaphylactic condition present in hay fever, nor

are we thoroughly cognizant of bacterial products or their effects on the body. It is not impossible that the bacterial toxins may counteract the substances in the blood (if they are there) which produce the hay fever. If they do this without injury to the patient may it not be better to use them than to do nothing for the person who seeks relief?

We knew a prominent professor of medicine who became so scientific that he would not use a drug which had, in other hands, proved of much benefit in a certain disease, because it had never been proved to his mind just how it could be of benefit in the condition.

While he should be familiar with all the classified knowledge that is current, the physician must, for the present, hold to the fact that he is practising the art, rather than the science, of medicine—an art guided by science but not to be interfered with by the limitations of science nor the scepticism of scientists. It is well to be conservative in medicine, but not to be a slave to school laboratory findings, for the human body is a laboratory with which the physician deals daily.

### ENDOCRINOUS ORIGIN OF GASTRIC ULCER AND APPENDICITIS.

The obscurities of causation of these common pathological conditions receive illumination in the interesting conclusions reached by Friedman and in the suggestive presentation of his recent investigations [G. A. Friedman: Further Studies of the Influence of Parathyroidectomy on the Gastrointestinal Mucosa of Dogs and Rabbits, *Journal of Medical Research*, March, 1918]. In about seventy per cent. of dogs and of rabbits in which parathyroidectomy had been performed gastric or duodenal lesions were found to have developed, and in about twenty-eight per cent. in dogs and twenty-one per cent. in rabbits there were appendicular lesions. In both dogs and rabbits autopsied as controls no such lesions were found.

An ulcer, the investigator believes, develops from an initial erosion, a lesion which would seem to be induced by a disturbance in the thyroid secretion. A gastric ulcer in man shows a tendency to spontaneous healing, as do also those produced in animals by direct experimental methods. Experience in these experiments was directly contrary to this. It seems here that the



disturbance in the constitution of the animals occasioned by the permanent interference with the thyroid secretion was the cause of preventing this natural healing process, for these animals were not autopsied in a number of instances until several months after operation. The degree of disturbance of the thyroid secretion was probably far in excess of the milder degree which would produce the initial lesion in the human being. In the latter the ulcer becomes chronic, through the irritation of food and perhaps the excessive secretion of hydrochloric acid, if the constitutional disturbance is not corrected. The initial lesion in the appendix also, due to the thyroid disturbance, is aggravated and rendered chronic by the irritation of fecal matter and through the presence of bacteria.

The author attributes the origin of the lesion to vasoconstriction induced by the diminished amount of thyroid secretion in the blood. In some individuals the effect of this may be produced upon the smallest gastric or duodenal arterioles of the mucosa causing them to contract. This spasm of the arterioles then causes an ischemia of the mucosa, which is followed by a superficial necrosis from which the ulcer arises. A majority of the animals experimented upon showed a hypotonic stomach, which corresponds with the common clinical association of stasis and hypotonicity of the stomach with chronic ulcer or appendicitis. This is probably due to a hypotonic condition of the vagus.

On the other hand, a peptic ulcer may be associated with a hypertonic stomach, in which the hypertonicity is probably due to an irritable condition of the vagus. A spastic contraction of a small area of stomach musculature, caused by an irritable vagus, may produce the same conditions favorable to a lesion as that due to the spasm of the arterioles. This irritable condition of the vagus may be caused by excessive secretion of the thyroid. In either case, under such explanation, the formation of the ulcer is dependent upon a disturbance in the thyroid secretion. There still remains the question whether other endocrinous glands are not also involved, through the vegetative nervous system, and whether, therefore, the initial lesion is not due to a pluriglandular disturbance. This point of view necessitates the considering of peptic ulcers as due to systemic disturbances. They cannot therefore be cured by surgery alone, though this may remove the mechanical complications and assist in the healing process, which must be a spontaneous one. The inherited constitutional tendency to peptic ulcer is also explained in this way.

## A GENERAL PRACTITIONER OF CANADA.

Tucked away near the southwestern extremity of the Niagara peninsula, in the Province of Ontario, lies a little village of three or four hundred inhabitants, by the name of Selkirk. It is out of the way of ordinary routes of travel, though easily accessible to Buffalo and Hamilton, in which latter ambitious city they can hold record breaking medical meetings when they have a free hand, and no favors asked. There has just died in that secluded hamlet a general practitioner of ninety-one years who never allowed himself to become moss grown, who did not believe in all work and no play, and who would neither be shut in the limited environment of his clientele nor shut out of the larger professional life of the meetings of national and provincial medical bodies. Coming from a back township practice, he attained to the highest honor of the Canadian medical profession—the presidency of the Canadian Medical Association.

To see Dr. Thomas Tipton S. Harrison enter a medical meeting when in progress, either in Montreal or Toronto, was to see a small, spare, wiry man, of unknown age, but hale, hearty, and beaming; for he enjoyed stealing in quietly to a front seat, but his stealthy entrance never passed unnoticed. It would seem as though his brethren of the profession were always on the watch for his appearance. Then there would be loud and prolonged applause and sometimes cheers. Quietly he would slide into a chair, listen for a few moments to the speaker, and then lapse into peaceful slumber. His long journey had no doubt wearied him.

His professional brethren could very complacently await upon his repose; for well they knew that at either luncheon or banquet, Doctor Harrison would be called upon, when they could enjoy his rural feast of reason and flow of soul. It was not upon intricate problems of surgery or obstetrics he spoke, though in his ripe experience he could break a lance with even the skilled professor of the city and the college, but mostly upon those humorous episodes of active country practice, out of which he reaped a double enjoyment, experiencing them, and then relating them to his more fortunate confrères of the towns and cities. He was possessed of a rapierlike wit and a bountiful humor.

Members of the medical profession are too prone to hibernate. It may be that their calling forces it upon them. Perhaps the doctor cannot have too many social friends. It is none too nice either to be accused of "working" the church, the

club, the fraternal lodge, or the ward political room. They should, however, be free among themselves, taking their best social enjoyments from among members of their own vocation, and tentatively sipping the sweets which lend the most charm of happiness and contentment. They should be the last to speak disrespectfully to others of members of their own profession, always remembering that "to err is human, to forgive divine." Far too often yet is heard the slighting jibe at the attainments and ability of some professional brother. Does it not enhance the standing of our profession when men who cannot speak well of a member, at least preserve a golden silence? Does it hurt any of us to hold our lips even when the occasion might warrant a sneer?

With no particular following—never having been a professor—the life of Doctor Harrison, and others of his kind, typifies the broad minded, generous, sympathetic, kindly, jovial, general practitioner who has his ups and downs in a country practice. He battles with wind and snow, rain and sleet, frost and cold; long standing bills and unpaid accounts; he faces complications when he must long for professional assistance; and comes up to medical meetings in the big centres bubbling over with life—and once or twice in a century is honored with a presidency. Then there is a void, an empty chair. But we are the better for having had such as he.

#### PRIMARY MASTOIDITIS.

Primary mastoiditis is uncommon; the most interesting feature of the cases is the integrity of the tympanum. It is quite curious to note that an infection sufficiently intense to produce a destructive osteitis of almost the whole of the mastoid apophysis yet respects the thin barrier offered by the tympanum.

During trepanation for acute primary mastoiditis, the antrum alone is involved or it may be diseased with the rest of the apophysis. Isolated cellulitides have been met with in the neighboring cells of the canal in the posterior groups and in the cells of the apex, and in a subantral cell, with integrity of the antrum itself. Communication between antrum and tympanic cavity is easily suppressed, and what remains of the cavities is filled with a serous or mucous exudate. If tumefaction is intense and if the osseous cells are undeveloped, their lumen disappears, so that when they are surgically exposed they are found filled with a reddish pulpy mass. The lesions

soon extend beyond the mucosa and invade the bone.

It has been shown histologically that after ulceration of the mucosa of the cavities of the ear, the superficial layers of the bone become necrosed and exfoliate, while an infiltration of round cells invades the necrosed parts and extends in depth along the perivascular tissues. Around the vessels, young cell granulations invade the bone laminae and set up the same changes as in the superficial osseous layers. In more advanced cases, extensive necrosis of the osseous trabeculae is seen and around these necrosed areas granular tissue exists, in which can be seen bacterial masses.

It should be recalled that the infection extends from the mucosa to the bone by the perivascular connective tissue sheaths or lymphatics, and also that the bone infection manifests itself by necrosis of the adjoining lamellae. Now, if, instead of the microscopic necrosis which constitutes caries, one finds necrosis en masse of an osseous mass of considerable size, the result will be the formation of a sequestrum. Sequestra and necrosis are consequently two slightly different evolutions of the same process.

In the pus of a carious apophysis osseous dust is found and nearly always the sequestrum is free in a large cavity produced by caries of adjacent parts.

The histological findings explain how the process may become limited. The portion of necrosed bone becomes separated from the healthy bone, which itself is the seat of a reaction resulting usually in a partial or total hyperostosis, or by eburnation. Hyperostosis of the petrous portion of the temporal bone does not imply that it is a defensive process of the organism against invasion of the infection; it is, in reality, a very serious complication, because it is rarely limited. By obstructing the antrum, mastoid cells, the auditory canal, and condensing the external cortex of the apophysis, it inevitably results in preventing the pus from escaping, which is sooner or later followed by serious cerebral complications.

The progress of the lesions may cease, regression may occur, and recovery take place, but if, on the contrary, the process undergoes its evolution, the pus may find its way out through the natural fissures of the petrous portion of the temporal bone. Such an evolution is peculiar to childhood. The petrosquamous suture not being closed, the pus reaches the integuments through it. The pus may likewise travel by way of the vascular tract and come to the surface in the re-



tromeatic cribrose space, and this event is met with both in children and adults, but in this case it is practically certain that a diploic apophysis is involved.

Finally, in the adult, the effraction of the pus takes place at no matter what point of the external cortex. It may burrow downward toward the neck, giving rise to one of the varieties of Bezold's mastoiditis, according to the site of the perforation. The pus may also find its way into the external auditory canal by way of a minute fistulous tract; or it may find its way to the roof of the antrum; or force itself through the upper groups of cells, resulting in an extradural abscess with or without an external pachymeningitis or a meningitis.

Backward, the pus may attain the lateral sinus and follow its walls, thus producing the destructive changes of perisinusitis, endophlebitis, and thrombophlebitis. It is also by this route that posterior meningitis develops on the under surface of the cerebellum. Besides these complications, facial paralysis due to necrosis of the osseous block of the facial or infection of the perifacial cells results. Pyemia, with or without thrombophlebitis, cerebral or cerebellar abscess, may be the ultimate result, while serious meningitis is a less common complication.

#### THE INFLUENZA SITUATION.

The influenza has now been pronounced epidemic in every state in the Union and up to Wednesday, the daily reports showed an increasing number of new cases reported in all the States except three. There are indications of a subsidence of the increment of new cases in the military camps, though the number of deaths is increasing. In Philadelphia and in the District of Columbia, so large a proportion of the public has been affected as to seriously interfere with business. Public gatherings have been forbidden in many of the larger cities. In many places, schools, churches, saloons, and the moving picture houses have been closed, though these steps have not been taken in New York city up to Wednesday of this week. The disease has materially affected the output of coal in the mining districts of Pennsylvania. In many collieries, mining has been brought to a standstill by the illness of the miners. Preventive vaccines, most of which include cultures of the pneumococcus, are being tried but so far no reliable reports are available as to their efficacy. A sharp difference of opinion has arisen between Dr. Royal S. Copeland, commissioner of health, and the Public Health Committee of the New York Academy of Medicine regarding the severity of the epidemic and the steps which should be taken. The report of the Public Health Committee appears on page 681.

There is still a scarcity of nurses and physicians and the third year medical students have volunteered to help out but have not yet been called on.

The fourth year students are now on duty. The city is being laid out into zones with the view to conserving the efforts of the physicians and nurses by obviating the need for covering a large area. The New York Telephone Company has issued a request to the public to restrict the use of the telephone to essential business only and has closed half the booths in the public telephone stations. These steps have been rendered necessary by the increase of the number of operators suffering from influenza.

#### THE SURGEON AT THE FRONT.

In civilized warfare the surgeon and his staff are recognized as noncombatants and free from attack. In the present war the Germans have ignored this precedent and have repeatedly attacked hospitals far in the rear, killing and wounding surgeons, nurses, and patients. A graphic account of a night attack on an American hospital behind Chateau-Thierry in the *Saturday Evening Post* for October 19th shows the cold brutality of the German airmen and the utter futility of such attacks. The only possible end to be achieved, from a military point of view, would be to terrorize the enemy, and to prevent the erection of hospitals close behind the lines. The material damage inflicted is very slight, comparatively few are killed or wounded, and in place of terrorizing the enemy such brutal attacks have wrought the army to a white heat of indignation which will tell heavily against the Germans when the time for final settlement comes. It will be remembered that the first American officer to be killed was a medical officer, Lieutenant Fitzsimmons, of Kansas City, who was killed by a German bomb in front of a base hospital far in the rear. Fortunately, few such deaths have been reported, but the danger is ever present and the surgeons in the United States hospitals have made a record of coolness and self-possession under fire which entitles them to the highest praise and which nullifies entirely any possible invidious distinction which might have been made against them as being noncombatants. They are noncombatants in that they do not attack the enemy, but they are far from having any of the immunity which was formerly accorded to the noncombatants.

#### News Items.

**Buffalo Academy of Medicine Postpones All Meetings.**—In accordance with the request of the health department, the Buffalo Academy of Medicine has postponed all meetings until further notice.

**Fort Sheridan Base Hospital.**—The work of converting Fort Sheridan, Ill., into a base hospital was begun on October 10th. The estimated cost of this work is \$3,434,000, and when completed the hospital will have 4,000 beds.

**Academy of Medicine Section Meetings Postponed.**—Announcement is made that the Section in Medicine and the Section in Obstetrics and Gynecology of the New York Academy of Medicine will hold no meetings this month.

**Clinical Congress Postponed.**—Announcement is made that on account of the influenza epidemic the ninth annual Clinical Congress of the American College of Surgeons, which was to have been held in New York next week, has been postponed.

**Harvey Society Lectures.**—The first lecture of the series will be given on Saturday evening, October 19th, by Dr. E. K. Dunham, of New York, his subject being Certain Aspects of the Application of Antiseptics in Military Practice.

**Clinical Meeting of the Hospital for Deformities and Joint Diseases.**—Dr. Frederick Tilney, of New York, will read a paper on Gait and the Reflexes in Cord Lesions at a clinical meeting at the Dispensary and Hospital for Deformities and Joint Diseases, 41-47 East 123d Street, New York, Tuesday evening, October 22d.

**Two Officers Die in Fire at Base Hospital No. 3.**—Two Army officers were burned to death, four others were badly burned, and two others cut and burned in a fire on Thursday, October 10th, which destroyed the officers' quarters at Base Hospital No. 3, at Colonia, N. J., near Rahway. The dead are Captain Warren T. Walker, Medical Corps, and Captain Frederick Toole, Quartermasters' Corps.

**Public Health Service's Campaign against Influenza.**—The United States Public Health Service announces that it has mobilized for a national campaign against the Spanish influenza epidemic. Headquarters will be established in cooperation with State and local authorities at Baltimore, Md., Columbus, Ohio, Richmond, Va., and Columbia, S. C. Dr. Admont Halsey Clark, associate professor of pathology at Johns Hopkins University, died on Monday, October 14th, from pneumonia following influenza. He was engaged in experimental work on a cure for the disease which had been suggested by the officers of the Public Health Service.

**Philadelphia Medical Societies Postpone Meetings.**—On account of the prevailing epidemic of influenza the fall reception of the Medical Club of Philadelphia, which was to have been held on Friday, October 18th, was postponed to a later date. The West Branch of the County Medical Society postponed its October 15th meeting and the Northeast Branch will hold no meetings until further notice. The section in Laryngology and Otology of the College of Physicians has postponed its October meeting until November, and the Logan Medical Association has postponed its meetings indefinitely.

**Medical Society of the Missouri Valley.**—At the thirty-first annual meeting of the society, held in Omaha, Neb., September 19th and 20th, Dr. Charles Wood Fassett, of St. Joseph, Mo., for seventeen years secretary of the society, was elected president by a unanimous vote. Other officers were elected as follows: Doctor Watson, of Diagonal, Iowa, first vice-president; Doctor Aikin, of Omaha, Neb., second vice-president; Dr. S. Grover Burnett, of Kansas City, secretary. Doctor Gebbart was reelected treasurer. He is now in France and Doctor Burnett will act as treasurer until Doctor Gebbart's return. An interesting feature of the program was the patriotic banquet on Thursday evening, which was attended by one hundred and fifty members and their friends. The guests of honor were Colonel Franklin Martin, chairman of the General Medical Board, Council of National Defense, and Colonel J. M. Banister, of Omaha, U. S. Army, retired.

**Meetings of Medical Societies.**—The following medical societies will hold meetings in New York during the coming week:

*Monday, October 21st.*—New York Academy of Medicine (Section in Ophthalmology); Medical Association of the Greater City of New York; Psychiatric Society of Ward's Island; Yorkville Medical Society.

*Tuesday, October 22d.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; New York Medical Union; Metropolitan Medical Society of New York city; New York Psychoanalytic Society; New York Riverside Practitioners' Society; Therapeutic Club; Valentine Mott Medical Society; Washington Heights Medical Society; Woman's Hospital Society.

*Wednesday, October 23d.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; New York Surgical Society; Brooklyn Pediatric Society.

*Thursday, October 24.*—Hospital Graduates' Club; New York Physicians' Association; Ex-Interns' Society of the Methodist Episcopal Hospital (Brooklyn).

*Friday, October 25th.*—Academy of Pathological Science; Audubon Medical Society; New York Clinical Society; Society of New York German Physicians; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Hospital Graduates' Club.

*Saturday, October 26th.*—Harvard Medical Society; Lenox Medical and Surgical Society; New York Medical and Surgical Society; West End Medical Society.

**Meetings of Philadelphia Medical Societies.**—The following medical societies will meet in Philadelphia during the coming week:

*Monday, October 21st.*—Academy of Medicine and Allied Sciences; Blockley Medical Society; Clinical Association; Medical Society of the Woman's Hospital.

*Tuesday, October 22d.*—West Philadelphia Medical Society.

*Wednesday, October 23d.*—County Medical Society; Neurological Society.

*Thursday, October 24th.*—Northwest Branch of the County Medical Society; Pathological Society.

*Friday, October 25th.*—Medical Club (directors); Northern Medical Association; South Branch of the County Medical Society.

**Model Field Hospital a Liberty Loan Exhibit.**—An interesting Liberty Loan exhibit at Broadway and Fiftieth Street, New York, is a model field hospital. In this hospital is shown the methods of using the Carrel-Dakin solution in the treatment of septic wounds. One of the hospital beds in the hospital is equipped with the special frame invented by Dr. Joseph A. Blake, formerly of New York, and now in charge of the American Hospital in Paris. This frame is equipped with pulleys by means of which a wounded man is enabled to raise himself and change his position, and there are appliances for keeping a wounded leg in a firm position without inconveniencing the patient. Another new medical appliance included in the exhibit is an artificial anesthesia apparatus, the object of which is to enforce artificial respiration during an operation. It is said that there are at present only four of these machines in existence. There is also a complete sterilizing outfit such as is used in the field hospitals abroad. Practical demonstrations are given at this model hospital of the treatment of wounded soldiers.

**Special Influenza Programs at the Academy.**—At a stated meeting of the New York Academy of Medicine, Thursday, October 17th, the evening was devoted to an informal discussion of influenza. Dr. Royal S. Copeland, health commissioner of New York City, opened the discussion, and other speakers were Major Dudley Roberts, M.D., U. S. A., of Columbia Base Hospital; Dr. William H. Park, director of laboratories of the Department of Health of the city of New York; Dr. Douglas Symmers, pathologist to Bellevue Hospital; Dr. Henry W. Berg, and Dr. William R. Williams. A general discussion followed.

Last week the Eastern Medical Society presented a special program on the influenza pandemic and its complications, postponing the regular program. Dr. Morris Manges spoke on the symptomatology of the disease; Dr. Louis I. Harris, of the Bureau of Preventable Diseases, New York Department of Health, spoke on the epidemiology and administrative control; Dr. Charles Krumwiede, of the Bureau of Laboratories, Department of Health of the city of New York, discussed the treatment; Captain G. E. Lung, U. S. N., commanding officer of the Base Hospital at the Brooklyn Navy Yard, spoke on the military aspects of the epidemic, and Dr. Royal S. Copeland, health commissioner, presented a general survey of conditions in New York.

**Colorado State Medical Society.**—The forty-eighth annual meeting of this society was held in Estes Park on September 9th, 10th, and 11th, and notwithstanding war conditions, was an unqualified success. Next year's meeting will be held in Denver. Major F. H. McNaught, Medical Corps, U. S. Army, was elected president to serve for the ensuing year, and Dr. J. J. Pattee, of Pueblo, first vice-president. Major McNaught, the new president, was graduated from the College of Physicians and Surgeons, New York, in 1878, and practised in New York for a number of years. Twenty-five years ago he went to Denver. He was called to surgical service in the aviation branch of the United States Army in December, 1917, reporting to Kelly Field, Texas. After a month of service as assistant to the surgeon in charge of that camp, Major McNaught was ordered to the hospital at Camp Bowie, Fort Worth, Tex., as chief of the surgical service. After four months' activity in this capacity, he was ordered to the hospital at Plattsburg Barracks, New York, where he is chief of the surgical staff.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### STROPHANTHUS AND ITS ACTIVE PRINCIPLES VERSUS DIGITALIS.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 652.)

That recent comparative studies of digitalis and strophanthin have suggested a more definite clinical difference in the indications for these two agents than has hitherto been thought to exist was pointed out in the preceding issue. The conclusion reached by Vaquez and Lutembacher, 1918, that strophanthin influences the tonicity and contractility of the heart far more than digitalis, while the latter agent acts more particularly on cardiac conductivity, was emphasized.

Ouabain prepared by the Arnaud method is employed by Vaquez in acute insufficiency of the left side of the heart, manifested either in attacks of angina pectoris—of the type occurring when the subject is recumbent—or in acute pulmonary edema, with bloody and albuminous expectoration and marked development of râles in the chest. In these conditions he first practises venesection to the extent of 400 or 500 mls, then injects intravenously one half a milligram of ouabain, later to be repeated two or three times at twenty-four hour intervals. Very often, decided improvement results within a few hours after the first injection; pain, dyspnea, and angor diminish, and the patient is restored to a condition of quiet and comfort, and is able to secure much needed sleep. Where the expected benefit from the first injection fails to materialize, Vaquez does not hesitate to anticipate the time of the second injection, giving one fourth to one third milligram of the Arnaud ouabain only six hours after the first dose.

An important observation made in these cases of acute dilatation under ouabain treatment is that the blood pressure is restored approximately to the normal. Where, in subjects with originally high blood pressure, the systolic pressure has receded to eighty or ninety millimetres of mercury in the period of acute heart weakness, it is progressively raised to 120 or 140 millimetres by the treatment; if this rise in pressure fails to occur, the prognosis becomes much less favorable. Along with the pressor effect the output of urine is augmented in proportion to the extent of existing edema; the heart beats less frequently and more regularly; premature beats and gallop rhythm disappear, and the relaxation murmurs previously present are no longer audible. These favorable changes are associated with and dependent upon a constant and very appreciable reduction in the size of the heart; that this observation of Vaquez, based upon repeated x ray examinations, may be definitely accredited seems permissible, in view of his extensive special studies in cardiac radiography, recently published in a large volume devoted exclusively to this subject. In one case of acute high pressure dilatation, of which he

publishes cardiac tracings, not only do these outlines show a manifest reduction of the size of the organ after four ouabain injections, but the blood pressure is recorded as having risen from 180 systolic and 120 diastolic to 250 systolic and 130 diastolic—Pachon instrument. In some of these cases of acute dilatation the symptoms disappeared after a single short series of ouabain injections; in others, another series, beginning a week or ten days later, was required.

Similar results are reported in acute dilatation involving especially the right heart, following prolonged or violent physical exertion and in subjects with mitral lesions, notably in women in pregnancy or labor. In such cases ouabain intravenously is superior to digitalis by mouth because it acts with sufficient promptness to meet the emergency; digitalis here would be too slow in action, and besides, its absorption would be interfered with by the hepatic congestion usually existing in these patients.

In this connection Vaquez presents striking x ray outline tracings from a case of mitral disease with marked insufficiency of the right heart. One tracing was taken after venesection and a single injection of one quarter milligram of ouabain, the second after three subsequent injections each of one half milligram. A very marked reduction in the size of the heart, affecting chiefly its right side but also to a considerable extent the left side, is shown in these tracings, illustrating the pronounced effect ouabain is capable of exerting on cardiac tonicity.

In chronic, progressive cases of insufficiency of the heart following valvular disorders, subacute myocarditis, and adhesive pericarditis, Vaquez postpones the use of ouabain until digitalis has definitely become inadequate. Even then digitalis should not be abandoned unless ample doses have been given without result. Care must be taken, in order to avoid acute cardiac intoxication, to wait five or six days after the termination of digitalis treatment before beginning the administration of ouabain. One fourth milligram of the latter is then given intravenously and followed, at twenty-four hour intervals, by two or three injections of one half milligram. Not infrequently the benefits sought in vain from digitalis now appear, venous stasis diminishing, edema passing off, and diuresis being reestablished. X ray examination reveals a diminished size of the heart. Subsequent series of injections, if indicated, may be given at intervals of eight or ten days, the patient being meanwhile kept at rest and on a milk diet.

Another interesting observation made is that where ouabain has not proved as efficient as had been expected, a return to digitalis in large doses after the ouabain treatment will show a restoration of therapeutic action of the former drug which will persist for months and even years. This species of "reactivation" of digitalis action occurs even where ouabain has apparently been devoid of effect. It is ascribed by Vaquez to the restoration of cardiac

tonicity effected by the ouabain. Disorders uninfluenced by either of the drugs, if used alone, may thus be successfully treated by their simultaneous or successive employment. A considerable number of cases of cardiac insufficiency such as would hitherto have been thought irreducible, are amenable to the combined use of these two remedies.

(To be continued.)

**Large Doses of Salicin in Influenza.**—E. B. Turner (*British Medical Journal*, August 3, 1918) recommends, in the highest terms, the immediate administration of salicin in cases of influenza. One and a third grams (twenty grains) should be given hourly and the first three or four doses will remove all discomfort and pain, while complete recovery will take place within twenty-four hours. This treatment also promptly renders the patient noninfective and so checks the spread of the disease. These statements are based upon an experience of over 2,000 cases of influenza, treated in this way without a complication or a single death. The treatment has been used with equally satisfactory results in the present epidemic of Spanish influenza.

**Chloroform Analgesia by Self Inhalation.**—Torald Sollmann (*Journal A. M. A.*, August 24, 1918) calls attention to the great need for some simple and entirely safe method for the production of brief analgesia for the purpose of changing dressings and other short, painful surgical measures. He advocates, from experimental and clinical studies, the use of a measured five mils of chloroform, absorbed on a piece of cotton about the size of a lemon, and held over the nose in the palm of the patient's hand. This promptly produces a confused state and a marked degree of analgesia, the latter lasting about half an hour. The administration can be repeated if necessary, but it is not advisable to do so on account of uncomfortable after-effects. It is free from danger and does not require the help of an assistant.

**Treatment of Yaws with Castellani's Mixture.**—Guerrero, Domingo, and Argüelles (*Philippine Journal of Science*, July, 1918) assert that yaws is widely distributed in the Philippines. They have used Castellani's formula in forty-three cases, with marked success. The formula calls for: Tartar emetic, 0.065 gram; sodium salicylate, 0.65 gram; potassium iodide, 4 grams; sodium bicarbonate, 1 gram; and water, 30 mils. This is given in one dose, diluted in four ounces of water, thrice daily, to adults and children over fourteen years of age; half doses to children of eight to fourteen; less to younger children, and not more than half doses to Europeans. All but four of the forty-three cases presented one or several of the following symptoms during the treatment: Malaise, weakness, slight fever, nausea, vomiting, gastralgia, diarrhea, pharyngitis, pytalism, coryza, lachrymation, conjunctival congestion, headache, and insomnia. The authors gave on the first day one third of a dose three times; on the second, one dose twice, and on subsequent days, one dose three times. This system was adopted in order to ascertain susceptibility and establish tolerance. The curative number of doses

varied from fifteen to eighty, and the time to complete recovery from five to twenty-seven days. Of one series of fourteen patients, ten showed complete recovery and four, improvement. Of a total of thirty-six patients who continued the treatment, twenty-four recovered completely, seven showed improvement, seven were unimproved, and five had relapses in from two to five months after the lesions had healed. Continuation of treatment after healing—treatment for five to ten days with intermissions of ten to fifteen days—would probably insure a permanent cure. Emesis, gastralgia, and diarrhea, if troublesome, can be prevented by increasing the sodium bicarbonate or giving four mils of paregoric or 0.01 gram of codeine fifteen minutes before each dose. Vasomotor symptoms are readily overcome by epinephrine.

**The Rapid Cure of Scarlatina.**—Cesare Mangitta (*Giornale di Medicina Militare*, January 31, 1918) describes his treatment of scarlet fever with a combination of chlorophenol with quinine and camphor. Two injections are sufficient in a case of moderate severity, twelve to twenty-four hours apart, given preferably intramuscularly in the gluteal region. Every feature of the disease is ameliorated and the course aborted. Mangitta considers that this method changes the treatment of scarlet fever from a passive to a markedly active one, and reports in detail seven cases to support his assertions. A marked feature of this method is the almost immediate subjective feeling of wellbeing, with a rapid drop in temperature.

**Treatment of Bilious Hemoglobinuric Fever.**—F. Roux (*Presse médicale*, July 25, 1918) emphasizes the uselessness of hemostatic agents in this condition. Since it is due, not to a hemorrhagic process, but to hemolysis, or rather, hemoglobinolysis, he was led to employ instead a remedy exerting a conserving, reparative influence on the red blood cells, viz., arsenic. Adequate dose by mouth proved impracticable, most patients suffering from repeated vomiting; intravenous injections of colloidal arsenic, however, gave excellent results. In the first five patients treated—three already in a grave condition—two injections cleared up the urine and caused prompt convalescence. Subsequently the following combination was used: Colloidal arsenic, 0.00034 gram; colloidal iron, 0.00012 gram, and water, two grams. Twenty-three patients received such injections, without any other treatment. The combined series showed twenty-eight cases with one death, or 3.57 per cent., as against the usual mortality of thirty-three per cent. The single unfavorable case was that of a little girl of eight years in whom no intravenous injection could be given, and who received only intramuscular injections, which are ineffectual. As soon as fever and hemoglobinuria appear in a malarial patient, an injection of iron and arsenic colloids should be given, followed by another injection the next morning. The urine now generally clears up, but for safety a third and last injection is given. Beginning the fourth or fifth day, adrenalin is administered for about a week. During convalescence, malarial paroxysms sometimes appear. These are satisfactorily overcome by intravenous injections of quinine colloids.



**Spinal Tumors: Statistics in 330 Cases.**—Carl R. Steinke (*Journal of Nervous and Mental Disease*, June, 1918) sums up his conclusions in these words: 1. Tumors must be operated on early to obtain the best results. 2. Cord operations must be delicately performed. 3. The post operative treatment is important. 4. If few fibres are destroyed marked recovery or cure follows within a few months to two years. 5. If the symptoms have been slight, recovery may be expected. 6. If marked spasticity remains, resection of the posterior spinal roots is indicated.

**Failure of Intraspinal Serum Injection to Desensitize.**—Lewis Fox Frissell (*Journal A. M. A.*, August 31, 1918) records a case of very severe anaphylactic shock from the rapid intravenous injection of antimeningococcic serum, after several doses of the same serum had been administered intraspinally. It was to have been expected that the intraspinal administration of the serum would have desensitized the patient, just as its intramuscular injection is known to do, but in this case it was evident that such desensitization failed to occur. The failure might be supposed to have been due to the failure of absorption of the serum by the choroid plexus.

**Treatment of Chancroidal Bubo.**—W. Dubreuilh and E. Mallein (*Presse médicale*, July 11, 1918) recommend Fontan's procedure, which consists in injecting a ten or fifteen per cent. preparation of iodoform in petrolatum into the buboes. Distinct fluctuation must be awaited before the injection is made. The lesion is first opened by a narrow stab with the point of a scalpel and the pus thoroughly evacuated by pressure. The cavity is then filled to complete distention with the iodoform preparation, injected with an ordinary glass urethral syringe, previously sterilized. The authors depart from Fontan's original technic in injecting the iodoform preparation cold; this is to obviate its tendency, when hot, to reissue through the stab opening. The syringe is filled with the preparation hot, but then allowed to cool, or immersed in cold water before the injection. The affected area should previously have been shaved and aseptized. After the injection collodion and cotton are applied and followed by a spica bandage. Two days later, unless the bandage is still firm and there is no inflammation or pain, the dressing is taken off, the iodoform preparation removed from the cavity, and a collodion, cotton, and spica dressing reapplied. As a rule, this completes the treatment and the patient can be discharged in four to six days, as far as the bubo is concerned; generally, however, the original chancroidal lesion requires more prolonged treatment than the bubo. Among 121 cases the treatment was completely successful in 106; in four sinus formation occurred, in eight the bubo showed chancroidal transformation, and in three such transformation in the skin over the bubo had already taken place on admission. The sinuses soon healed. Excluding the last three cases referred to, the procedure failed in only 9.3 per cent. of the whole series. Pain, inflammation, and discomfort pass off after the injection; pain may later recur, however, if the cavity has not been completely filled.

**Heliotherapy in Pott's Disease.**—Maurice Ca-zin (*Fresque médicale*, July 23, 1918) calls attention to the benefits of heliotherapy, as practised by Rol-lier, in Pott's disease. The kyphosis can be eliminated almost invariably without the use of a plaster apparatus by this method. Heliotherapy, immobilization, and compression by a cushion under the diseased area, suffice to procure these results. The weight of the body, acting on the spine through a cushion of gradually increasing thickness, gradually overcomes the kyphosis. When the pain has disappeared, after a few weeks of heliotherapy, the patient is gradually trained to assume a ventral position during a part of each treatment. This permits of exposure to the sun's rays of both the diseased area and the posterior aspect of the body. While this is being done a hard cushion of increasing thickness is placed beneath the chest to help correct the dorsal and lumbar curvatures by accentuating the spinal lordosis. The patients so easily become accustomed, within a few days, to the ventral position that they soon prefer it and pass most of the daytime in this posture, meanwhile occupying themselves with writing, drawing, carving wood, etc. Even in cases with marked kyphosis a cure is thus obtained in ten to fifteen months—sometimes longer—where abscesses and sinuses exist.

**Arsenobenzol in Puerperal Bacteriemia.**—H. A. Miller and S. A. Chalfant (*American Journal of Obstetrics*, September, 1918) report eleven cases of puerperal blood stream infection, usually verified by blood cultures, in which arsenobenzol treatment was followed by recovery of seven of the patients. In such cases, presenting little or no local—uterine—evidence of disease, the profession has hitherto been practically helpless. Seven cases showed in the blood various strains of streptococci, with two deaths, two a gram negative bacillus, and two, negative cultures but absence of local trouble with severe constitutional symptoms. In every instance the blood stream was rid of the invading organism by the treatment, usually in twenty-fours, always in forty-eight hours. After the injection there was usually a decided improvement in the patient's general condition. Five patients had but one injection, three had two, and two had four. The dose of arsenobenzol used is given as six milligrams. General treatment consisted in giving water by the bowel and stimulation when indicated. No local treatment was employed except in two cases, in which the uterus was irrigated with Dakin's solution every two hours. The leucocyte count was usually low in comparison with the temperature and pulse, but after the arsenobenzol the leucocytes increased markedly. If, later, the leucocytes decreased decidedly without a corresponding improvement of the patient, reinfection was deemed probable and arsenobenzol given without waiting for the confirmatory laboratory report. In suspected blood stream infections, delay for the report may similarly be avoided, arsenobenzol being given immediately after a culture has been taken. The treatment is probably not applicable in thrombophlebitis, localized abscess, or pelvic cellulitis of long standing, where there is repeated infection of the blood stream, as the effect of the drug is not long continued.

**Significance of Fats in the Diet.**—Ernest H. Starling (*British Medical Journal*, August 3, 1918) calls attention to the fact that there are no scientific studies as to the minimum requirements of the body for fats, while the general food shortage due to the war has brought into prominence the great practical importance of the fat supply. From the material available and a study of the proportionate fat consumption by several classes of individuals under normal conditions, the following conclusions seem warranted. Since the alimentary canal of man has been developed to deal with a diet in which a considerable proportion of the energy is provided by fats, a certain amount of this food material is absolutely necessary. The diet of the infant yields over half of its energy from the fat present, and from the time of weaning to the age of six years butter and milk supply the main sources of fat which should represent about thirty-five per cent of the total energy of the diet. From the age of six years onward from twenty to twenty-five per cent. of the total energy of the diet should be supplied by fat, provided that there is no excessive demand upon the body for energy output. Such a proportion can be raised to thirty-five per cent. without any harmful effects, but twenty per cent. should be considered as the minimum. Where the energy demands are excessive—3,600 to 5,000 calories or more—these increased demands should be met by an increase in the proportion of fats up to forty per cent., on account of the limitations upon other foods by reason of the size and digestive capacity of the alimentary tract. Such conditions are met in the food tables adopted by the Inter-Allied Scientific Food Commission.

**Treatment in the Toxemias of Pregnancy.**—Gilbert I. Strachan (*British Medical Journal*, August 3, 1918) deals only with the immediate treatment of the fully developed condition, recognizing, however, that this condition should be largely avoided by proper prophylactic care. The treatment must always rest on the basis that the woman is pregnant, and that the termination of pregnancy removes the cause of the toxemia; and if the pregnancy is to be terminated it must be done early and not postponed until the patient's life is in danger. The treatment of various types of toxemias must run on similar lines, the variations being minor. In eclampsia sedatives are demanded, and if properly used morphine is probably the best. A routine which is both safe and satisfactory is to give fifteen or thirty milligrams (one fourth or one half grain) as the first dose, and if necessary to repeat the smaller dose not over twice, at intervals of two hours. If this does not prove satisfactory operative measures will probably be required. The drug decreases metabolism and so reduces intoxication, diminishes cerebral irritability and lessens the fits, and lowers the blood pressure. If used with care and only for a limited period it never produces harmful results. Chloroform is very valuable but must not be used over a prolonged period. Chloral hydrate and potassium bromide are of value for the restlessness between fits, but alone are of little sedative aid in eclampsia. On the other hand, paraldehyde is of great sedative value and is absolutely

safe. Eight mils (two drams) can be given by rectum, and half the dose repeated every two hours when necessary. In such doses it is usually quite equal to morphine and has none of its disadvantages. Careful attention must be given to the patient's surroundings to exclude all sources of irritation and excitation and only a single, but a thorough, examination should be made. The methods advocated recently by Stroganoff are also highly satisfactory. Circulatory sedatives, such as *Veratrum viride* and the nitrites have frequently been advocated, but the former is too dangerous and the latter are seldom efficient. In hyperemesis attention must be given primarily to the gastrointestinal tract, the stomach being first washed out and then the bowel, which latter should be kept clear as it may have to be used for feeding. Rectal feeding, especially with glucose, is usually well borne, but nourishment may have to be withheld for a day or two. Bismuth subcarbonate, tincture of opium and dilute hydrocyanic acid are most variable in action as gastric sedatives, but the most effective is dilute hydrocyanic acid in doses of 0.3 mil (five min.) Purgatives may be used but can seldom be tolerated by the stomach. Diaphoresis is of distinct value, as is also venesection with saline infusion. If these measures fail to give prompt relief the immediate termination of pregnancy is demanded.

**Hypophyseal Tumors Through Intradural Approach.**—A. W. Adson (*Journal A. M. A.*, August 31, 1918) anesthetizes the patient by the inhalation drop method and places him on the table at an angle of eighty degrees with the horizontal plane, the head being held back so as to permit the natural gravitation of the frontal lobe from the anterior cranial fossa. An osteoplastic flap is made with its anterior limb corresponding to the hair line, the posterior to a point above the ear and the upper to the median line, where the incision is three and one half inches long. Hemorrhage from the flap is controlled by a pedicle clamp, that from the scalp by the application, at half inch intervals, of forceps to the aponeurosis, which is then turned outward to compress the edge. The bone is cut with a bevel to aid in its retention. A dural flap is next made at right angles with the osteoplastic flap and this flap is allowed to remain in position over the frontal lobe. The brain surface and exposed dural surface are covered with warm, moist cotton, and this by strips of rubber tissue laid like shingles to make uniform pressure when the cortex is raised by the retractor. The retractor is ligged at one side of its tip. The hypophysis and optic commissure are thus readily exposed by gentle manipulation. When both optic nerves have been exposed the hypophyseal tumor is gently dissected free of the nerves and commissure by means of blunt hooks. When the tumor is well freed from its surrounding structures it is slowly removed from its pedicle by means of a septal snare. The pituitary body may then be removed from the sella turcica. This operation gives an approach in a dry field which is free from infection. The exposure permits complete dissection of the tumor from other structures and the removal of part or all of it and of the pituitary body. Trauma of the commissure and optic nerves is avoided.



# Miscellany from Home and Foreign Journals

**The "Influenza" Epidemic of 1918.**—Oliver H. Gotch and Harold B. Whittingham (*British Medical Journal*, July 27, 1918) base their statements on a careful study of the first fifty cases seen in an Air Force Hospital. In all cases they grew a Gram negative micrococcus, quite similar in most respects to the *Micrococcus catarrhalis*, from the sputum or from nasopharyngeal swabs. Pfeiffer's influenza bacillus was present in only eight per cent. of the cultures, though influenzalike bacilli were present in direct smears in 62 per cent. of the cases. Other organisms were also found in many of the cases, but the only constant one was the micrococcus mentioned. This organism, when inoculated on the nasopharyngeal mucosa of two normal persons, produced typical attacks of the disease and was recovered from the throats and sputum during the disease in both of the cases. It was therefore regarded as the probable causative organism, either alone or in conjunction with the *Bacillus influenzae*. The incubation period of the disease was usually one to two days and the onset sudden with bodily pains, headache, malaise, etc. The headache was generally diffuse, the throat and nose felt tight and sore, and there was a slight dry cough. The symptoms were generally much worse by the second day and a painful photophobia developed. By the third day there was usually some improvement, but some cases ran a five day course. Convalescence averaged a week to ten days. The physical signs were heavily coated tongue; toxic appearance; marked conjunctival injection; acute inflammation of the whole mucosa of the buccal cavity; rapid rise of temperature to 103 or over; defervescence by lysis on the third or fifth day; slow pulse; slight bronchitis; scanty, concentrated urine with albumin and casts; initial leucopenia with relative polynucleosis followed by moderate leucocytosis and a relative lymphocytosis. Blood cultures proved negative.

**Epidemic Three Day Fever on a French Hospital Ship.**—P. Joly and Baril (*Bulletin de l'Académie de médecine*, July 30, 1918) describes an epidemic which broke out on a hospital ship in May, 1918, reproducing the epidemic that prevailed on all Mediterranean shores at the time. The interval between the first and last case was eleven days. Over forty per cent. of the previously healthy ship's crew developed the disease, but very few of the patients on board suffered. The onset was almost always sudden, usually in the evening or at night, with headache and backache. Other symptoms were ocular and periorbital pain, slight dysphagia, a tracheal cough, myalgia, especially in the neck, back and limbs, mental and physical prostration, anorexia, and sometimes nausea. The temperature rose rapidly to 38 or 40° C., remained there as a plateau for two days, and fell usually by crisis on the third day, occasionally by lysis on the second or third days. Convalescence occupied but two to four days, and no actual complications were witnessed, though there was sometimes a considerable loss of weight. Quinine proved ineffectual, but the following solution gave relief: Sodium salicylate, two grams; tincture

of aconite (French), ten to twenty drops; syrup of belladonna (French), ten grams, and water, to make 150 grams. The authors argue against the condition being gripe, on the ground that the cases presented too uniform a clinical picture, that muscle pains had been more marked than asthenia, that joint pains, complications, and recurrences were wanting, and that convalescence was so brief. The disease much more closely resembled the so called Mediterranean dengue or phlebotomus fever.

**Epidemic Streptococcal Bronchopneumonia.**—W. G. MacCallum (*Journal A. M. A.*, August 31, 1918) studied a series of cases of bronchopneumonia caused by the *Streptococcus hemolyticus* and summarizes his findings as follows. He concludes that the *Streptococcus hemolyticus* is capable of giving rise to extensive and fatal epidemics of a form of bronchopneumonia which involves the framework of the lung and the walls of the bronchi in such a way as to be classed as an interstitial bronchopneumonia. This bronchopneumonia arises with or without such predisposing causes as measles, but it seems specially severe after that disease. There is often also a diffuse, patchy, lobular pneumonia in which the streptococcus is found finely scattered in the alveolar exudate. Areas of such type may be confluent and resemble lobar pneumonia. In the more acute cases of such pneumonia there is frequently an ulceration of the vocal cords and epiglottis. Empyema is an extremely frequent complication, while other complications are not common.

**Epidemic of Streptococcus Pneumonia and Empyema.**—Joseph L. Miller and Frank B. Lusk (*Journal A. M. A.*, August 31, 1918) record their experiences in Camp Dodge, Iowa, from September 20, 1917 to May 10, 1918. From the beginning up to March 20, 1918, the ordinary clinical lobar pneumonia of pneumococcal origin prevailed, of mild type and giving a mortality of only eleven per cent. in the 276 cases. In this series empyema occurred in eleven per cent. of the cases, but showed a marked tendency to multiple pus foci, and its mortality was seventy per cent. in the colored troops and fifty-seven per cent. in the white. Beginning between March 18th and 20th, the epidemic of streptococcal pneumonia broke out, and to May 10th there were 400 cases. In this pneumonia there was very early evidence of severe intoxication, and empyema became very frequent and was extremely early in its development. The appearance of a pleural exudate was often very hard to determine by physical examination, the x rays, and repeated aspirations. The fluid was moderately turbid at first, slowly becoming definitely purulent. The exudate showed pure streptococci on culture in eighty-eight of ninety-five cases, all being of the hemolytic type, while pneumococci were also present in the remainder. The mortality from this empyema was forty-four per cent. in the colored and sixty-five per cent. in the white soldiers, while the mortality from the uncomplicated streptococcus pneumonia was twenty per cent. in the colored and eleven per cent. in the white.

**Medium for Culture of Pfeiffer's Bacillus.—**

John Matthews (*Lancet*, July 27, 1918) presents a description of the preparation of this medium at once, and without waiting for the preparation of a more complete paper with the record of his experiments, because of the prevalence of influenza at the present time. The essence of the medium is the use of blood digested by trypsin. This is prepared as follows: One-quarter mil quantities of Allen and Hanbury's trypsin compound are added to each of a series of tubes containing 4.75 mls of sterile broth. The tubes are then incubated for twenty-four hours and contaminated tubes are discarded. To each of the sterile tubes there is then added one mil of blood, drawn by venipuncture, and the mixture is incubated for three or four days, when it is ready for use. Various other methods and other proportions of blood may be employed in making the digested blood, but the proportions here given are the same as those used in making quantitative blood cultures for diagnosis, so that such cultures thus obtained are as sterile can be readily trypsinized and employed. Douglas's tryptagar, faintly alkaline to litmus paper, should be prepared and the final culture medium is made by mixing five mls of the trypsin blood with about thirty mls of the agar. The advantages of this medium are: That it grows the influenza bacillus freely from the first culture; that it is decidedly selective toward this organism, inhibiting pneumococci entirely and streptococci and other Gram positive organisms to a large extent; and that the colonies of the influenza bacilli are of large size even in the initial cultures. With this medium about a dozen recent cases grew the influenza bacillus, either from postnasal swabs or from the sputum or nasal mucus.

**Detection of Infective Syphilitic Lesions by Staining by the Fontana-Tribondeau Method.—**

Quioe (*Paris médical*, July 27, 1918) considers staining of a smear for spirochetes the diagnostic procedure of choice where early recognition of the disease is required in the absence of positive clinical signs. Ultramicroscopy is serviceable for this purpose only where the specific spirochete is present in considerable numbers and unassociated with other spiral organisms. Staining by the Giemsa and Proca-Vasilescu technic is of value only in very thin smears with at least a fair number of spirochetes. With the Fontana-Tribondeau method, on the other hand, the specific treponema contrasts sharply with the rest of the specimen. An entire smear may be completely examined, and even sparse spirochetes cannot be overlooked. The specific organisms can be easily and at leisure differentiated from other forms of spirochetes. The author has conducted seventy-eight examinations by this method, with positive results in fifty-four instances. All lesions clinically specific revealed spirochetes, and in some instances the positive diagnosis promptly afforded obviated all harmful delay in the institution of treatment. The method is particularly recommended for the diagnosis of chancre in the first two or three days, before induration and lymphatic enlargement have occurred; for infected or mixed chancres, or chancres artificially indurated with caustic agents; for gonorrheal chancriform ulcerations, and for

secondary lesions of the preputial mucosa altered by concomitant balanitis. Fontana's ammoniacal silver nitrate solution is made by gradually adding ammonia to the greater part of a solution of one gram of silver nitrate crystals in twenty mls of water, stirring constantly with a glass rod until disappearance of the sepia colored precipitate occurs. The remainder of the solution is then very gradually added until a slight turbidity is seen which persists on stirring. This reagent will keep for some time in darkness. In staining a smear, the latter is first carefully dried, then treated two or three times for thirty seconds—according to its thickness—with Ruge's solution, made by dissolving one mil of glacial acetic acid in 100 mls of two per cent. formaldehyde solution. This dissolves the hemoglobin. The preparation is then washed with alcohol and the alcohol remaining on it ignited. Next it is covered with a solution of one gram of phenol and five grams of tannic acid in 100 grams of water, and heated to steaming for about one minute. Finally, the tannin solution is carefully washed off with water, the preparation dried, the silver nitrate solution applied, and the slide again washed and dried. All spirochetes are stained, but the specific organism exhibits its special morphological features, in particular its marked tenuity. It appears violet-black on a transparent or light yellow background.

**Immediate Bimanual Percussion in the Diagnosis of Pulmonary Tuberculosis.—**

O. Peyret (*Presse médicale*, July 25, 1918) seeks to supplement the findings of ordinary mediate finger percussion by investigating with the palmar surfaces of both hands the massive or total dullness of the lung apices. Patient and observer should preferably be standing. Anterior and posterior landmarks are first determined, the former being on the anterior border of the clavicle at the midpoint of a line joining the sternal crotch and the outermost point of the acromion, above the head of the humerus; the posterior landmark is the spine of the scapula. These two points are joined by a line, as short as possible, passing over the shoulder and prolonged vertically behind for ten centimetres below the spine of the scapula and interiorly for twenty centimetres below the clavicle. These lines serve as axial guides to the percussing hands; the anterior hand is placed with the tip of the middle finger half a centimetre below the clavicle, and the posterior hand, with the metacarpophalangeal joints over the spine of the scapula. The observer stands at the side of the patient, facing the nearest shoulder. The patient throws his head back, allows his shoulder to hang loosely, takes a deep breath, then lets all the air out and remains motionless, with the mouth open. Percussion is conducted alternately over one apex and then the other, the observer merely leaning forward to attain the more distant shoulder, without in the least disturbing the relationship or position of his two arms. The hands must be carefully adjusted so that the palms and fingers are in complete contact with the parts before beginning to percuss. All the force of percussion should come from the arms, the wrist remaining passive and motionless, though not rigid. The percussion should be relatively light, preferably in the form of a series of rapidly repeated blows.



Dullness noted by this method is almost pathognomonic of lung congestion, i. e., of an active lesion rather than a fibrotic condition; in this respect it is of service where ordinary mediate percussion fails. Where doubt remains, felt gloves may be used to eliminate the slapping sound of the percussing hands. Tactile sensations should, apart from the percussion notes, be carefully noted during the procedure; the diseased apex imparts very plainly an impression of diminished elasticity as compared with the normal or less affected side. Stethoscopic auscultation may be combined with bimanual percussion.

**Gas Bubbles at the Sites of War Fractures.**—P. Duval and H. Bécère (*Presse médicale*, July 11, 1918) have encountered four cases in which x ray examination clearly showed accumulations of gas in war fractures. The gas was present in the form of a more or less extensive bubble, located either in the bony focus proper, between the ends of the fractured bone; in contact with the shaft, or extending from the seat of fracture into adjacent muscle tissue. The gas bubble persists six to ten days, then wholly disappears. The question arises whether such collections of gas are due to confinement of air in the empty space frequently existing between the bone fragments or to an abnormal production of gas at the point of fracture. The discovery of anaerobic germs in the wounds suggested that these may be responsible.

**Essential Partial Tetanus.**—G. Etienne (*Paris médical*, August 3, 1918) lays stress on the fact that partial tetanus by no means implies mild tetanus. In two cases the incubation period was but three and five days, respectively; in another, fever was noted very early, etc. These cases showed gradual intensification of the tetanic manifestations, and the author believes they should be classed as instances of incipient tetanus in process of extension from the tissues primarily affected. Incipient, and still partial tetanus is, indeed, apt to be overlooked, until sudden, rapid, aggravation, with extension to the masseters and neck muscles, occurs. Extending tetanus may be caused to remain partial by early, intensive serum treatment. To secure this result, however, early diagnosis is required. None of the cases of incipient tetanus which came under the author's observation had been diagnosed as tetanus. To detect incipient tetanus one must observe the first spasmodic manifestations near the portal of entry of the virus. The definite diagnosis is to be based on fibrillary or fascicular contractions induced by sudden, repeated movements of the suspected limb; on exaggeration of the reflexes and of muscle irritability; on spastic attitudes of the limb, and on the athletic appearance of the muscles and the sensation of firmness they impart on palpation. One should always bear in mind that while the tetanus toxin formed at the point of injury may act in an overwhelming manner through the blood stream, striking from the outset the entire nervous system though manifested first in the elective centres of the masseters and neck muscles, extension may also take place progressively through nervous channels, beginning near the site of infection. In these cases extension may be slow and steady or may suddenly pass into

general involvement. In progressive cases trismus appears only when the disease has already been present for a certain period, and is a sign of generalization of the disease, unless the wound is in the district of the facial nerve itself.

**Brain Changes in Gas Poisoning (Carbon Monoxide).**—Emory Hill and C. B. Semerak (*Journal A. M. A.*, August 24, 1918) made careful studies of the brains in thirty-two cases of this form of poisoning and reviewed the literature of the pathology of this intoxication. They found that carbon monoxide produced a characteristic lesion of the brain, namely, a bilateral ischemic necrosis of the lenticular nucleus, especially of the globus pallidus. This lesion was due to thrombosis and degeneration of the vessel walls as a result of the presence of the carbon monoxide in the circulating blood, while anatomic peculiarities of the circulation seemed to account for the characteristic localization of the lesion. The extent of the necrosis, as found post mortem, varied from slight perivascular lesions to grossly visible softening of the whole lenticular nucleus and internal capsule, the variations depending on the amount of gas inhaled, the duration of life after intoxication, and upon pre-existing pathological changes in the vessels. Various small hemorrhages in the leptomeninges and cerebral white matter were also part of the characteristic lesions of the poison. Edema and hyperemia of the brain and internal hydrocephalus were frequently found. These facts readily explain the subsequent development of various nervous and mental conditions, as well as the occurrence of death.

**Determination of Quantity of Secreting Tissue in Living Kidney.**—C. K. Watanabe, Jean Oliver, and Thomas Addis (*Journal of Experimental Medicine*, September, 1918) report the results of investigations made some years ago, when they attempted to approximate, as closely as possible, the conditions met with in disease, by a comparison of the degree of anatomical defect resulting from the action of uranium on the kidney and the degree to which the function of urea excretion was disturbed, under conditions involving strain on the kidney. An anatomical classification of the kidney lesions based on the extent of damage seen microscopically, according to whether it was slight, moderate, or severe, and a similar functional classification was determined, depending on whether the function after uranium was sixty-six per cent. or more of the measurement made in the control experiments, which was considered as slight functional damage; between thirty-three and sixty-six per cent. of the original was listed as a moderate defect, and when the function was less than thirty-three per cent. of the control experiment, it was considered severe impairment of function. Under the strain induced by the administration of urea, the authors were able, using the above classifications, to show the relation between the amount of anatomical damage in the kidney and the degree of defect in the urea excreting capacity induced by uranium. In attempting to do this, they also found that the closest correlation between structure and function was obtained when the ratio between the urea content of the urine and of the blood was used as the measure of function.

# Proceedings of National and Local Societies

## MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held January 21, 1918.*

### SYMPOSIUM: MEDICAL PROBLEMS OF THE WAR DRAFT.

The President, DR. THOMAS S. SOUTHWORTH, in the Chair.

**Rehabilitation of the Rejected.**—DR. WILLIAM HARRIS SHELDON read this paper, which embodied an account of the work of the Volunteer Physical Reclamation Committee to date. The object of the formation of the committee was to make fit for military service those men who had been rejected by the army examiners for being underweight and underdeveloped. In April, 1917, classes were started at Cornell Medical Clinic for building up these men, some of whom were referred by the Navy Recruiting Office. Physical drill was taught and instruction in hygiene given. In the fall of 1917 an evening class was opened and it has since been held regularly three times a week. A record was made of the history and physical condition of each man and he was personally instructed as to his habits, work, diet, and hygiene. Most men who were underweight had poor muscles and were underdeveloped. The object of these classes was to build muscles, particularly of the chest and abdomen. This aided the circulation of the blood, helped nutrition, and increased the power of digestion and assimilation, thus enabling the eating and digesting of an amount of food otherwise impossible. Physical drill was conducted in squads of twelve for twenty minute periods, and exercises were selected to develop the chest, abdominal and foot muscles, no apparatus being used. The men were instructed to take the same exercises at home on alternate days, but to avoid other exercise except a moderate walk, with deep breathing. The drill was followed by a warm and then a cold shower and a brisk rub, and each man was given a pint of milk and crackers *ad libitum*. On November 16th, 116 men had entered the classes, twenty-four had gained the requisite weight and been accepted in the army or navy, and several others had been registered for service. Apart from this, the men carried themselves better, had acquired habits of personal cleanliness, and showed more self-respect in every way.

The types of men referred to these classes were those with long chests, badly developed, and with narrow subcostal angle, stooped shoulders, and wide intercostal spaces with ribs slanting downward at an acute angle. Low centrally placed hearts were common, and not a few had functional murmurs which cleared up after a short period of training. The long enteroptotic type of abdomen was often observed.

These men were earnest and eager to fit themselves for the service of their country. The experiment had been a success. The field for such work was almost unlimited, not only in times of war but of peace, for if it accomplished nothing else it

demonstrated its value in spreading through the community the idea of a proper method of living.

Mr. ROGER B. WOOD, director of the draft in New York city for the Adjutant General of the State, stated that the fundamental principle of the selective draft act was that no man not liable to service should be called to the colors. He expressed his deep conviction that every exemption board, every physician, and every lawyer associated with these boards would make it his business to see that this principle was carried into effect. That they were successful in carrying out their purpose was demonstrated by the fact that at Camp Upton the record for rejections upon physical examination was only four per cent.—better than that of any camp in the United States.

**Medical Advisory Boards.**—Major CHARLES M. DOWD, M. R. C., said that on June 5, 1917, 9,586,508 registrants between the ages of twenty and thirty-one were enrolled under the selective service law, and of this number 1,057,363 were certified for military service, and a large proportion of them were actually in that service. A new plan had been adopted, purposed to utilize the resources represented by the remainder of these nine and a half million registrants. They were to be divided into five classes, numbered according to the different degree of availability of each class, for the nation's need. Physical examinations were to begin promptly in Class I, so as to select those men best qualified for the next army. For this the authorities in Washington decided to create a new type of medical examining board, to act mainly in the capacity of consultants and to be called the Medical Advisory Boards, the members of which were to be nominated by the governors of the individual States and appointed by the President of the United States. A member of the Medical Reserve Corps should act as aide to each governor in districting the state and nominating the members of the boards, taking council with representatives from the American Medical Association and the Medical Section of the Council for National Defense. The boards were to represent ten different specialties: Surgery; internal medicine; tuberculosis; neurology; ophthalmology; ear, nose, and throat; urology; laboratory; roentgenology; and dentistry. Since the boards had only an advisory capacity the types of men who were consultants were especially adapted for appointment on them. Fifty-eight such boards had been appointed in New York State, thirty-three in Greater New York and Long Island, and twenty-five in the remainder of the state. There were 658 physicians and sixty-three dentists upon the boards, and they represented the best type of consulting talent in the state. The authorities of each of the following hospitals organized a medical advisory board: Columbia University, St. Luke's Hospital, New York Hospital, University and Bellevue Hospital Medical College, Cornell University Medical College, Post Graduate Hospital and Medical School, Flower Hospital, Lincoln Hospital, and Fordham Hospital. In Brooklyn,



boards were organized at the Methodist Episcopal Hospital, Brooklyn Hospital, Trinity Hospital St. Catherine's Hospital, Greenpoint Hospital, and the Norwegian Hospital. A board was organized in Jamaica and one in Richmond. Many were organized in triplicate so that the members could work on stated days in the week and meet the contingency of a great rush of work if necessary. Throughout the state, boards were established at White Plains, Newburgh, Poughkeepsie, Albany, Troy, Saratoga Springs, Plattsburg, Saranac Lake, Ogdensburg, Watertown, Utica, Syracuse, Rochester, Buffalo, Jamestown, Elmira, Binghamton, and Middletown. A diagrammatic statement of the plan of procedure, made by Dr. Robert L. Dickenson, was included in the official instructions. The manifest function of the medical advisory boards was the giving of expert opinion, thus conserving the rights both of the government and of the individual registrants, and placing the type of physical examination on so broad a basis that all might acknowledge its justice. New regulations increased the amount of examining to be done by the boards and even took away their function as consulting boards, but every effort was being made to equalize the strain thus thrown upon the medical advisory boards.

The cases examined by the medical advisory boards were referred by the local boards, acting either independently or at the request of a government appeal agent or an examining physician. The registrants themselves might, with certain restrictions, appeal to the medical advisory boards. Registrants who were at a distance from the local boards of their home districts were referred to medical advisory boards. Delinquents might be referred by the Adjutant General to medical advisory boards.

Supplementary directions for the boards of this state were issued from the office of the Adjutant General, under date of December 29, 1917. The local boards were expected to designate in what respect examination was desired and to refer the registrants at such time and in such number as should prevent undue crowding or undue retention. An order of reference and three properly filled out copies of Form 1010 should be received from the local board through the mail. The registrants should be identified, and substitution prevented by means of signatures, fingerprints, photographs, or all three if necessary. In the local regulations of this state it was directed that the orders of reference should be kept and that the physicians who made examinations should sign their names on the backs of these orders. In addition to this, carbon copies of the entries of the boards' official decisions were filed with the orders of reference. The Federal Government had also given directions for very simple records.

**Need for Standardization of Local Board and Army Examinations.**—Dr. RICHARD WARD WESTBROOK said that the principal defect of the medical work of the draft lay in the lack of standardization. Some examiners accepted a weak man on the theory that army life would bring about a wonderful change in him and would make of him an efficient soldier; other examiners rejected the same man on the theory

that the strain of military life in modern warfare would pull him down to the point of developing disease and cause him to become a drag upon the army. In the first draft, the authorities urged the acceptance of a sufficiently large percentage of men; also that the Government be always given the benefit of the doubt and the registrant sent to the army if there was any question of his fitness. When the registrants were finally sent to the cantonments, the criticism of the army surgeons was summed up as follows: That much of the medical work had been badly done; that it showed both lack of care and lack of conscience, and that the Government was being put to great expense in caring for and returning unfit men. At the same time word came from the regular army recruiting offices that good men were presenting themselves for enlistment but could not be accepted as volunteers under regulations, as they had been rejected by local boards.

The work of the forthcoming draft, as arranged, would be an improvement in several ways, but it was well to emphasize the need of standardization of the local and advisory medical boards in their personnel, equipment, and methods, and also the fact that the army examination standards should conform as exactly as possible to those of the civilian boards. In New York city, a group of four examiners—an eye specialist, a throat and ear specialist, an internist, and a surgeon—could examine comfortably and thoroughly one hundred men a day for a local board and have part of the day left for private practice. The employment of paid clerks would do away with the interminable writing during examinations. Medical examiners should be provided with a standard examination equipment by the Government, and should be provided, through reading matter and lectures and demonstrations by army officers, with first hand information as to the work of the soldier in the different branches of the service. The civilian medical work should be under inspection by experienced men who might also direct and suggest. The medical advisory boards might well supervise the work of the local boards associated with them, and also act as middlemen to keep in touch with both local boards and the army. If the medical advisory boards were to be swamped with numberless reexaminations of slackers, or unfit men, appealed by Government agents, it would not serve its real purpose. If used as a consulting board, with its special experience and special facilities, it would be able to clear up the questions in time of real doubt, resulting in economy of men, money, and time to the Government. Such advisory boards, too, should by consultation and agreement with each other, formulate such standards in ruling, especially in conditions of the heart and lungs, as would make for uniform fairness toward registrants, and would be in conformity with the accepted practice of the army surgeons in such conditions. It was possible that it might be well to reject every man with an authentic past history of tuberculosis, even if with no other finding. The regular army recruiting regulations should now be identical with those of the local boards. The Government had appointed a board which would revise "so much of the regulations issued under the Selective Service Law and of the Manual for Recruiting Officers as is related to phy-

sical examination," the object being to harmonize the standards of the draft and of the army. The speaker had been assured by the experienced surgeons of the regular army that they would cooperate with the selective service boards in every way, allowing them to observe their work and making it possible for them to familiarize themselves, so far as could be, with the soldier in his daily life. One must concede the right to the army surgeon to be more arbitrary in his judgment of the recruits than the boards, because of his greater knowledge.

#### **Some Abuses of the Medical Side of the Draft.**

This paper was read by Dr. VICTOR C. PEDERSEN.

**The Cardiovascular Problem of the Draft.**—Major HARLOW BROOKS, M. R. C., chief of the Medical Service at Camp Upton, delivered this address, in which he pointed out the matters of interest in which the draft boards and the army examiners had failed to come together in cardiovascular problems. It was not in regard to heart examinations that the local boards committed the greatest number of errors; in the main their work in this regard had been exceptionally satisfactory. Accepting the experience largely of the English, Canadian, and Australian medical officers, from the very outset, much less importance had been placed on the existence or nonexistence of cardiac murmurs in the examination of recruits. One no longer rejected a recruit simply because he had a heart murmur; this was particularly true as regards systolic murmurs at the apex, and especially those of the cardiorespiratory type, even in many instances of unquestioned mitral incompetency. Reexamination of many of these cases had shown that the regulated life and systematically administered exercise of military training, though severe, was followed by great symptomatic improvement and often by the complete disappearance of the murmur. It was not so much a question of the valve lesion as of the heart muscle that was fundamental to the prognosis. This was even more true of systolic murmurs at the base; only a very small percentage was due to actual stenosis of the aortic valve or ring. Most were hemic, functional, or not explainable on an organic basis. A very large number of them disappeared in the course of the recruit's training.

The army placed its final and most important decision on the question of the ability or disability of the heart to perform its duty. It was on this ruling that the civilian examiners and those at the camps had most differed. The army examiners had a great advantage. In testing the possibilities of a heart they were not obliged to be content with the simple tests of the office or clinic, but in questionable cases could send a man to full duty, to work in the trenches or at bayonet drill, where, even on the hike or at games he was under observation—usually entirely unknown to him, the regimental medical officers carefully reporting his reaction to exercise. This method had enabled the detection of malingerers who, through the use of drugs or in other ways, had succeeded in deceiving their medical advisors and friends. The functional test was the thing. It had been carefully worked out by the Royal Army Medical Corps of the British, and

American physicians were profiting to a very enlightening degree from their experience. This field, so largely inaccessible to the physician on the draft board, was one in which those on active duty had preeminent opportunity, and the one in which they most disagreed with the conscientious work of the patriotic draft boards, and it was in this field that the speaker wished to emphasize the importance of heart efficiency and the secondary importance of cardiac peculiarities.

Captain JAMES F. ROONEY, M. D., of Albany, declared that up the State the men who resorted to various expedients to get into the service were almost as numerous as those who tried to evade it. All those in charge of the draft, especially the Adjutant General of the State, and the Chief of the Federal Bureau, felt that the success of the draft was largely due to the selfsacrificing devotion of the medical profession. Every precaution was being taken to reduce mistakes to a minimum, and those that had been made would not be repeated. The local boards would be relieved of some responsibility by the appointment of advisory boards, but the work of the latter was going to be difficult. The gradual standardization of physical requirements, however, would probably result to great advantage. Whatever criticisms had been uttered elsewhere, the Albany office greatly appreciated the efforts of the men engaged in this work in building a new army for the United States.

Dr. JAMES S. WATERMAN, of the district board, said he had been very much interested to hear of the work of the Volunteer Physical Reclamation Committee, and would be very glad to refer these young men who knew so little of how to walk, breathe, or even talk properly, where they could be helped. Two changes had been made in reference to the new draft which were very important. One was the addition of a lawyer as an advisor and counselor. Many of the appeals had been absolutely futile and obviously useless; this addition would prevent a great deal of needless work and be of invaluable assistance to the drafted men. Another change had resulted from the need for interpreters. In regard to the advisory boards, the speaker believed that even if nothing more was accomplished by them, the moral effect created by their existence would stimulate the local boards to their best efforts and have its strong influence over the men. Doctor Brooks was to be congratulated on the absolutely intelligent, common sense attitude of his position toward the heart cases. Aside from this point, it would be interesting to know if Doctor Brooks had noticed any relief from rheumatism in the men who were immunized against typhoid. In the navy it had been reported that many men had been much relieved.

Major Brooks said that they encountered three kinds of rheumatic conditions in the camp, one of them being what was believed to be real rheumatic cases. These were apparently improved, in some instances, by the vaccine. Another kind was composed of those who said they had suffered intensely before they came to camp, but, once there and becoming interested and fond of soldier life, they improved marvelously and became anxious for pro-



motion from the ranks. It was questionable, however, if this could be attributed entirely to the triple vaccine. There was still another type, and this was entirely unaffected by the vaccine—in fact was seemingly made worse by it—and in which the only desired treatment appeared to be exemption.

Doctor SHELDON said that though the work they had been doing in building up men had so far been carried on solely in connection with the Naval and Marine Corps, they now had increased facilities and would be very glad to include men referred by the boards, as they could handle several hundred men in the classes. They had only had three drafted men who had been rejected because of cardiac murmurs and hypertrophied hearts, but after several weeks' training they gave absolutely normal cardiographs. They were very anxious to be included in the next draft and had been doing everything to fit themselves to pass the physical tests, or to get into the Regular Army.

#### *Stated Meeting, Held February 18, 1918.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn, in the Chair.

**Address of Retiring President.**—Dr. THOMAS S. SOUTHWORTH, of New York, expressed his appreciation of the honor, twice conferred upon him, of presiding over the meetings of the Medical Association of the Greater City of New York. He paid high tribute to his fellow officers and the members of the council who, by their wholehearted and unselfish cooperation, had proved their devotion to the interests of the association, and to the many men of prominence in this and other cities who had presented papers and joined in the discussion at the meetings. Owing to these two groups the duties of president, instead of being onerous, had been a pleasure. In selecting Dr. Edward E. Cornwall, as president for the ensuing year, the association had chosen a distinguished internist and writer on medical subjects, as well as an earnest worker in this society; he surrendered to him the gavel, the symbol of office, with the full assurance that the future of the association under his guidance was bright and full of promise.

**President's Address: Some Aspects of Symptomatic Treatment.**—Dr. EDWARD E. CORNWALL, of Brooklyn, said that in that not very remote period of medicine before vaccines and serums and internal secretions and metabolism became therapeutic catch words, a period which was sometimes alluded to as the prescientific period, treatment was generally one or more of three kinds, specific, expectant, and symptomatic. The specifics in those days were very few; expectant treatment was unpopular, and symptomatic treatment occupied most of the field. Even now, when true specifics, mostly biological, were constantly being discovered, symptomatic treatment constituted a very large part of medical practice. But increase in scientific knowledge, particularly of physiology, brought up certain questions regarding symptomatic treatment. The first question was the definition of a symptom, and to what extent symptomatic treatment was rational or permissible. A symptom could be defined as an

unusual functioning of the body, more or less regularly associated with disease conditions, sometimes occurring without demonstrable pathological basis. Symptomatic treatment, as a universal dogma, rested on the assumption that these unusual functionings were themselves morbid manifestations, or a part of the disease, and as such deserved to be suppressed or abated. Careful observation, however, had shown that many symptoms, such as fever, diarrhea, constipation, pain, and high or low blood pressure, were evidences of Nature's work in combating disease, if not part of the combative process itself. With this understanding, what became of symptomatic treatment? Was there any warrant at all for treating symptoms? The answer to this question was qualified, for certain symptoms should be treated under certain conditions. Sometimes hyperfunctionings, or hypofunctionings, or abnormal functionings kept on to such an extent as to disturb seriously the organism or even to threaten it with new trouble. When this was the case, legitimate indications for symptomatic treatment might appear. Also, an unusual functioning might be kept up so long as to threaten to become a habit or a truly functional disorder, and for that reason be a legitimate object of symptomatic treatment. Some of the hypofunctionings might involve actual morbidity and require treatment to stimulate the functions to meet vital necessities of the body; as when cardiac contractions were too weak and vasomotor tone too lax to insure an adequate circulation. Pain was a symptom which frequently called for treatment. High blood pressure did not often require direct treatment; occasionally, however, it did, as when its continuance at an exaggerated height threatened acute injury to the cardiovascular apparatus, or increase of damage which had already taken place; when cerebral hemorrhage had occurred in the presence of very high blood pressure, arteriodilators might be indicated; and in certain conditions of aortic disease, and in some cases of angina pectoris temporary lowering of the blood pressure might be rational treatment. Fever, being regularly curative, should be let alone in most cases, but hyperpyrexia, when its continuance threatened harm, distinctly called for antipyretic treatment. Constipation was often a disease and a cause of disease, as well as a symptom. Overcatharsis, however, seemed to prevail widely. The routine use of cathartics, for the sake of catharsis, was without justification. In some diseases, notably pneumonia and typhoid fever, constipation of moderate degree, provided certain precautions were taken in respect to the diet, seemed to be beneficial rather than otherwise. While symptomatic treatment had a large and important place in therapeutics, in order to be rational it must avoid interfering with Nature when properly performing her functions; it was not a universal dogma, but required a distinct warrant for each particular case.

**Acute Infectious Jaundice (Spirochetosis Ictero-hæmorrhagica).**—Dr. CHARLES FERRMAN, of New York, said that the history of acute infectious jaundice was exceedingly interesting. It was probably recognized by Hippocrates for the characteristic changes of eyes, urine, and feces could not easily have escaped his attention. The disease was mentioned by writers in the seventeenth century;

but the first detailed description of epidemics was to be found in the writings of the end of the eighteenth and the beginning of the nineteenth century. Among the Federal troops in the Civil War 22,569 cases of acute infectious jaundice were reported, with 161 deaths. In discussing the etiology, the factors of defective drainage and putrefaction had been mentioned, even by recent writers, very little being said of the possibility of contact infection. It was not at all surprising that this disease should occur in camps, because of crowding and the presence of a certain number of susceptible persons. This was not essentially, however, a disease of adults or of camps. Only a small percentage of persons exposed to infectious jaundice contracted the disease. In urban centres, infectious and so called catarrhal jaundice agreed, in that they were prevalent during the late fall and winter months and in that they affected primarily children under ten years of age. In large cities, the disease occurred sporadically as well as epidemically.

Doctor Herrman's observations led him to conclude that so called catarrhal jaundice, epidemic jaundice, and infectious jaundice, Weil's disease or Spirochetosis icterohæmorrhagica, probably represented a group of closely related diseases and that clinically these diseases were similar; the infectious material probably entered the body through the nasopharynx, was then taken up in the circulating blood, and had a selective affinity for the bile ducts of the liver; the disease was not due to indiscretions in diet, and the infectious material was not conveyed by food or water; Weil's disease or Spirochetosis icterohæmorrhagica was due to a specific spirochete, and sporadic and epidemic catarrhal jaundice were probably due to a related organism; the infection usually took place by direct contact, might occur indirectly through infected urine or fecal matter; the disease was only slightly communicable, there was a large degree of natural immunity to it, and one attack rendered the patient immune; and in civil life, sporadic and epidemic jaundice were somewhat more common in children, and in camps the disease was most common among recruits coming from rural districts.

Dr. HIDEYO NOGUCHI, of the Rockefeller Institute, stated that he had studied about a dozen of the cases of icterus in children to which Doctor Herrman referred. Some years ago Doctor Herrman called attention to the possibility of the infectiousness of this form of jaundice, but it was only recently that it occurred to the speaker that it might be due to the organism discovered by Inada and Ido in Japan. The Spirochete icterohæmorrhagica of these authors had also been found in Europe and in America. It produced an acute febrile disease with jaundice and hemorrhages. In Japan the jaundice had been almost constantly present, but in European cases, as reported by certain French, Italian, and British authors, among the soldiers, this symptom is not always constant. The spirochete had been found in the urine in the convalescent stage of the disease as well as at the height of fever. No spirochetes were found either in stained preparations or by examination under the dark field microscope in the urine from the cases reported by Doctor Herrman at the height of fever and also in

the convalescent stage. Inoculations were made into a number of guinea-pigs, but the results were uniformly negative. At the present time it was not possible to say whether or not the jaundice among children as described by Doctor Herrman was due to an organism similar to that found in forms of spirochetal jaundice. In order to ascertain whether there was any immune substance in the blood sera or urine of these patients, they were studied with the strains of the Spirochete icterohæmorrhagica from Japan, Europe, and America. In one case there was some indication of the presence of specific immune substance, but in the remainder no evidence of it could be demonstrated. The study was still incomplete, the question still undecided.

(To be continued.)

## Letters to the Editors.

### BETTER CARE IN ARMY THAN IN PRIVATE LIFE.

NEW YORK, October 3, 1918.

To the Editors:

The news item in this week's issue of your journal, "Better Care in the Army Than in Private Life," also appeared in an enlarged form in the New York Times as an Associated Press dispatch from France.

In this article General Gorgas is reported as citing, in addition to what you have published, "the example of a man whose leg had been crushed in a logging camp or a farmer's son shot accidentally," and pointed out, according to this report, "that they would have had country practitioners attending them at irregular intervals." This he contrasted with "the services to the troops of the most skilled surgeons and the foremost physicians, as well as trained nurses and all the modern appliances."

Admitting all this, it may be said in extenuation, if not in palliation, that the private practitioners in civil life are debarred the use of the Associated Press in promulgating the character of their services, remarkable as they may be at times. This is not the case with those in the public employ. With them the exigencies of the times require that the public be informed with more and more emphasis and under the most favorable aspects of the nature of their accomplishments.

It should not be forgotten, however, that civil life furnishes to the army today, as it has in the past, the highest medical and surgical skill it possesses, and at a sacrifice of personal and professional interest willingly answers the call of duty for the period of the war.

JOHN P. DAVIN, M.D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Etudes sur le fonctionnement rénal dans les néphrites chroniques.* By PASTEUR VALLERY-RADOT, ancien interne des Hôpitaux de Paris. Paris: Masson et Cie, Editeurs, 1918. Pp. 256.

The author presents an exhaustive study of the subject of renal function in chronic nephritis, including an extensive review of the literature and a large number of original studies. He is firmly of the belief that the examination of every nephritic should include a systematic study of the renal function and that for this purpose the three most satisfactory methods are the determination of the blood urea, the use of Ambard's coefficient, and the study of either the chloride excretion or of that of



phenolsulphonephthalein, both of which give parallel results. He finds that the evolution of nitrogen retention, and the course or prognosis of the disease, cannot be followed by the blood urea determinations until the disease has already reached an alarming stage. Where the blood urea, however, rises to more than one gram per litre and remains at such a level the prognosis of a fatal outcome within two years can be made. For the earlier cases, in which there is little nitrogen retention as shown by low blood urea, the stage and progress of the renal secretory disorder can be determined and followed by the use of Ambard's coefficient. If a high Ambard is found constantly present it indicates a permanent damage to the renal secretory function and marks the prelude to a nitrogen retention, but cannot be used as a prognostic indication of the probable duration of life. Chloride retention does not occur by chance, but follows very definite gradations according to the severity of the renal disturbance and its determination gives valuable information. The limits of space forbid our entering further into a discussion of the author's conclusions, but, whether or not one agrees with them, his studies and arguments deserve careful consideration, both by the investigator, and especially by the clinician who studies his cases with care and precision.

*L'Electricité médicale en clientèle l'indispensable en électrothérapie.* Par J. LABORDE (DE SARLAT), correspondant national de la Société de Thérapeutique de Paris; correspondant du *Journal des Praticiens*. Comment Guerir. Bibliothèque des Praticiens, publié sous la direction du Dr. Ch. Fiessinger. Avec 94 figures dans le texte. Paris: A. Maloine et Fils, Editeurs, 1918. Pp. iii-376. (Price, 5 francs.)

This handy volume presents in a clear and concise manner the essential facts as to the apparatus and technic required for treatment by galvanic, faradic, sinusoidal and high frequency currents and by static electricity. A special feature is the description of simple and inexpensive appliances, possibly home made, which produce the same results as expensive factory made apparatus. Electrodiagnosis is completely covered in every practical detail including even its application to the special subject of otology. Electrotherapy is systematically presented from a practical standpoint, and the completeness of the book is shown by the fact that a careful examination shows only one detail omitted; viz., iontophoresis as a means of sterilizing the root canals of the teeth and curing chronic apical abscess and granuloma. The book can be highly recommended as a guide to the general practitioner in his occasional use of electricity and will abundantly repay perusal by the specialist in electrotherapy.

One interesting observation is that "without doubt static electricity is the most powerful of emmenagogues" and that it regulates the periods and prevents the violent pains. The static bath is employed, the patient sitting for twenty minutes upon an insulated platform which is connected with the negative pole of the machine. This is followed by a five minute application of sparks to the lumbar region. Rhinophyma forming bulbous red masses on the nose is treated by electrolysis. Three needles penetrate the mass parallel to the surface and about one eighth inch superficial to the level to be desired after

healing. The middle needle is positive and the two outer negative and a galvanic current is gradually increased to forty ma. if possible. When the tissue turns gray the current is gradually turned off. A dry scab comes off in about fifteen days. The Apostoli method of very heavy intrauterine galvanization is not recommended for fibroids; radiotherapy is advised.

## Births, Marriages, and Deaths.

### Died.

AUZAL.—In New York, N. Y., on Friday, October 11th, Dr. Ernest William Auзал, aged fifty-eight years.

BRASILIN.—In Saranac, N. Y., on Sunday, October 6th, Dr. W. Donald Brasilin, son of Dr. William C. Brasilin, of Brooklyn.

BLACK.—In Williamstown, Mass., on Saturday, October 5th, Dr. M. S. Black, aged forty years.

CANNON.—In Poultney, Vt., on Saturday, September 21st, Dr. Mott Dwight Cannon, of Greenwich, Conn., aged sixty years.

CHIPMAN.—In Chelsea, Mass., on Monday, October 2d, Dr. William Reginald Chipman, aged sixty-nine years.

COLLINS.—In New York, N. Y., on Monday, October 14th, Dr. Frank Horan Collins.

CROWLEY.—In Westerly, R. I., on Wednesday, October 9th, Dr. James M. F. Crowley, aged thirty-three years.

CUTTER.—In Lawrence, Mass., on Friday, October 4th, Dr. Arthur Hardy Cutter, aged forty-six years.

DAVEY.—In Keene, N. H., on Saturday, October 5th, Dr. Harry E. Davey, aged thirty-four years.

DORWARTH.—In Philadelphia, Pa., on Tuesday, October 8th, Dr. Charles Votteler Dorwarth, aged thirty-one years.

ELEMENDORF.—In Buffalo, N. Y., on Saturday, September 26th, Dr. William F. Elemendorf, aged sixty-four years.

GROSS.—In Metuchen, N. J., on Sunday, October 6th, Dr. Herman Gross, aged thirty-eight years.

GROSSMAN.—In Brooklyn, N. Y., on Sunday, October 13th, Dr. I. Jacques Grossman, aged twenty-seven years.

HALE.—In Providence, R. I., on Monday, September 30th, Dr. Robert Carleton Hale, aged thirty-nine years.

HOBBS.—At Meul le Tour, France, on Thursday, September 26th, Lieutenant Austin L. Hobbs, of East Orange, N. J., Medical Corps, U. S. Army, aged thirty-six years.

JUNGE.—In New York, N. Y., on Saturday, October 12th, Dr. Bernhard W. Junge, aged fifty years.

KORN.—In New York, N. Y., on Saturday, October 12th, Dr. Abraham Korn, aged fifty-five years.

LOWELL.—In Brooklyn, N. Y., on Thursday, October 10th, Dr. Walter William Lowell, aged twenty-eight years.

MORGENSTERN.—In New York, N. Y., on Monday, October 7th, Dr. Adolph Morgenstern, aged thirty-five years.

PERKINS.—In New York, N. Y., on Thursday, October 10th, Dr. John Richard Perkins, aged twenty-six years.

RICE.—In Babylon, L. I., on Saturday, October 12th, Dr. Albert Carl Rice, aged thirty-two years.

ROTHENBERG.—In Brooklyn, N. Y., on Saturday, October 5th, Dr. David M. Rothenberg, Assistant Surgeon, U. S. Navy, aged twenty-five years.

SMITH.—In Philadelphia, Pa., on Tuesday, October 8th, Dr. Edward M. Smith, of Valdosta, Ga., aged twenty-three years.

STEINHOFF.—In New York, N. Y., on Friday, October 11th, Dr. Karl L. Steinhoff, aged twenty-five years.

THOMPSON.—In Bridgeport, Conn., on Sunday, October 6th, Dr. John E. W. Thompson, aged fifty-seven years.

THOMPSON.—In Standish, Me., on Tuesday, October 1st, Dr. William S. Thompson, aged sixty-four years.

TOPPING.—In Newark, N. J., on Saturday, October 12th, Dr. Robert Samuel Topping, of Rutherford, N. J., aged thirty-four years.

VAN DERVER.—At Norfolk, Va., on Monday, October 7th, Lieutenant Warren Abbey Van Derver, Medical Corps, U. S. Navy, aged thirty-one years.

WELLS.—In Westford, Mass., on Sunday, October 6th, Dr. Orion V. Wells, aged thirty-eight years.

WISWALL.—In Wellesley, Mass., on Monday, October 7th, Dr. Edward Hastings Wiswall, aged fifty-six years.

# New York Medical Journal

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WHOLE No. 2082.

## Original Communications

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### SPANISH INFLUENZA IN THE ARMY.

BY CHARLES L. MIX, M. D.,

Camp Mills, N. Y.,

Major, M. C., United States Army; Medical Chief, Base Hospital.

The first cases of so called Spanish influenza received at this hospital were admitted on September 18th, four patients coming in. On the 19th we had five, on the 20th seven, and from that time on the epidemic increased with tremendous rapidity, so that in a few days we were receiving two or three hundred cases daily. At the present time—October 11th—we have under treatment approximately 2,000 cases.

#### PERIOD OF INCUBATION.

In some instances we have had opportunity to find out the period of incubation. For example, two of the earlier cases were admitted to a medical ward and remained in this ward over night. I saw them the following morning and recognized them as cases of influenza, whereupon they were promptly taken to the isolation ward. The wardman who superintended their removal to the isolation ward came down with influenza two days later, and on the same day one patient occupying an adjacent bed also became a victim of the disease. No more cases originated in that medical ward. The incubation stage clearly then may be as brief as two days. In some instances it is probably delayed a few days beyond this, but in the vast majority of cases the incubation period is extremely short.

#### ETIOLOGY.

The disease is always conveyed by contact with existing cases. In this respect it is entirely analogous to measles, and it bears a great resemblance to measles in its stage of invasion. The contact infection has been proved also in this base hospital. For example, in this previously mentioned medical ward there has been no epidemic of influenza, whereas in a surgical ward about forty cases broke out in a period of three days' time. The prompt recognition of the disease in the medical ward and the removal of the patient ill with the disease accounts for the lack of spread in that ward; and the delayed recognition of the disease for two days in the surgical ward undoubtedly led to the outbreak there. There is another important conclusion to be drawn from the above facts, and that is that the contagion

is not air borne. For example, the medical and surgical wards just mentioned are not more than 200 feet apart, and the fact that many cases appeared in one and not in the other proves that the germs are not carried by the air. The conclusion is inevitable that the infection is passed by contact from one person to another exactly as in measles.

An important corollary in this connection is that all epidemics theoretically may be stamped out by the isolation of the persons affected. To be sure, such isolation may sometimes be extremely difficult, because of the large number of cases in a given locality, but in army work and in institutions such isolation is absolutely feasible and should inevitably be carried out. Theoretically, it could have been kept out of the United States.

#### SYMPTOMS.

The symptoms of the disease are chiefly respiratory, gastrointestinal, and nervous. In the stage of invasion there is usually a feeling of chilliness, sometimes an actual rigor, and invariably there is fever. The fever may last only a few hours or it may extend over several days. There is great variability in the degree of temperature in the state of invasion. In one instance the patient entered with a temperature of 107.4° within a very few hours of the time of onset. Another entered with a temperature of 106°. Several patients have entered with a temperature of 105° or 106°. Usually the patient with very high initial temperature develops pneumonia. Ordinarily the average temperature of the stage of invasion is between 102° and 103°. Very few run an initial temperature as low as between 99° and 100°.

The subjective complaints on the part of the persons affected are, first and foremost, headache and pains and aches all through the body. The backache is sometimes as severe as in cases of smallpox or meningitis. Complaint is also made that all the muscles of the body are sore and painful, and when attempts are made to move the patient in bed there is usually marked objection on his part because of the muscular soreness.

The respiratory symptoms are manifested by mild degrees of laryngitis and pharyngitis, so that when the mucous membrane of the mouth is inspected it is found to be reddened and somewhat turgid. There is no rash in the mouth as in the acute exanthemata, but there is, in the more acute cases, a redness of the fauces which reminds one of the color of the mucous membrane of the mouth in measles. Many



of the patients show a moderate degree of laryngitis, and in some instances are very hoarse because of the excessive degree of irritation of the mucous membrane of the vocal cords. In some instances there is an undoubted congestion of the fossa of Rosenmueller with closure of the Eustachian tubes and a consequent deafness and earache. Though at the present time we have not found many complications on the part of the middle ear and mastoid cells, a few cases have already developed and we confidently expect that otitis media and acute mastoiditis will be more or less prominent sequelae. In some cases, during the acute stage, there is considerable congestion of the mucous membrane of the middle ear, so that there is a bulging of the drum to such an extent that it sometimes reaches close to the end of the aural speculum when the instrument is introduced. Paracentesis merely liberates a little blood, but it seems to give the patient some relief.

The gastrointestinal manifestations are confined chiefly to nausea and vomiting. Without preparing statistics, it is my judgment that half the cases show nausea, and perhaps one third actually vomit one or more times during the stage of invasion. Frequently the patient will not vomit until water is given to him or until he tries to take a dose of medicine. There have been no severe cases of intestinal irritation, although one or two persons out of the 2,000 were troubled with diarrhea at the time they entered the hospital. In the great majority of cases there is, on the contrary, more or less constipation, so that it is almost invariably necessary at entrance to administer a laxative or a cathartic.

The nervous manifestations are much more pronounced in this epidemic than the gastrointestinal. There is usually evidence of quite a degree of intoxication of the brain and cord with, in some instances, the actual production of a symptomatology resembling meningitis. We have had six instances during this epidemic of patients presenting the symptomatology of meningitis. In each case we did a spinal puncture, of course, and found that three were straight influenza cases with negative fluid, whereas the other three were cases of epidemic cerebrospinal meningitis. The symptoms in the actual cases of meningitis were not more pronounced than the symptoms of meningismus in the cases of influenza. In these influenza cases there seems to be at least an increase in the pressure of the cerebrospinal fluid though there is no exfoliation of cells and no increase in the count. Thus, in one case, I withdrew forty-five c. c. of cerebrospinal fluid very rapidly, the fluid being under some slight pressure.

The nervous manifestations resembling those of the stage of invasion of epidemic meningitis are headache, nausea, and vomiting, and muscular rigidity. This muscular rigidity is, in rare instances, sufficiently pronounced to give rise to the Kernig's sign and to rigidity of the neck.

Chronologically the symptoms might be arranged as follows:

1. Fever, in all instances ushered in by chilly sensations, or by one or more chills separated by short intervals—perhaps an hour or two. The temperature ranges from 102° to 104° and the fever is continuous.

2. The pulse at first is rather rapid, ranging from 82 to 110. After the stage of invasion and with the fall of temperature there is apt to be a temporary bradycardia, the pulse dropping to 70 or even to 60 and 50.

3. Headache, rather severe, even suggestive of meningitis.

4. Backache and pains and aches in the extremities.

5. General prostration, quite marked; well described by the old word "grippy."

6. Marked irritability on the part of the stomach, manifested in the majority of instances by nausea and in perhaps one third of the cases by vomiting, particularly on the ingestion of liquids or solids.

7. Rather pronounced nasopharyngeal catarrh with redness of the throat.

8. Laryngitis and bronchitis, extending as far as the second or third bronchus, so that in the uncomplicated cases no râles are heard in the chest during the stage of invasion. Later, there is a marked tendency toward the development of a bronchitis affecting the small bronchi and bronchioles, so that some patients may show almost a capillary bronchitis. All the patients cough.

9. The sputum is thick and very tenacious and resembles the sputum of pneumonia in its tenacity. Later on, expectoration is more profuse; and the ordinary, thick, mucopurulent sputum of acute bronchitis is encountered. If pneumonia develops the sputum is bloody.

10. There may be, in the early stages, some hypertonicity, so that the patient shows symptoms somewhat resembling those of meningitis.

The marked feature of the disease is the respiratory symptomatology. All patients are troubled by a cold in the head, by a feeling of clogging in the head, and by cough. The cough is sometimes very distressing and is frequently much worse at night. On going into a ward filled with influenza patients, one is immediately struck by the large amount of coughing going on. As a rule, the bronchitis which occasions the cough is more or less transitory, but in many cases it takes several days before the respiratory mucous membrane returns to normal.

The thing which makes this present epidemic a matter of such grave consequence is the fact that it is not the result of an invasion by the influenza bacillus alone, but, instead, an invasion by both the influenza bacillus and the pneumococcus. It seems almost as though Pfeiffer's bacillus and the pneumococcus lived together in a state of symbiosis. The initial invasion is invariably by Pfeiffer's bacillus; this hits as abruptly and as vigorously as a sledge hammer. The blow is almost a knockout. Within two days, to five or six days' time, however, a certain degree of immunity seems to be acquired by the patient, the temperature rapidly falling and the patient beginning to recover. But in from ten to fifteen per cent. of the cases the pneumococcus takes up the work at this point and, without a chill and somewhat insidiously, pneumonia begins.

The pneumonia does not seem to have any great predilection for the right or the left lower lobe, ap-

pearing in each in about the same percentage of cases. A large number of double lower lobar pneumonias have been found. A few cases of upper lobe involvement were discovered, but not many. One fatal case had involvement of the left upper and the right lower lobes. In the majority of instances the patients show the initial trouble along the vertebral border of the scapula, and usually at about the level of the eighth spinous process. The disease seems to start from the bifurcation of the large bronchi and to spread from this point down through the lobe, reaching the surface, sometimes only after three or four days of symptomatic pneumonia. In some instances the onset is at the base of the lower lobe, but in the great majority of instances it is in the upper part of the lower lobe, from which point it spreads downward.

The spread is sometimes extremely rapid. There may, for instance, be a patch only the size of a half dollar in the forenoon and an area as large as the palm of one's hand in the afternoon, and by the following morning the whole lobe may be involved. The rapidity of the process was exemplified in the case of one patient who entered at 7:30 p. m. on October 5th and died on the morning of October 7th, and of another who entered at noon on October 9th and died at 9:30 p. m. on October 10th. Each was ill altogether about thirty-six hours, entering and dying with pneumonia combined with influenza. Some of the boys of his company said that on the morning of October 5th the first mentioned patient was as well as any of them; by afternoon he was ill, and at 7:30 p. m. he was brought to the hospital on a stretcher.

In a few instances the influenza bacillus associates itself with the *Streptococcus hemolyticus*. This was shown in one of our patients, W. C. H., who, stricken on September 30th, with influenza, died on October 4th. This patient had involvement of both right and left lower lobes, and from his sputum the *Streptococcus hemolyticus* was isolated. No pneumococci were found.

The strains of pneumococci which have been found have been of all four types, the majority belonging to Types II and IV. Not many cases of Type I have appeared, and fortunately not very many of Type III, the *Pneumococcus mucosus*. The Type IV cases, which ordinarily have an excellent prognosis, in this epidemic are almost as virulent as cases of Type II. We have lost several cases of Type IV pneumonia. The old rules of prognosis as regards Types I, II, III, and IV do not hold in the presence of influenza. In some instances the influenza bacillus is itself capable of causing a pneumonia, as we have found in cases in which pneumonia has existed and in which we have been able to isolate nothing but Pfeiffer's bacillus from the sputum. Of all of our cases, 88 per cent. show the influenza bacillus.

The physical signs of pneumonia are not like those of the ordinary cases of uncomplicated lobar pneumonia which we were accustomed to see in the past. For example, on percussion dullness is often not marked until the patients are well on toward death. It would seem as though the invasion of the lung was so rapid that it was patchy in distribution; in

other words, instead of spreading slowly through the lung and involving every portion of it as it goes along, it jumps by leaps and bounds through the pulmonary tissue, causing areas of consolidation here and there, with spaces in between at first free from trouble. The effect of this upon the percussion note is the same as in bronchopneumonia; the spaces between the involved areas being in a state of elastic equilibrium give to the areas of consolidation a part of their resonance, so that the dullness is frequently not much more evident than the ordinary relative dullness found at the cardiac or hepatic border in normal persons. As time goes on, of course, this percussion note becomes deeper, so that in time there may be marked dullness.

The most important findings are those obtained with a stethoscope. For purposes of examination, do not have the patient sit up. Have him lie face down flat on his belly, with his arms hanging over the sides of the bed. The latter maneuver spreads the scapulæ apart, and uncovers more of the chest. He can lie in this position as long as you want him to without being inconvenienced or fatigued, and you can make a thorough examination of his chest at your leisure. Moreover, the right and left sides will be in a relatively symmetrical position so that you can tell absolutely what your findings are. On applying the stethoscope one will find usually, on inspiration, a shower of fine crepitant and subcrepitant râles. The expiratory portion of the respiratory sounds will be prolonged and will be accompanied by clicking râles. The consonant râles of early pneumonia reach their finest exemplification in these cases of influenzal pneumonia. Bronchovesicular breathing is far more common than bronchial breathing. If one makes a diagnosis of pneumonia only in those cases in which there is pronounced bronchial breathing, one will fail to diagnose a large number of cases. If, however, one pays attention to bronchovesicular breathing and to consonant râles located in only one spot and asymmetrical in distribution, one will more often discover the cases of pneumonia much earlier than if these signs are not regarded.

Another error which is apt to be made is failure to take into account the vicarious overaction of the sound lung. Listening to a chest in the early stages, one sometimes encounters an apparently suppressed respiration on one side with exaggerated respiration on the other. Some of the inexperienced and younger medical officers have made the mistake of finding the pneumonia in that side of the chest which showed exaggerated breathing with a large number of râles due to the associated bronchitis, instead of recognizing that the pneumonia really existed in the opposite side where breathing was suppressed, but where it was distinctly bronchovesicular or even bronchial in type.

In the old classical lobar pneumonia, increased tactile fremitus and vocal resonance were always mentioned as very characteristic. In these cases, however, voice conductivity is only occasionally found exquisitely manifested. In the majority of cases there is a comparatively slight increase in vocal resonance. Bronchophony and egophony are not nearly so common in these cases as in the well



known uncomplicated lobar pneumonia. The explanation for the relatively slight increase of vocal resonance is the same as the explanation for the relatively slight increase in the dullness. In some instances the pneumonia seems to be almost "massive," the bronchi themselves being apparently filled with the exudate as well as the air cells.

A very important part of the back to be examined is that which lies along the vertebral border of the scapula opposite the spines of the fifth to the eighth vertebrae. On one side or the other one will find, in the cases showing pneumonia, a shower of sharp crepitant or subcrepitant râles apparently very close to the ear. The râles are not bilaterally symmetrical, and therein lies their diagnostic value. If one finds râles of equal intensity and distribution on both sides of the chest the probabilities are that one is dealing merely with a bronchopneumonia, but not with a lobar pneumonia. If, on the other hand, one finds a definite patch of râles, crepitant or subcrepitant, close to the ear, or consonant râles in one small area and not in its corresponding area on the opposite side of the chest, then one may conclude that the case is one of beginning pneumonia.

No examination is complete without watching the patient breathe. In many cases in which one base shows diminished or absent breath sounds and a dullness which is just dimly apparent, that base will be seen to fail to expand equally with the opposite base on inspiration. By placing one's hands on the sides of the pulmonary bases of the patient, and asking him to breathe in deeply, one can frequently appreciate the failure to expand better than with the sight alone.

The cases of association of the pneumococcus with the influenza bacillus are manifested very frequently by herpes labialis, a number of patients showing very intense herpes.

We have made two observations in these cases which are interesting. Many of the patients have epistaxis during the stage of invasion or when they are running fever and, perhaps, the majority of these patients subsequently develop pneumonia. One cannot help feeling that there is early in these pneumonic cases some interference with the passage of the blood from the right side of the heart through the lung with sufficient damming back of venous blood to make possible nasal hemorrhage on the slightest occasion. This tendency to nosebleed is to be correlated with the early cyanosis which so many of these patients show. One of the striking features of this epidemic is the blueness of the patient's face. All of them have red faces with a slight amount of conjunctivitis so that they resemble an early case of measles, and a great many subsequently change from a red to a cyanotic shade. Indeed, some of them are so red all over the body as superficially to resemble cases of scarlet fever. If pneumonia is developing, the cyanosis is apt to become very extreme. I have seen cyanosis quite as great as that which occurs in miliary pulmonary tuberculosis or capillary bronchitis.

I feel somewhat uncertain about mentioning a point, which has appeared in a number of instances—namely, a series of red dots or spots coming out on the trunk of patients very ill with

influenza. These red spots are frequently noted upon the backs of the patients while they are being examined. They look as if they might be the beginning of an acne vulgaris, but they do not suppurate and they quickly disappear. In appearance they are of the size and color of the rose spots of typhoid. They are more apt to appear on the backs of those having pneumonia. I am not altogether certain, however, as to this point because the patients whom I have examined were in all instances those in whom there was a question of the existence of pneumonia. There may have been numerous mild cases without such spots, but I cannot speak with certainty on this point because I have not paid much attention to the mild cases. Nevertheless, it would not surprise me to learn that extensive observation will disclose the fact that these combined cases of influenza and pneumonia may show a characteristic cutaneous manifestation somewhat akin to the rose spots of typhoid fever.

#### SEQUELÆ.

In regard to sequelæ, it is too early at the present time to say what those of this present epidemic may be. I am rather inclined to believe that there will be some cases of otitis media following the epidemic and some cases of delayed pulmonary resolution. I do not believe we are going to be troubled with any great number of empyemas; thus far there has been no evidence of empyema or of pleurisy with effusion in any of our cases. Indeed, it is my belief that the invasion is from the bronchi always to the parenchyma; hence pleuritic involvement would be the last pulmonary sequel to appear. Surely pleuritic pain is unusual.

Many of the patients with pneumonia have the ordinary crisis, but in perhaps one half the cases the temperature gradually falls to normal. In some instances the crisis is as spectacular as in uncomplicated pneumonia. On the morning of this writing I saw a patient who in four hours' time showed a drop of temperature from 103° to 97°.

#### PROPHYLAXIS AND TREATMENT.

Taking up the question of treatment, perhaps the most important topic at the present time is prophylaxis. It is not a simple task to take care of the situation when it has developed, but it may perhaps be a simple matter to prevent its development. Among large bodies of troops, the following three factors aid in breaking down the natural resistance to infection, and these three factors should be thoroughly borne in mind by all commanding officers:

1. It has become increasingly evident of late years that anything which increases acidosis, or, better, anything which decreases the amount of normal alkalinity in a person's blood, increases the tendency toward infection. There are three great factors which contribute to the production of acidosis—or more accurately to the diminution of this alkalinity—and these are starvation, fatigue, and exposure. We have for a long time known that starvation acidosis is a very definite thing. It has been met with in a large number of cases following gastrojejunostomy; not infrequently the cause of the very intense vomiting and death which follow it

starvation acidosis, relief of which, by intravenous injections of glucose, brings the patient back to life and stops the vomiting. If troops are allowed to travel long distances on trains, improperly fed or fed at long intervals, or if they are permitted to go without two meals out of three in a day, their resistance to infection is very remarkably lowered by a slight, and perhaps immeasurable, but none the less actual acidosis.

2. Another factor contributing toward acidosis is fatigue. If soldiers are very much fatigued by long trips, excessive traveling, or overwork of any sort, they are apt to show an increased tendency toward acidosis.

3. The third factor is exposure to cold and wet. Long immersion in cold water, as swimmers know, brings about a condition not well recognized by those who do not think, but perfectly evident to those who have some understanding of what acidosis may do. The cause of death in many of these cases of immersion in very cold water is really the acidosis which is thereby produced.

The application of these points is obvious. Young, healthy soldiers usually can withstand strain along one of the three lines mentioned with impunity, but they cannot ordinarily withstand strain along any two or three of these lines without subjecting themselves to the danger of infection. To put it briefly, it may be possible for a soldier to go hungry for a day without harming him, but on that day in which he goes hungry he should not at the same time be subjected to a great deal of drilling or labor in cold, wet weather, for the combination of cold, fatigue, and hunger is going to prove too much for him. No soldier should ever be subjected to more than two of these three conditions at a time; he may be cold and hungry if he is not tired; cold and tired if he is not hungry; and hungry and tired if he is not cold. But he should not be tired, cold, and hungry all at the same time. If he is to be drilled hard he must be fed well; if he is to be exposed to inclement weather, wet or dampness, he must be fed well and not overworked. Starvation, fatigue, and exposure all tend toward acidosis which predisposes to infection.

Another possibility which presents itself from the point of view of prophylaxis is the question of vaccination against influenza. To my mind, it it going to be perfectly feasible to produce a vaccine which will be potent. When one contemplates these great epidemics of influenza from the historical aspect, one is struck by the fact that they appear in periods of time separated by about one generation. We had our last great epidemic of influenza in 1889 and 1890. Another great epidemic preceded that one by a generation. It seems as though there was a certain amount of *pubulum* which these germs feed upon which comes into being during a generation and which they seize upon with avidity from time to time, and thus a great outbreak takes place. But the invasion of the hosts by this great outbreak immunizes them against subsequent attacks and the result is that the disease apparently disappears, not to return again until sufficient fodder for its sus-

tenance has been gotten ready for it by the passage of time.

The conclusion of the matter is then that the disease is one which produces widespread immunity, and that it exhausts itself by this very trait which it possesses. In the individual case, as well as in great groups of persons, immunity seems usually to be produced within a comparatively short period of time. In typhoid fever immunity is very gradually acquired by the host over a period of three to six weeks. In influenza a state of immunity is approximately obtained in a period of from two to three days in some instances, and in the majority of cases in less than one week. Moreover, after one has had the disease, one is immune from it. We have no data at the present time which tells us how long such immunity may last, except the broad observation that these epidemics occur at about one generation of time apart. It is likely, however, that immunity lasts indefinitely. The writer had a very severe attack of influenza in December, 1889; during the present epidemic he has not spared himself in any particular and has not had the slightest sign of any disturbance, whereas the younger members of the staff have in many instances been temporary victims of the malady. Whether age confers an immunity or not, it is difficult to say, but I am rather of the opinion that the reason those older in years escape the infection is that they have previously had it or acquired an immunity against it. We have observed, however, that about two thirds of the young soldiers have a natural immunity, the epidemic involving as a rule about one third of the units affected.

These remarks concerning immunity were made chiefly because of their bearing upon the question of vaccination. If there is such a thing as natural and acquired immunity it ought to be possible to bring about an artificial immunity in those who do not possess it. It is not unlikely, therefore, that a potent vaccine will be discovered which will lead to the production of artificial immunity. Thus, it is not too much to hope that in the future influenza will be forced to disappear from armies in precisely the same way that typhoid fever has been forced to disappear.

In the management of the active cases it is imperative that the patients immediately take to their beds. Every ounce of strength must be safeguarded and all exposure avoided. This is best done by keeping the patient in bed. He should be kept warm, but not too warm. Above all he should be kept quiet.

At present there is no serum treatment and I very much question whether there ever will be. The disease is one which is over so quickly that serum treatment for the influenza *per se* is hardly necessary. It is the complication of pneumonia which makes the disease dangerous.

The treatment of the influenza by drugs is very simple. The only remedies which are of much value are aspirin and salicylate of soda. The aspirin is given in doses of ten grains every four hours, or as much as sixty grains *per diem*. Ordinarily it is not necessary to give the aspirin more than one or two days. Salicylate of soda is perhaps slightly



more effective, but not so agreeable a drug from the point of view of the patient. The dose is approximately the same as that of aspirin—ten to fifteen grains every four hours. As soon as the temperature has fallen to normal these drugs may be omitted. As to a choice between acetyl salicylic acid and sodium salicylate, personally I should choose the sodium salt every time. I cannot help feeling that the aspirin increases the cardiac weakness, as shown by the cyanosis, and that sodium salicylate does not depress the circulation at all. This is merely a personal observation, to be taken for what it is worth.

For the very severe headache capsules containing four grains of acetanilide and one grain of citrate of caffeine are useful. Phenacetin (acetphenetidin) would be very satisfactory if it could be obtained; in the old epidemic of 1890 it was very extensively used.

We find it convenient, when the patient enters the hospital, to see to it that his gastrointestinal canal is put into a good hygienic state and that his nose and throat are properly sprayed. We have done this as a routine in certain wards, and not in others, and have concluded that fewer cases of pneumonia develop in the wards in which the nose and throat are taken care of than in the wards in which no such measures are taken.

In the treatment of pneumonia, the important measure is to keep the patient alive until the crisis is reached, and this can be done, to use a Hibernicism, by keeping his heart beating. The great danger in these cases, as in all cases of pneumonia, is heart failure. The virulence of the toxins is very great, and the hearts early show signs of giving out. Tincture of digitalis—ten minims every four hours—or infusion of digitalis—two drams every four hours—or digitalin, 1/100 grain hypodermically every four hours as soon as the heart shows the slightest signs of trouble is very effective. Very many patients show a tendency toward pulmonary edema which may be thwarted temporarily or permanently by the use of atropine sulphate in a dose of 1/120 grain. For cases showing marked cyanosis aromatic spirits of ammonia, one drop per minute, or twenty minims every twenty minutes in a teaspoonful of water may tide over a desperate place. Camphorated oil is to be used only in extreme cases. We do not use it interchangeably with digitalis during the whole course of the disease, though some have advocated this procedure. Citrate of caffeine in doses of one to three grains every three or four hours has also proved of value in many instances during emergencies.

The cases combined with pneumonia have been helped in some instances by venesection and by the introduction of normal salt solution per rectum. I have not received reports from the laboratory as yet on acetone and diacetic acid in the urine of those most desperately ill, who do not eat at all and who drink but little, who are pouring out alkalies and retaining acids, but I am confident that a great deal of the very intense intoxication is fundamentally an acidosis. Here is a chance for some research work. I am furthermore so convinced of this, that I am giving some of these patients sodium bicarbonate by

rectum and injections of glucose intravenously. I cannot as yet say whether this is a foolish and unnecessary thing to do but from *a priori* considerations it is a very sensible thing to do. Surely about the third or fourth day of delirium or stupor brings with it a greatly diminished alkalinity of the blood. Experiments with respired air should be made, but at a base hospital with cases running literally into the thousands there is no time for research work. The sick must first be cared for.

The cough is a most distressing thing. Codeine is useful, or perhaps it would be better to say is used; yet the cough keeps up until the toxicity so profoundly lessens irritability that the cough ceases spontaneously. During this stage of influenza ammonium chloride is useful, but if pneumonia develops it should far better be omitted. One does not care to try to drown the patient in the secretions of his own lungs, or to tempt the onset of pulmonic edema. Since, however, about eighty-five in every 100 patients do not have pneumonia, and do have the cough a good cough mixture of ammonium chloride with codeine and paregoric is very well worth while.

Cases in which pneumonia is going to develop are fairly easily recognized by the temperature, pulse, and respiration charts. If the temperature, pulse and respiration—the TPR—do not fall in three or four days, pneumonia is to be sought for; if the temperature rises after it once falls, pneumonia is to be suspected. All cases in which the temperature is high—103° or more—on the third day are pneumonia suspects and cardiac stimulation should be started before the pneumonia is demonstrable. All cases in which the temperature remains above 100°, all cases in which the pulse persists above eighty-eight, or the respiratory rate above twenty-four are suspects. I found pneumonia today clearly demonstrable in a patient with a temperature of 100°, a pulse rate of seventy-two and a respiratory rate of twenty. This is most unusual, but many similar instances in lesser degrees have multiplied themselves.

I cannot refrain, in speaking of the convalescence from influenza, from insisting that patients be kept in bed five days with a normal temperature. I have learned by mistakes. In the haste for men which military officers show I permitted a man to be discharged on the morning of the sixth day of normal temperature; on the evening of the seventh day we sent an ambulance for him and found him desperately ill with pneumonia, from which he subsequently died. We had one fatal case of pneumonia developing in a boy who had three days of normal temperature following influenza. On the evening of the fourth day his temperature was 100.2°, on the morning of the sixth day it was 106°. We have reached the conclusion that it is wholly unsafe to send out a patient before he has had at least seven days of normal temperature; and I think that as my experience increases I shall arbitrarily raise my date of discharge to ten days of normal temperature.

In treating large numbers of men it is highly important to separate the pneumonia patients from the pure influenza cases. I am fully convinced that this measure is as important as quarantine in measles. This we diligently do by searching out the pneumonias and transferring them. I am not of the

opinion that the patients should wear masks; they need to have unhampered respiration. If I had pneumonia and were not delirious I would not consent to wear a mask. Attendants may wear masks and are asked to do so by government officials, but I would personally caution all those wearing them to put a new one on every time a patient coughs toward them; for it is easily conceivable that a good dose of influenza bacilli and pneumococci lodging on the masks will, by the industrious breathing of the wearer of the mask, be ultimately drawn into his own system. Better far than masks is resistance to infection built up by plenty of food, enough rest and hours of sleep, and freedom from exposure. In camps, these two considerations, so large and so fundamental, are lost sight of in the minutiae of formulated schemes of action and conduct.

The same broad considerations should control in the wards. Screening of the patient is advisable, but is wholly contraindicated when it interferes with the far greater necessity of free exchange of pure air. Cubicles may be all right in themselves in certain types of hospital construction, but not in all types; and uniform adherence to dictations as to cubicles, without due consideration being paid to the getting of the maximum amount of pure air by the patient, is to say the least, inadvisable.

There is no rule of thumb for the treatment of influenza, either pure or complicated by pneumonia. If the cases are pure they almost cure themselves. If they are complicated by pneumonia, the problem is really the treatment of pneumonia and will have to be met in the usual routine manner.

As regards serum therapy for the pneumonia following influenza, only cases of Type I are at present very much helped, and we are using in cases of this type the Type I serum. One of the great difficulties in an epidemic of this extent, however, is the vast amount of work suddenly thrust upon the laboratory. The course of the disease is so rapid that by the time the patients are "typed" they are either convalescent or dead. We have used the serum in the Type I cases faithfully, but the results which were obtained were no better than in the untreated cases. This is probably due to the fact that the pneumonia in all cases is complicated by influenza; just as in Type IV the prognosis is made very bad by the associated influenza, so in Type I the same thing is true.

#### PROGNOSIS.

The prognosis in all of the uncomplicated cases of influenza is uniformly good; it is grave only in the cases of those having pneumonia. In evaluating the percentage of deaths from pneumonia, one should take into consideration only the total number of influenza cases and the total deaths from pneumonia. If one attempts to base statistics upon the number of deaths in the number of cases of pneumonia discovered, one may be somewhat in error, owing to the fact that in many of these patients a diagnosis of pneumonia might be made by one physician and not concurred in by another. In this base hospital where every single case of pneumonia is seen by the writer, our mortality is running approximately one third of all the pneumonia complications. On the other hand our proportion

of deaths among the total cases of influenza is running at approximately two per cent. The pneumonia usually appears on the third or fourth day; death, when it comes, usually occurs before the sixth or seventh day. If the patient survives a week he is very apt to get well. Cases of double pneumonia have been numerous and almost uniformly fatal. Patients with early cyanosis, those with nosebleed, those with delirium and with great prostration, and those who are somnolent or stuporous, all are very prone to die.

## GENERAL SURVEY OF THE INFLUENZA EPIDEMIC.\*

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Commissioner of Health of the City of New York.

It is meet and proper that at a time as critical as the present, and one fraught with tragic consequences to the lives of so many of the people of this city, the commissioner of health should appear before the medical profession to submit to the judgment of its members a report of the activities of the health department and a statement of the reasons which have guided him in determining upon certain procedures and in omitting certain others which have been suggested from time to time. I gladly avail myself of this opportunity accorded me because I have consistently attempted to keep the public, lay and professional, fully informed of conditions.

To begin with, it should be borne in mind that we have been living in abnormal times. It is quite likely that when the history of this epidemic comes to be written, it will be found that it originated in the Orient, and that it was carried through the channels of military and commercial communication into Europe, and after spreading far and wide to every country of the latter continent, it was brought to these shores by vessels bringing traders, passengers, and troops who had left countries in which the epidemic was actively waging. The urgent necessities of the war probably determined the federal authorities who guard our ports of entry, in the decision to admit ships bringing persons affected with influenza as well as those who were carriers.

We should bear in mind the fact that the large cities of this country were powerless to put into effect any official prohibition against the admission into this country of influenza cases and influenza carriers. The machinery of the health department has through the course of many years been designed and shaped to prepare to meet emergency situations. We have been handicapped, unfortunately, by the enlistment in the military service of a large number of doctors and nurses of the health department staff. It should be stated in justice to those who compose the health department's personnel, as well as to those who have exercised an influence in the past in directing the organization and the building up of the machinery of the department, that notwithstanding

\*Address delivered at the meeting of the Eastern Medical Society on October 17th, and at the regular meeting of the Academy of Medicine on October 17, 1918.



ing the handicaps produced by the depletion of its nursing and medical forces, the health department promptly and energetically met the situation. It is but just to pay tribute to the devotion, zeal, and tireless efforts which have marked the conduct of all of the employees of the health department in meeting the critical situation which we are at present facing. Doctors and nurses of the health department have rendered most excellent service in the nursing and care of patients in the home and in the medical treatment of many afflicted persons, who would otherwise have been without such care in their severe illness.

Methods of prevention have been acknowledged by the foremost authorities in the world to be the most effective in protecting a community against epidemic diseases. In so far as the prevention of the entrance of the epidemic diseases in this country is concerned, dependence must be placed first and foremost upon the rigid guard which is maintained at the ports of entry to this country. These guards, for reasons which have already been indicated, could not, in the judgment of those who were responsible for their operation, be maintained during these abnormal times. Our first line of defense was, therefore, weakened. From various ports and various cities, there converged upon New York as upon other communities, a number of influenza carriers, and these, unrecognized in most instances, were the sparks which lighted the conflagration.

Secondly, the production of a vaccine which would effectively protect persons against influenza, has not yet passed the experimental stage, and its use on a large scale has been decried by some as tending to produce a special susceptibility to the disease during the negative phase which it produces. At all events, while those most competent to decide are not yet in accord with its value, it offers as yet only a measure of promise as an agent in the prevention of the spread of the disease.

For the time being, every function of the health department which does not contribute to the prevention of the disease or to the care of the sufferers, has been suspended or subordinated. The Department of Health has reached out to hospitals so far as it could through persuasion, and through the exercise of arbitrary power has taxed every available resource and has combed this city, as well as neighboring cities, for the skilled and unskilled workers who are necessary for the operation of places which have been established as emergency hospitals. Every day the department is supplying nurses, nurses' aids, orderlies, and the other helpers who are essential for the proper operation of an institution for the care of the sick.

I am grateful for the support which the Academy of Medicine, through its members individually, and through its Committee on Public Health, has accorded me in these trying days. I desire to take this occasion to acknowledge my thankfulness for the heartening and generous expression of commendation given by the Public Health Committee of the Academy of Medicine in its communication of October 10th, in which it stated that it approved all the measures adopted by the health department and extended an offer of cooperation.

The public press of this city has been most generous in serving as the medium for the education of the people. Public health education has been depended upon through placards, through circulars, and through verbal instruction in the public schools, to apprise the public of the danger of close contact with unrecognized cases of influenza, especially in crowded public places. The success of public health education is, at best, limited. Its power to prevent crowding and to secure the observance of those fundamental laws which are essential for the safeguarding of personal and community public health has well defined limitations. While availing ourselves to the utmost of its services, let us not overrate its value. The sanitary police of the Department of Health, and the police department as well, have been active daily in arresting those who are guilty of spitting, and large fines, which should have a deterrent effect upon the continuance of this practice, have not sensibly diminished it even though placards conspicuously placed in subways, stores, and elsewhere, have informed persons of the menace which this practice offers to health. We have, so far as human power, forethought, and earnestness make it possible, bent every energy to the adoption of every procedure which has been commended by authoritative opinion.

In the city of Washington, to all practical intents and purposes, the government is the one large employer of labor, and the establishment of a relay system of traveling to and from work is a matter of relative simplicity. We have in the city of New York taken radical action to prevent crowding in the subways, and in the elevated and surface cars. Thousands of business men have assisted in a spirit of sacrifice that is perhaps unprecedented.

It is not my disposition to complain of the co-operation which private physicians are giving at a time when each of them is bearing a strain such as they have possibly never borne before, but I desire to bring home to every practising physician the realization that their reports, valuable as they are for statistical purposes, serve an even greater purpose, namely, to give us a better picture of conditions in the city than is possible from the fragmentary, disjointed, and sometimes highly colored statements which are made by individual observers who have limited or personal sources of information, and who reflect an experience which may be peculiar.

The Department of Health has bent every effort to make the reporting of cases of private physicians complete, so that it might be in possession of all the facts which would enable it to concentrate the combined attack of its own staff and that of the social agencies in those districts in which the disease is most prevalent. It should be realized by all practising physicians in the city of New York that they have not discharged their full duty to the patients, if they have merely prescribed medication and other forms of treatment. Those officially responsible must not be held accountable for failure to make adequate hospital, nursing, and medical provision for the needs of the community, if doctors who are in direct touch with the entire situation fail to report to the health department, so that the commissioner may know how widely prevalent the disease in real-

ity is and the localities in which it may be more markedly concentrated. The department does not wish to acquire these reports for other purposes than for cooperative action and to enable it to serve the pressing needs of the community.

The nurses' settlements, the Salvation Army, the health department clinics, and other agencies have been established as centres to which cases in urgent need of medical and nursing care can be reported. These cases are given immediate attention so far as the resources of the department and these social agencies permit. An Emergency Advisory Committee has been appointed, and its members, though only recently called together, have already contributed valuable aid in their respective fields. This advisory committee has representatives from the American Red Cross, the United States Public Health Service, the Academy of Medicine, Merchants' Association, private hospitals, nursing service of the city, and similar agencies. Through the cooperation of the multiplicity of social agencies already organized in this city, there have been established numerous centres whose purpose it is to co-ordinate and harmonize the efforts which all these agencies are making to secure nurses and doctors and unskilled aid, to furnish food to the sick, and to furnish motor cars and motor trucks, the former to be used to take nurses and doctors from place to place with the greatest dispatch. A clearing house has been established in the Department of Health to ascertain daily which of the hospitals have vacancies, and to refer all cases in need of hospital care to the nearest hospital offering such accommodation.

It seems to me of the utmost importance that the influence of every member of the medical profession should be brought to bear upon every private hospital or other institution which may be adapted for the hospital care of persons suffering from influenza and pneumonia, so as to reduce to a minimum the accommodation for surgical and medical cases which are of an emergency character. It would seem to me also most essential that every vacant bed in any of the private or public hospitals of this city should be under the control of a central agency, such as the health department, so that the distribution of patients to the various institutions may be equitable and in accordance with the needs of the various sections of the community.

Furthermore, it seems to me that the time has come when every other consideration must give way before the paramount needs of the situation created by the epidemic, and every specialist, who in the normal course of his daily life devotes considerable time to laboratory, dispensary, or other work which is not of an emergency character, should come forward and volunteer to respond to the calls for medical assistance which come from any quarter of the city, where the physicians of the district are hard driven and unable to care for all those who are sick. Such specialists should be roused to the pressing needs of the moment and should enroll under the direction of the central agency, namely, the health department, so that they may be placed where they can best serve those who are sick. Such service

is as finely patriotic and humanitarian as any that they could possibly perform.

In almost every important essential, the recommendations, which the Public Health Committee of the Academy of Medicine was good enough to submit on October 10th, were already in effect or were being put into operation at the time when the suggestions were received.

Time does not permit of an extended review of the manifold activities which the department has entered upon in connection with its effort to control the epidemic and to alleviate the condition of those who are suffering. While it would offer very little consolation to those who have been bereaved by the loss of a dear one through this disease, it is nevertheless well to bear in mind that New York city with its 5,750,000 of population has had a much lower mortality rate from influenza and pneumonia during the last four weeks than is reported by any other American city at the same stage of the epidemic. From September 18th to date, we have had a total of 5,725 deaths from pneumonia and influenza combined. This total includes a number of deaths which would in normal times be present in this community from these respective causes. However uncertain we are as to the actual prevalence of this disease in the community, because of the insufficiency of reports from private physicians, we have in the recorded number of deaths a valuable index. A comparison with the number of deaths reported at the same stage of the epidemic in other cities will demonstrate that the city of New York has thus far, tragic and serious as the consequences of the epidemic have been, fared very much better than other municipalities. We have taken counsel in our administrative procedures, as already mentioned, with some of the foremost authorities in public health work in this country.

It is well that it be emphatically recorded that the attitude of the health department with respect to the closing of schools, theatres, and other places of public assembly is the result of study and deliberation which were conducted with an anxious regard to do that which was best for the city as a whole.

Such eminent authorities as Charles V. Chapin, William H. Welch, Milton J. Rosenau, Victor C. Vaughan, as well as several of the prominent members of this society, have emphatically endorsed the attitude of the department with respect to its decision as to schools and theatres. It requires courage to assume such an attitude in the face of opinion which is not based upon authority or study. It is worthy of note that the cities which enforced the most rigid closing orders for theatres, schools, churches, and other public assemblies failed to experience any marked reduction in the prevalence of this disease, except in one or two instances where the closing order went into effect at or about the time when the decrease was unrelated to any activity of the health departments of those cities. It is amazing to find that the mortality among children from five to fifteen years of age is almost half that of children under five years of age. Our control of such children who go to school secures them a degree of safety impossible if they were allowed on the streets. Our rigid school medical inspection



of the children who daily attend and of those who return after absence; our prevention of assembling of children in the playgrounds; the opportunity that we have to educate these children through the school teachers and to educate their parents in turn—all these are advantages which are of overwhelming importance and justify the stand which the health department has taken. As to closing the theatres, moving picture shows and the like, a discriminating attitude has been adopted, those places being shut down which were found upon inspection to violate the sanitary laws and to be favorable to the breeding of disease. Had we adopted a universal order with respect to the closing of theatres and moving picture shows, we should then logically have closed every department store, every office and factory, every restaurant, and cabaret show, and every club. The disease is one which is spread to a large degree by contact in the home, and even if we went through some Utopian method of policing to confine every person to his or her home, it is doubtful whether the epidemic could be measurably diminished. Those in private practice see the disease spread from one member to all other members in the same family in a way which would seem clearly to indicate contact in the home as the distinct cause. Our record of 5,725 deaths with a population of 5,750,000, as opposed to the record of 10,741 deaths in the various army camps of this country which total a strength of about a million, makes an encouraging showing and gives warrant for the belief that our steadfast adherence to our views with respect to the closing of places of public assembly is justified.

In conclusion I may say that the Department of Health stands ready to help the medical profession in every possible way. We welcome all helpful suggestions, all information that will contribute toward the solution of this problem, all constructive criticism; but in return we want the assistance of the profession, principally in reporting the cases. The situation has taxed the resources of us all and we are all doing our best to bring it to a conclusion. I sincerely hope that another ten days may see us past the worst phase of the epidemic.

## EPIDEMIOLOGY AND ADMINISTRATIVE CONTROL OF INFLUENZA.\*

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Aside from such information as came to us through the medical journals, we had no intimation of the type of influenza which has since become epidemic, until August 11, 1918, when we were informed by the quarantine officer that a Norwegian steamer had arrived in this port, giving a rather interesting history. We found, upon investigation, that during the voyage two hundred passengers had become ill. A fairly large number of them had complained of abdominal pains, headache, general prostration, and fever; in addition to these symptoms they suffered from diarrhea and vomiting. On

the other hand, in a fairly large group of these there was a history of fever, prostration, and symptoms of acute respiratory inflammation. This history taken together with the fact that the ship had followed a zigzag course in its voyage across the Atlantic—alternating between the torrid zone and regions in which icebergs were encountered—caused some of the observers to believe that these symptoms were purely a reaction to marked atmospheric changes. Eleven patients arriving on this steamer were seriously ill, suffering from pneumonia, and these were removed to a hospital, and constant supervision was exercised over these patients to prevent the transmission of infection, for it was suspected that they were cases of influenza.<sup>1</sup> Those passengers who were convalescent or who had come in close contact with the sick were followed up by nurses of the Bureau of Preventable Diseases, with a view of discovering any new cases that might develop, and to restrict the activities of such persons until an adequate period of time had elapsed to make it reasonably safe for them to go about.

Shortly thereafter, a French troopship and several freight steamers arrived, each bringing a few cases which were diagnosed as influenza and which were promptly removed to the hospitals of the health department, those who had been in contact being kept under surveillance.

For the period of several months prior to September 12th, passenger steamers and freighters, as well as troopships, were entering this port, each of them discharging large numbers of patients, among whom it is entirely reasonable to suppose there were numerous carriers or missed cases of influenza. The same story is true of the other ports of entry in this country, and it would seem just to assume that the epidemic was started by numbers of patients who were admitted at the various ports of entry in this country. The safeguards which have been established to prevent the entrance of infectious diseases to this and other ports have had to be relaxed, apparently because of the great need of leaving undisturbed the channels of communication with the seat of war.

The departments of health of this and of other cities, which normally looked to the quarantine officers at the various ports to stand guard as a first line of defence to prevent the entrance of persons suffering from infectious diseases into this country, were powerless to exercise their official powers to prevent the entrance of infected persons who started an epidemic which has exacted a large toll of lives in this country. Before discussing the administrative measures which have been adopted in this city for the control of the epidemic, so far as its control lies within the power of the health officials—after thousands of foci had been distributed throughout the country—it may be of interest to point out some epidemiological facts with reference to the present epidemic.

Shortly after this disease was made reportable—that is about September 20th—the reported cases seemed to show, upon analysis, that very few persons other than those between the ages of twenty-

\*Address delivered at a meeting of the Eastern Medical Society, October 11, 1918.

<sup>1</sup> A report of these cases was made by Dr. Edward E. Cornwall, under whose care they came in the Norwegian Hospital, and published in the NEW YORK MEDICAL JOURNAL for August 24, 1918.

five and thirty-five years, were attacked by the disease. The preponderance of cases among those in the latter age group continued to be very marked until the first of October, approximately. From all indications the epidemic seemed to have become actively manifest about September 15th. Therefore, for a period of about the first two weeks of the epidemic, persons between twenty-five to thirty-five years of age seemed to bear the brunt of the attack. From October first up to the present day, the epidemic has shown a distinct tendency to expend a large part of its force, not only upon those between twenty-five and thirty-five years of age, but upon earlier age groups as well. Out of a total of 25,082 cases of influenza reported to the Department of Health by private physicians and hospitals from September 18th up to and including October 11th, the ages of affected persons were given in 21,211 cases. Of this number,

2,140 cases were children under five years of age;  
4,865 cases were children from five to fifteen years of age;  
4,726 cases were persons from fifteen to twenty-five years of age;  
4,833 cases from twenty-five to thirty-five years of age;  
1,957 cases from thirty-five to forty;  
2,641 cases forty years or over.

At first, apparently, those most easily susceptible to the disease, namely persons between twenty-five and thirty-five years of age who were in contact with carriers in the markets of the world, in offices, factories, subway cars, and in other places of public assembly, were affected. One may reasonably assume that these cases as they increased in number served as foci of infection in their respective homes. Apparently the disease, which had first been spread about through the avenues of commercial and mercantile intercourse, was carried into the homes, and domestic or family contact probably became the chief source of transmission.

While in the pandemic of 1890, the disease affected males chiefly, in the present epidemic it is worthy of note that from the very outset the number of females affected has been equal to the number of males. This change is perhaps accounted for first by the fact that in the last decade women have in increasing numbers entered industry, and have during the period of the war, especially, taken over thousands of places formerly filled by men, and second, by the fact that a large number of men belonging to the age group which is most susceptible to this disease are now engaged in overseas military service.

*Extent of the epidemic.*—The actual extent of the epidemic in this city is difficult to measure. The commissioner and those of us who are assisting him in the control of the present epidemic fully realize that only a fraction of the cases actually occurring in this city are reported by private physicians. The cases reported to us are of value, not because they give an adequate notion of the extent of the disease, but rather because they represent the report of a number of physicians in active practice who, from the outset, have continued to report the cases coming under their care, thus giving us a daily cross section which fully depicts the variations in conditions as seen by a fairly large group of practitioners. However, in the number of deaths

reported daily to the health department, as resulting from both pneumonia and influenza, we have an index which, in the light of the mortality experience in this disease, as observed in foreign countries, in various camps, and other communities, gives us a fairly accurate means of estimating the extent of the disease in this community. In the various army camps in this country, the mortality among affected persons has been about four per cent. This is rather higher than reported in civil communities. Assuming the mortality in the city of New York to have been quite low, so as to make our estimate of the total number of persons affected by the disease as liberal as possible, we have calculated that the 2,550 deaths from influenza and pneumonia which have been reported from September 18th to date represent a mortality rate of two and one-half per cent. Therefore, the total number of persons affected up to the present time would be about 102,000. Unless reasons appear which would indicate the necessity of changing the method of our calculation, it would seem just to assume that at any stage of this epidemic, the most liberal estimate as to the extent of its prevalence would be obtained by multiplying the total number of deaths by forty, on the assumption that the deaths represent but two and one-half per cent. of all persons affected.

Several times during this epidemic, the nurses of the Bureau of Preventable Diseases have made a block census, visiting each home in a given area to ascertain the number of persons who were sick and thus to secure data as to the probable prevalence of the disease. This evening, October 11th, a census of six densely congested blocks in the Borough of Manhattan was completed by nurses of the Bureau of Preventable Diseases. The Borough of Manhattan is divided into seven districts. A congested block in each of these districts was chosen for the purpose, with the following results: 3,041 families, consisting of 10,594 persons; were visited by the nurses. The total number of cases of influenza which they found during this census was 335. Of this number, however, 220 were under the care of private physicians who had established a diagnosis, and 115 persons were not under medical care, but had assumed to diagnose their own condition. Indications, therefore, are that at the present rate the disease is not nearly as widely prevalent as it has been estimated to be by a number of unofficial observers.

The disease is causing grim and tragic consequences which all must regard with great sorrow. It is most important, however, to bear in mind that terrible as the loss of human lives in this community will be found to have been, when the epidemic is at an end, we will have much to be grateful for if the mortality rate among those affected will not have risen a great deal higher before the disease has run its course. This point of view is of the utmost importance if one wishes to appraise justly and calmly the guiding principles which have governed the conduct of those of us who have been responsible for establishing a definite program for control and prevention of the epidemic in this city. The commissioner and his official advisers



have, in spite of the counsel of many who are apparently distracted by the tragic events through which we are passing, adhered to an administrative policy which is based on painstaking and most earnest study of the problems created by the present situation. This will be discussed more in detail later.

*Seasonal Influence.*—The present pandemic, unlike the pandemic of 1890, has traveled from country to country during the summer months of the year. It would seem that seasonal influences play no part in the present situation.

*Virulence of the infection.*—During the early days of the present epidemic in this city, a very large number of virulent infections were observed in the several hundred cases treated in the hospitals of the Department of Health. Many cases were of the fulminating type. During the first days of the present month it was noted by the physicians who were attending the cases in our hospitals that the disease had assumed a somewhat milder form, and that the severe intoxications, delirium, and rapidly fatal terminations were not nearly as frequent as during the early period of the epidemic. Apparently the previous state of health of persons affected by this disease has had little relation to their susceptibility and to the course of the disease. Robust and vigorous soldiers and sailors were seriously attacked and seemed able to offer little, if any, resistance to the infection. It would seem that those persons about the age of thirty-five, and particularly those who were over forty, and who very likely survived attacks of influenza in previous years, enjoyed the largest degree of immunity. It would seem that the exposure to inclement weather, fatigue, and crowding in dormitories were largely influential in causing robust and vigorous men enlisted in our army and navy to be attacked by the disease. It has been stated by some observers that one attack of influenza does not protect against subsequent infection by the influenza bacillus. If there is any merit in the theory that there is a survival immunity among persons forty years of age and over, it would seem to argue powerfully against the view that one attack predisposes rather than protects against a subsequent one.

An unusually large number of deaths have been attributed to influenza. On many days the number of cases which were reported to be due directly to influenza was greater than the number of deaths reported from secondary pneumonia or bronchopneumonia. It is incredible that about fifty per cent. of the deaths reported are due to the effects of influenza itself. It would seem, in the light of the best clinical experience, that many of these patients die as the result of a bronchopneumonia in which the physical signs are few or unrecognized, and in which toxemia dominates the picture. It is important and of interest to note that nearly seventy-five per cent. of the deaths reported during the present epidemic have occurred in persons between the ages of fifteen and forty-five; slightly less than ten per cent. of these deaths have occurred in children under five years of age; and remarkably enough children of school age—namely those between five and fifteen years—although equaling the number of cases reported between the

ages of twenty-five to thirty-five, have contributed only 5.8 per cent. of the deaths thus far reported.

*Administrative procedures.*—In the main it will be found upon comparison of the administrative procedures for the control and prevention of the epidemic that different communities have adopted very much the same program, in so far as essentials are concerned. In New York city both influenza and pneumonia were made reportable by an amendment to our Sanitary Code on September 17th, a few days after the disease was recognized as having gained entrance into this city. An educational campaign, through placards placed in subway, surface, and elevated cars was immediately begun; circulars of information for the prevention of the spread of the disease, together with instructions for the care of the sick, were promptly issued; and the newspapers, which have generously and unstintingly given aid in the campaign, furthered every effort of the health department to spread broadcast a knowledge of the rules and instructions established by the latter. This epidemic has been a demonstration of the fact that public health education, in the sense in which the term is ordinarily employed, has a very narrow limit of usefulness. If one were to weigh all evidence dispassionately it would probably be found that in spite of the well organized educational campaign in which many agencies have assisted, it has been impossible through this means to check the indecent and deadly habit of spitting in public places, and to educate persons, many of them quite intelligent, to use a handkerchief when coughing or sneezing. Many arrests have been made in the city of New York for spitting during the last few weeks and heavy fines have been imposed by the judges before whom these culprits were brought, but these punitive measures have little or no value in restricting the practice. It should be recognized that preparedness is the most essential principle in applying public health education. It would seem to be of the utmost value to impose a rigid discipline upon school children so that they may grow up to appreciate the danger of spitting, coughing, and sneezing without the proper use of a handkerchief. We have adopted vigorous efforts to supervise places in which food is prepared and sold, and particularly in the supervision of soda water fountains to secure the proper washing of glasses and spoons. There is, unfortunately, a popular prejudice against the use of the paper cup at soda water fountains which prejudice has retarded the manufacture of an adequate supply of this most important article for the prevention of the spread of disease. This is another subject which would seem to merit public health education as a part of the school curriculum.

Quite early in the course of the epidemic, the commissioner inaugurated an epoch making experiment in instituting a relay system for the opening and closing of business establishments, thinking in this way to minimize the crowding which follows as the result of having an opening and closing hour almost identical for all trades and industries.

All nurses of the Bureau of Preventable Diseases and a number of those employed in the milk stations of the Bureau of Child Hygiene have coordinated with the other home visiting nursing agencies of this

city and are now giving actual care to the poor who are in need of such services. Several hundred patients are under the care of the Department of Health nurses, to say nothing of those cared for by other agencies which have previously given service of this type to the community. The diagnosticians of the Bureau of Preventable Diseases have been more than doubled in number and have responded to the call of persons in the community who could not afford to pay for the services of a private physician. They are working hard to meet the demands made upon them. Unfortunately there was no system of central control of all physicians in this city, such as is contemplated in health insurance, which would guarantee to every person in the community, however poor, the privilege of securing medical service, and which would enable a central authority to distribute the physicians where their need was greatest; in this way much of the waste, energy, and time which follows from an individualistic system of medical practice during a crisis such as the present would be eliminated. Whatever the merits of health insurance or any other system of central control of medical practice in the community may be, there is no doubt that in such an emergency as the present—and particularly because the ranks of the medical profession in this city have been depleted by the call to military service—a more equitable and just method of distributing medical care would have been possible. Under a system of central control, many specialists who are now pursuing their normal daily routine, could have been commandeered to render emergency aid.

The public schools have been allowed to remain open, not as the result of laxity or because the commissioner and his official advisers have failed to appreciate the solemn responsibility which devolves upon them, but as the result of searching, painstaking, and thorough study of the merits and demerits of such a procedure, and also as the result of counsel obtained from some of the foremost public health experts in this country. As the result of our deliberations and studies, we feel certain that the commissioner has taken, not only a courageous, but a sane and scientific view of the situation in keeping the schools open and utilizing many special provisions for safeguarding the health of the children which have been devised to meet the present situation. From present indications, it seems likely that when the epidemic shall have passed, and when its results will have been carefully recorded, that it will be found that the city of New York has compared more than favorably with other cities, in the sanity and wisdom of its procedures, and in the results achieved through such methods, especially when contrasted with the illogical and arbitrary methods employed in some communities where fear and panic have prevailed. The children, under special arrangements made in the city of New York, are being more carefully guarded through medical supervision and through the intelligent oversight of teachers than ever before in the history of any community. This is a venturesome statement, but I believe will be found to be true. Thus far we have demonstrated that with many hundreds of thousands of children under our supervision, the schools have continued in operation without producing any au-

thentic evidence that our school population has been thoughtlessly exposed to greater danger than they would have encountered on the streets of the city of New York where they would be without rigid and constant supervision and without the concentrated educational attack which is made upon them each day as the most important part of the curriculum during the period of the epidemic.

The commissioner of health has closed only such moving picture theatres as were found to be violating the sanitary laws or harboring conditions conducive to disease. Unlike other communities, the city of New York has not closed the theatres and the moving picture theatres indiscriminately, because we could not carry such a procedure to its logical conclusion, without the paralysis of industry and of social life which would have made conditions in this, the greatest city in America, intolerable. Had we closed theatres and moving picture theatres it should have followed logically that all department stores, all restaurants, all clubs, all offices in which workers were congregated, and all factories in which they come together in large groups, and every transportation line should have come similarly under the ban. It will be interesting to note when the epidemic has come to an end, if an honest and accurate system of accounting has been kept in each community, that the prevalence of the disease will have been just as great, if not greater, in those cities in which vigorous closing measures were adopted as compared with the city of New York. One may venture to predict with confidence, realizing how dangerous prophecy is, that the usual quota of from twenty-five to forty per cent. of influenza cases in each community will have been recorded, providing of course that a careful system of records has been kept.

It will be realized in time no doubt, that contact in the home was one of the most important, if not the most important, of all causes for the transmission of the disease throughout the community. Possibly we will begin to realize when this epidemic is over, that in our reform of housing conditions, we must strive to insist upon a standard which will give the poorest family in our community an adequate number of rooms to make at least a small measure of isolation of the sick possible when a case of infectious disease occurs in a family. In time it will come to pass, though this is perhaps a Utopian conception, that the law will compel the building of apartments and the maintenance of living conditions within them to be of such a standard that it will be held illegal to have families herded as they now are in various congested sections of the city, and it will come to be realized that no member of the community, however rich and sheltered, is safe from the visitation of an infectious disease with its terrible consequences, unless the poorest members of the community live in such fashion that infectious disease may not select their habitations as a breeding place for contagion and pestilence which radiate to all other homes in the community. And public health education in our elementary schools, night schools, high schools, and colleges will perhaps be made increasingly of a character to promote an understanding of personal and public hygiene and sanitation.



## SYMPTOMATOLOGY OF THE PREVAILING EPIDEMIC INFLUENZA.\*

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Two days ago I was invited by your president to open this discussion on the prevailing pandemic of influenza. Naturally, on such short notice and with very little spare time for its preparation, no attempt at a complete paper was possible. I have simply attempted to note the more striking features of the disease as I have observed it.

One of the chief points of interest is its occurrence in young adults between the ages of eighteen and thirty-six years of age, the decade between twenty and thirty being the period of greatest frequency. At the onset of the pandemic very few children and adults beyond the age of forty were attacked. As the disease became more prevalent the number of children attacked increased, but the severity of the disease in them was much less marked than in young adults. The older adults have remained relatively free. The oldest patients I have seen who have been attacked were fifty-three and fifty-four years old. It is true that many cases have been reported among older persons, but I am convinced that most of these cases are not true influenza. There is a natural tendency to attribute every case of acute pulmonary disease which occurs at the present time to influenza; but it must be remembered that we always have had respiratory diseases at all seasons of the year.

This incidence of influenza among young adults is strikingly unlike that of the pandemic of 1889 and 1890, when all ages were attacked alike. The malignancy was most marked in older adults and the aged. That the older persons should be spared in the present pandemic is readily understood, for they have acquired immunity either by having had the disease in the pandemic of 1889 and 1890, or through natural immunity; but why the children should be more immune this year and have the disease in a milder form, is very difficult to understand.

Another point of great interest is the distinction in social grades. In the better class of people are seen only milder types of the disease, and even those are relatively few in number, whereas nearly all the severe cases which I have seen have been in my hospital service or in consultation; they have occurred in the lower middle classes or in the poor—people who have been living in crowded places or have traveled in the subways and crowded street cars. On account of this congestion they have been brought into close contact with those suffering from the disease or have acquired it while nursing sick members of the family.

There are three distinct types of onset. The first begins with a mild onset of muscular pains, headache, coryza, and slightly elevated temperature. This condition lasts two or three days, and the patient is well. With some this marks the termina-

tion of the disturbance. But there is a large number in this group who, after being apparently well for four or five days, experience a sudden change; there is a feeling of chilliness and marked prostration, and suddenly the patient becomes severely ill with symptoms of typical bronchopneumonia. The prognosis is serious in this type.

The second group begins with moderately severe symptoms of influenza, prostration, moderate fever, and slow pulse. These patients are sick for two or three days; then there is a sudden crisis and they are well. Among a certain proportion of these cases, however, after this lysis on the third day, the temperature suddenly rises to 104°, and the patients become acutely ill with the bronchopneumonic group of symptoms. They are sick for eight or ten days, when they have the usual lysis. They do very much better than those who have a milder onset and develop acute symptoms afterward.

The third group comprises the foudroyant or fulminating cases. These patients are taken acutely and violently ill at once, with high fever of 106° or more, great prostration, cyanosis, a rapid pulse and respiration, followed by death inside of thirty-six or forty-eight hours, with very few physical signs in the chest.

In regard to the symptomatology, I shall confine myself to the individual symptoms; the general picture is too well known to require any detailed description.

I would refer first to the asthenia which is such a striking feature of this disease. Even in the mild cases it is present to some degree. It is much more pronounced in the severe types, and its intensity is a good index of the severity of the toxemia. Indeed, I know of no sign which gives a better index to the condition of the patient and the prognosis than the asthenia. The first glance at the patient will give one more information as to his condition than the most detailed physical examination could insure. Any patient whose illness is ushered in with severe asthenia will undoubtedly have a stormy course.

The asthenia has two important therapeutic relations: One is to avoid the free use of depressing coal tar drugs, one of which is the much advertised aspirin. Secondly, it is an indication for the free use of alcohol. I consider whiskey or brandy in full doses a most important part of the treatment. In these days when prohibition has even invaded the hospital wards and when the younger generation of physicians is ignorant of the value of alcohol in toxemias, it may not be amiss to lay stress on the great benefit which may be obtained from it in the treatment of these patients.

Chills are conspicuously absent. There is only a chilliness which frequently ushers in the disease. It also occurs during the course of the disease when there is a recrudescence of the fever or an additional involvement of the lungs. The height of the fever varies with the type of onset. It is a more or less continuous fever around 104°, which usually lasts eight or ten days in the moderately severe cases. There is a curious drop in temperature on the third day. In the milder cases this marks the end of the disease, but in a large number of patients

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the temperature suddenly rises to  $104^{\circ}$  or  $105^{\circ}$ , at which height it remains with daily oscillations of a degree until the eighth or tenth day, when lysis begins; in two days the temperature becomes normal. At times the temperature assumes a distinctly remittent type, but these cases are not common. In the severe types there is a steplike rise of the fever to  $106^{\circ}$  or higher. When this occurs the prognosis is very poor.

The pulse is slow—about 80 to 90. No matter what the temperature is, there will be a slow pulse of rather large volume, often dicrotic, and reminding one of a typical typhoid fever pulse. It is a wonder to me that any physician should give digitalis in the early stages of this disease. The heart is already under the influence of a powerful vagal inhibitor and the use of digitalis in the early stages is contraindicated. An increase of the pulse rate to 120 with a tendency to go upward, accompanied by a rise in temperature, is an ominous prognostic sign.

The blood pressure remains good and constant, the range being 110 to 120 systolic and 60 diastolic, and one has nothing to complain of in the action of the heart, in spite of the asthenia. But if there is a low pressure at onset or if there is a sudden drop, it is well to beware of trouble.

Sudden deaths from acute dilatation of the heart are by no means uncommon. Pulmonary edema is much less frequent in occurrence than one would expect in a disease in which cyanosis is so marked as in these severe cases. In the very toxic patients who are comatose and profoundly asthenic, the myocardial condition is what is ordinarily seen in such conditions. It is worthy of note that I have not observed a single instance of endocarditis or pericarditis. This was verified by the postmortem examination of the hearts which showed only the acute myocardial changes.

The respiration is usually slow and around twenty to twenty-four. It is to be noted that the respiratory rate may bear no exact relation to the pulmonary condition. Thus there may be a rate of twenty-four to thirty with extensive pneumonic changes in the lungs. On the other hand the respirations may be forty or more, with few physical signs in the lungs. This discrepancy will be referred to later on under the physical signs of the lungs. I wish to emphasize the ominous significance of a respiratory rate of forty or more, whether there are physical signs in the lungs or not; it denotes a profound toxemia.

The skin shows remarkably few manifestations. I have seen only two cases of roseola. Another point to be noted is the absence of herpes; I have observed it in but one case which had pulmonary involvement, and I am sure there was a pneumococcus admixture in this case. Febrile erythema is quite uncommon.

Another significant feature is the absence of the coal tar drug rashes seen so frequently in the pandemic of 1889-1890. This represents a great advance in the therapeutics of today.

Cyanosis is a common condition in the severe cases of the present epidemic and, when progressive, is an almost lethal manifestation. It is not

the cyanosis produced or augmented by the proprietary remedies which were so extensively used twenty-nine years ago.

Epistaxis is a very frequent symptom; I believe it is present in thirty-five per cent. of the cases. There is no bleeding from any other mucous membrane than that of the nose. Epistaxis may be regarded as one of the cardinal symptoms of the disease.

The sputum is not very abundant. It is usually mucopurulent and is often blood stained and frothy. It is unlike the sticky, tenacious sputum of ordinary lobar pneumonia.

Vomiting is a very common symptom at the onset and early stages of the disease, and is often very distressing. Jaundice of a mild type is occasionally observed; it is probably due to a mild cholangitis. Another symptom referable to the abdomen is pain. At times, this may be so severe that acute abdominal conditions may be suspected. In the case of a child recently admitted to Mt. Sinai Hospital, the abdominal pain was so severe and cramplike and the rigidity of the abdomen was so great, that in the presence of fever and the absence of other symptoms and physical signs, a diagnosis of acute appendicitis was made. As nothing was found at the operation the true diagnosis of influenza became apparent. I have seen a number of patients in my own service in whom the main symptom was intense abdominal pain which was especially referred to the epigastrium.

The ears and sinuses seem to be almost exempt in this pandemic. I have seen no case with sinus involvement or mastoid disease, and I have observed only three patients with otitis. The otitis was of a mild type, which yielded to a simple paracentesis. And yet all these cases were fatal. In army practice, I have been informed, ear complications have been more frequent. But the fact remains that this pandemic has been singularly free from these complications. This is in striking contrast to the pandemic of 1889-1890, when these complications were exceedingly common.

The spleen is rarely palpable. Phlebitis occurred in one case; it involved both saphenous veins during convalescence, and was accompanied by a fever of  $103^{\circ}$ . It may be worth while to think of this possibility in obscure rises of temperature during convalescence.

The urine has the characteristic feature of any acute infection. But this pandemic has a milder type of nephritis than was observed in 1889-1890, when the urinary changes were often very marked.

The blood picture is very characteristic; there is always, even in the severe cases, a leucopenia. The average counts are from 4,000 to 6,000, with sixty per cent. polynuclears and thirty to thirty-five per cent. lymphocytes. High counts usually denote the existence of some complication.

The last topic to which I will refer in the symptomatology is the lung signs. These are among the most important of all, since pulmonary involvement is always present to a greater or lesser degree. Coughing is usually prominent and is either pharyngeal, laryngeal, tracheal, or pulmonary in origin. One of the surprising features of the postmortem



examinations is the more or less intense tracheitis; indeed, tracheal ulcers are surprisingly frequent. Another manifestation of the trachea being a point of selection is the fact that pure cultures of the influenza bacilli are found most frequently in the trachea, more frequently even than in the lungs. In diagnosis and treatment it is well to bear in mind that the influenza cough may have these various points of origin. In the physical examination of the chest, the two areas to be especially examined are the trachea and the bases of the lungs. The apices are only exceptionally involved. Over the trachea we may hear coarse rhonchi; over the bases one finds the characteristic sticky crepitant râles. If one does not hear them it is important to make the patient cough. The percussion note over the involved areas has a peculiar wooden tympany or flatness which is suggestive of Skodaic resonance. Sometimes it has even crack pot characteristics. In the early stages when the lesions are still scattered bronchopneumonic patches there may be little change in the auscultation sounds even though the percussion note is already duller. Later on, it becomes bronchovesicular, but it does not become bronchial until the bronchopneumonic patches coalesce into larger areas. The vocal fremitus is not increased and may be absent. All these physical signs may be explained by the fact that aeration of the involved bases is usually poor.

The pleura is almost never involved in the cases which I have observed. I have seen no effusions nor empyemata. Only one patient had physical signs which suggested an effusion; this was confirmed by the x ray examination; however, repeated punctures failed to reveal any fluid. In the much larger number of cases observed in the army, pleural effusions have been found in a small number of patients. It is important to remember that the physical signs of them often fail to correspond with the actual amount of involvement of the lungs, for extensive areas are found by x ray examinations, and at postmortems, when the physical signs would lead one to believe that the lungs were not extensively involved.

As regards prognosis the ominous signs are: 1, cases which begin fulminantly; 2, secondary pneumonias which come on after apparent recovery from a mild attack; 3, a steplike rise in the fever above 105°; 4, rapid pulse; 5, rapid inspirations; 6, an initial low blood pressure or a sudden drop; 7, profound asthenia; 8, cyanosis. One should always be very guarded when influenza occurs in a pregnant woman or when the disease attacks persons who have healed or latent tuberculosis. In both these classes, the mortality is unusually high. Furthermore, the lighting up of latent tuberculosis by an attack of influenza should always be remembered as a strong possibility.

I would like to say a few words comparing this epidemic with that of 1889-1890. Not all of you had the chance of observing cases at that time. I was in Vienna in 1889 when the epidemic began and saw it in all its phases there, and when I returned here in December, 1889, the pandemic broke out and I had ample opportunity to observe it. That epidemics should vary in their essential

features is by no means uncommon. Those of us with hospital experience know that this is true of all infectious diseases. Thus every year there is a difference in the type of typhoid fever; in one year there is more hemorrhage; in another year there are more perforations; in still another year roseola are more abundant. It is an interesting fact that we should have these variations in the same disease as it shows itself at various times. In influenza, however, one symptom is always constant and prominent. Pneumonia has always been associated with this disease, even in the earliest reports of epidemics. Thus Bockel in 1580, Sydenham in 1675, Arbuthnot in 1732, and Huxham in 1737 referred to pneumonia as being the leading feature. There are several features which deserve notice. There is the remarkable sameness of the cases you see now; the only thing that varies is the severity of the symptoms, but the picture is the same. In the pandemic of 1889 there was the utmost variety. The second point is the age incidence. In 1889 all ages were involved; it was not limited so much, as at present, to early adult life. Then differences were the ear involvement of the past; otitis, mastoiditis and sinus disease were extremely common as well as neuritic manifestations; also psychoses were quite common. Influenza stands third in the etiology of psychoses as a result of the epidemic of 1889. I have not seen any, but the army reports some. It is too early to say as yet if these sequelæ will develop later on.

Nephritis was very common in 1889; the changes in the urine do not correspond at all today; and routine examination shows only mild febrile changes and much less albumin than was seen in 1889. At that time too abscess of the lung and bronchiectasis were common; I have seen none in this epidemic, but in this respect also it is too early to say that these may not be observed in the future.

Last of all, I would like to call attention to remarkable statistics which I chanced to find some time ago in Leichtenstern's monograph on influenza in Nothnagel's Encyclopædia, 1896, p. 110, vol. IV, part 1. This refers to the frequency of pneumonia in the Prussian army in the pandemic of 1889-90. There were only 534 cases of pneumonia among 55,263 cases of influenza in the entire army (one per cent.) and only 175 cases of pleurisy (0.3 per cent.). Compare this with the present epidemic in the United States army in camps in this country with ten per cent. incidence of pneumonia and a mortality of thirty per cent. No better material could have been chosen to make comparison of the two epidemics and no better evidence could be produced to show how unlike the two epidemics are in their clinical features and mortality rates.

In conclusion, I would say that I have tried to include the chief symptoms of this protean disease as it has shown itself in this pandemic. There are others, but the limited time at my disposal in this symposium precludes discussion of them.

Nothing has been said about the sequelæ, as it is as yet too early to predict what these will be. To one probable sequel, tuberculosis, I would direct especial attention, as its incidence after the last pandemic was much increased. It is, therefore, important for every physician to be on his guard.

## NERVOUS AND MENTAL DISTURBANCES OF INFLUENZA.

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The historical background of influenza affords a hazy territory for research, conjecture, and speculation. From the days of Hippocrates epidemics have been written of which bear certain resemblances to the present day influenza. Even Homer has been said to have placed an early epidemic on record. Thomas Glass, of Exeter, in his description of the epidemic plague of 1775 calls attention to the plague of the Iliad as presenting features which convinced him of its identity with the influenza. Of the history of these early plagues it is not my purpose to write; this has been done fully well by hosts of students better qualified than myself, and scores of sources are at the beck and call of the historically interested. Hirsch, Webster, Zeviani, Conradi, Kusnekow and Herrman, and many others have traced these from the fifth century to the present time. Throughout this record one finds certain unmistakable indicia of implication of the nervous system, but it is apparently only from about the fourteenth century on, that the details are sufficiently recorded to enable the student of the history of nervous affections to take up the scent and feel that he is on certain ground.

In these early accounts we read of headaches and deliria as frequent accompaniments of this disease; notably in the accounts given by Kusnekow and Herrmann. Sauvages in his celebrated *Nosologie* adopted the classification of cephalitis epidemica for certain of these epidemic descriptions which have notably come to us, chiefly outlined in Mezèray's description of the epidemic of 1510.

Of the many opportunities for uncertainties in the differentiation of different contagious disorders it is not my purpose to speak. It is certain that many whooping cough cases were intermingled in these early epidemics. But apart from all of the historical intricacies of interpretation, the point to be emphasized is that nervous and mental complications or manifestations have been evident from the earliest times and it is becoming increasingly apparent that the influenza microorganism is one fraught with certain specific activities upon the nervous structures.

One of the features that I wish to bring out in this rather hasty review is that many of the factors which have contributed to the dangers of influenza are based upon this predilection for certain specific nerve structures. Before attempting a generalization, however, with reference to a specific activity upon certain nervous elements, a review of the more general clinical manifestations of nervous disturbances seems advisable.

A great number of these nervous manifestations have come under personal observation in private, hospital, and dispensary practice. Their detailed anamnestic consideration would unduly extend this summary. The extremely extensive literature, which, beginning with the epidemic of 1783, has been recorded with each epidemic in voluminous proportions, contains an extremely rich and varied

collection of a vast number of syndromes attributable to the influenza bacillus. The epidemic of 1889 gave rise to several thousand literary productions of all kinds, those bearing on the nervous system alone numbering at the very least several hundred.

I am aware of the fact that a number of observers (1) have claimed that the influence of influenza upon the nervous system has been greatly exaggerated by those who have emphasized this relationship. In fact we find it recorded, in 1837, that Broussais wrote that "influenza itself was a creation of people without a sou, and of doctors without clients, who having nothing better to do are amused to create this rigamarole." Thus for Broussais, and many others—and we have heard the same expression of opinion at the present time—there was no such thing as influenza although its malign influence and singular severity, especially upon the nervous system, had been emphasized for centuries. Such is the usual forgetfulness of the present for the past.

There can be no exaggeration of the countless number of facts that indubitably attest the enormous significance of the causal relationship between influenza and diseases of the nervous system. Since 1889—when more exact methods of diagnosis, neurological, bacteriological, and cytological have been more widely employed—the actual presence of the influenza bacillus, either in pure or mixed culture or in section, and by other methods of definite identification have more and more aided the diagnosis of nervous syndromes and have helped to clear the way to a more valuable therapy. Pfuhl, Pflüger, Nauwerk, and scores of others have isolated in organism in various neurological syndromes.

In practically all of the conditions which shall be here mentioned the etiological relationship has been clearly established by different observers, either by direct observance of the organism or by a rigid logical analysis. Snap diagnoses have occurred and will continue to occur, and during an epidemic of influenza it will not infrequently happen that a superficial study of a nervous disturbance may be taken as due to influenza and thus permit a different serious etiological factor to pass by undetected. This may happen, and is particularly unfortunate in the case of syphilis or a tumor for example.

With these introductory remarks we may take up the consideration of the more widely observed syndromes.

*Cranial nerves.*—Olfactory: Disturbances of smell are frequent and anosmia is a widespread early symptom. Whether arising from the pressure of the swollen mucous membrane or as a direct response to toxic action, cannot always be determined. In certain patients the loss of smell persists for a long period after recovery from the acute effects of the infection. A few instances of anosmia under personal observation have set in in from four to five days or as late as ten days, after the onset of the acute symptoms. These have not been isolated happenings, as loss of taste was also present in one and loss of hearing an accessory symptom



in another patient. Zwaardemaker (2), Bossers, Bardt, Dippe, and others have reported similar cases. Olfactory hallucinations, presumably of peripheral origin are also known (Bardt).

**Optic nerve.**—Optic neuritis, while a comparatively rare affection, is nevertheless frequent enough to demand serious consideration. Different neurones are involved. Thus retinitis results from involvement of the receptors, giving rise to partial or complete blindness, or more frequently to scotomata. Acute axial neuritis with its characteristic central scotomata is met with. It usually recovers. The most frequent types in my experience are the interstitial and diffuse forms of optic neuritis, the so called retrobulbar neuritis of most textbooks. In interstitial neuritis there results a limitation in the visual fields from peripheral scotomata, but many patients are unaware of the reduction in vision until definite tests are made. Influenza plays a very important rôle in the production of diffuse optic neuritis, here being almost as important a producing cause for this type as syphilis. There is a large literature bearing on this extremely grave disorder. Willbrand and Saenger have collected this in their great monograph. Post-chiasmal involvement of the optic tract may be seen in influenzal meningitis, and rare quadrant hemianopsias may be observed in occipital lobe involvements, as in serous meningitis and in abscess, which latter may result from a pure or mixed infection.

**Ocular palsies.**—Third, fourth, and sixth nerve involvements, belong to some of the commonest of the many palsies which accompany the influenzal toxemia. They may occur as isolated palsies or are found in combination, and may be accompanied by more widespread involvement of the bulbar nuclei or peripheral neurones of the cranial nerves. The peripheral types are the better understood and also offer the better prognosis. Isolated external rectus palsy as a result of this toxemia I have encountered in a number of instances. It, as well as the more complex or complete types, is frequently preceded by a severe eyeball neuralgia. Accommodation palsies have also been seen by a score of observers, occurring as an isolated event or in combination with external ocular palsies. From a strictly neurological standpoint there is nothing pathognomonic in these ocular palsies by which they may be separated from palsies of other etiology. The prognosis is usually better than the syphilitic, typhoid, diphtheritic, poliomyelitic, or metallic ocular neuritides.

Combinations of ocular palsies, external and internal, with paralyzes of the pharyngeal pillars, or of certain of the laryngeal muscles occur. I have seen two or three such patients, in whom the resemblance to a diphtheritic palsy was very striking. This latter cause was excluded by laboratory tests. Joachim, Jankau and Uthoff, Heymann, Krakauer, Faye, Fukula, Valide, Pflüger, Albrand, Strower, Greef, Bergermeister, Landolt, Weichselbaum, Sattler, Frank, Guttman, and others, have reported cases.

**Trigeminal.**—Neuralgia of the fifth nerve is one of the most frequent and painful disturbances in influenza. In our dispensary work it is frequently

observed. I have seen it less often in private practice, as many of these patients go to their dentists in the belief that the trouble is a dental one. Trigeminal zoster I have also seen, and some patients have a very severe trigeminal zoster as a symptom of an influenza. Motor palsies of the fifth nerve I have never seen.

**Facial nerve.**—Palsy of the seventh nerve I have frequently observed when the general symptoms of influenza have been present. It may or may not be associated with an otitis. As not infrequently happens, the neuritis may be severe and yet the general symptoms of the influenza be quite mild, that is speaking from the usual standpoint—that the nasal and respiratory symptoms are taken as a general criterion of the severity of the disease. I am disposed to believe that this is a great mistake, for many extremely severe cases of influenza go through almost to death with very minor nasal or respiratory indications. It has seemed to me that when the toxin seems to localize its activities in one type of tissue it has a tendency to limit itself there. Thus most of the neuritides that I have observed—and this applies to the neuritides of spinal distribution as well as of cranial localization, including also zoster cases—have occurred in patients in whom bronchial, intestinal, or nasal manifestations have been extremely mild. Thus to deny the presence of an influenza in the absence of these symptoms in a severe type is not good sense. In the epidemic of 1889 and 1890 I recall a particularly striking incident in one family in which one patient died of an influenzal pneumonia, another with a slight bronchitis only, died with a severe zoster, and a third with no influenzal symptoms in the ordinary sense had an external and internal ophthalmoplegia. In two patients seen recently, the mother had a severe old fashioned influenza and was not under my care, but two daughters had a zoster and a mild chorea, respectively, but with only slight indications of the influenza. Thus I have expected not to find the severe neuritides in the severe bronchial cases. It may be that the internist sees these cases and I do not. When the influenza has been mild and palsies have been present they are referred to the neurologist as nervous cases. This experience as that of others as well would seem to be indicated in the reading of the full historical accounts of former epidemics. Even in those way back in the early centuries, we note that different observers have spoken of, "this epidemic as being noted for the large number of mental cases"; "this epidemic has been noted for the large number of pneumonia cases"; "this epidemic runs to intestinal types," etc., etc. Thus, in the epidemic of 1781, it is recorded that there were great numbers of very severe head symptoms, "cruel pains," and the term "cephalitis epidemica" was coined and used as a standard of classification by Sauvages, as has been referred to. Thus there are direct indications at least that a certain specificity of tissue type involvement may be the usual thing. Complete analyses, which are rarely ever possible, may show this to be a faulty generalization, for there are by no means few instances when diffuse and severe neuritides are known to have occurred with severe pneumonic types. Thus severe

facial cervical zoster type accompanied a severe and fatal exudative edematous pneumonia.

Since the general problem of the determination of localization of disease processes is still so obscure, the generalization is left for subsequent modification and criticism. When one patient with a mild influenza develops a zoster, another a mild optic neuritis, and still a third a tachycardia, diffuse perspiration, tremor, and other symptoms of a vagotonic exophthalmic goitre with other adenopathies, all three resulting from a similar toxic producing agent, it becomes an interesting problem of individual constitutional variation in organ susceptibility—a problem which has been but little touched upon but is of paramount importance, not only in the reactivity to the influenza toxin, but to other types of infectious disease, syphilis for instance. Among others, Potzl, Bartels, Paltauf, and Adler in his *Inferiority of Organs and Their Psychological Compensation*, have broken ground in this fascinating realm for investigation.

*Eighth nerve.*—The marked tinnitus which is an almost invariable symptom of the early stages is a mixed auditory nerve and physical exudative phenomenon. When the involvement of the auditory nerve is more persistent, deafness results. Vertigoes and nystagmus of vestibular origin are also reported.

*Ninth nerve.*—The glossopharyngeal palsies have been less thoroughly studied, although the throat complications of the grippé are very widespread. Hoarseness with weakness in swallowing and in phonation are very frequent mild accompaniments. They are conditioned by disturbances which are in part of neurological functioning and in part of physical interference. The great laxness in the tonus of these muscles is directly due to the disturbance in the vegetative control which is so marked a feature of the entire poisoning that it will be made the subject of special discussion.

*Tenth nerve.*—As will be brought out later, this vegetative nerve disturbance is a fundamental underlying condition in influenza poisoning, and for this reason the symptomatology more directly connected with the pneumogastric will be merely touched upon. These are masked, as it were, beneath the more striking internist situation of an edematous pneumonic flooding—which is so frequently complicated by the effects of the activities of other microorganisms, thus altering the purer (?) picture of a true influenzal vasomotor paresis of the pulmonic vessels with edema, bloody extravasation, etc. I shall pass on to the more usually thought of neurological phenomena, saying at this time only that the peculiar character of the grippé edematous flooding has been so strikingly different as to have attracted attention and record for several centuries and must be elucidated ultimately in the light of the vegetative functions of the vagus (autonomic) and sympathetic systems respectively.

*Hypoglossal nerve.*—Disturbances of muscular control of the tongue are few, and unilateral atrophy of this structure, while recorded (Leyden), is a rarity. Taste disturbances of a mixed nature are a frequent finding and the universal disgust for food, which is a mixed psychical and cranial nerve

disturbance, is too well known to demand special attention (Frey-Laache) (3).

*Spinal distribution.*—Neuralgias, neuritides, with palsies and zoster of every regional distribution—central as well as peripheral—have been seen, either as isolated localizations or as widespread and serious polyneuritides. Even the most severe grades of multiple neuritis, grouped under the symbol of Landry's paralysis, are known. Many of these isolated neuritides with their consequent palsies resemble poliomyelitis cases closely and a clinical differentiation is at times extremely difficult. Poliomyelitis and influenza have often been associated; indeed there are not wanting those who have claimed them as identical. There is a rich Scandinavian literature upon this question, but with our present knowledge this viewpoint seems untenable.

I have seen comparatively few spinal neuritides and a few zoster of influenzal causation, yet they are among the best documented cases in the neurological literature, and a passing word may be said concerning the more frequently observed types.

Neuralgias are extremely frequent. In some epidemics nearly fifty per cent. of those affected have had severe neuralgias (4). Supraorbital and infraorbital localizations are among the most frequent, and seem associated with the near lying sinus engorgements. Trigeminal neuralgia has been mentioned. It is occasionally very intense and chronic. Intercostal neuralgia is frequent and is to be separated from the extremely frequently felt sense of constriction of the chest. This latter is usually a vagus sympathetic syndrome, as has been noted by Kinnicutt (5), Edgren, Brakenridge, etc. Scapulohumeral and brachial neuralgic types are the most frequent of the upper extremity neuralgias (6). Sciatic neuralgias and neuritides are extremely common. The entire distribution is rarely involved in a neuritis sufficiently severe to develop a palsy, although this sometimes happens, and even bilateral sciatic palsies are known.

*Polyneuritis.*—A rare, but nevertheless, a most important series of polyneuritis cases are on record. Personally I have happened to see but two cases in private practice when the causal relationship could be carefully investigated. A number of suspicious cases have been seen in my City Hospital service, but the etiological factor had to be surmised rather than proven. In one of my cases a complication with a possible rabies polyneuritis of the Landry type obscured the picture. These have been written concerning these polyneuritis cases (Diemer), which have entered the literature as definite since Duménil called attention to them in 1866.

The multiple neuritis is apt to come on in the period of convalescence, in from ten days to three weeks, more or less like the postdiphtheritic palsies to which they have often been compared, and, at times, attributed. Grippé polyneuritis is preeminently a motor neuritis although even severe neuralgic pains may precede its development. The lower extremities are more severely involved as a rule than the upper, and one side of the body is apt to be more affected. The muscles of the back seem to be spared. The cranial nerves are involved



with the severe cases, even the pneumogastric (7). The diaphragm has been paralyzed (Bonnet). The distal muscles are more involved and the extensors more than the flexors. Central vegetative disturbances are not marked, though at times present, and the secretory and trophic alterations minor. The atrophy which follows seems to follow the peripheral spinal type and the prognosis is usually good. In marked contrast with polyneuritis of alcoholic etiology, Korsakow's psychotic states are rarely observed.

Some help in the differential diagnosis from a palsy of central origin, poliomyelitis, may be gained by a study of the sensory changes. In the polyneuritic types there are not infrequently changes in bony sensibility (see Williamson), and epicritic heat and cold tests reveal differences; light touch and the sense of position also may be involved. These signs are usually entirely absent in the poliomyelitis, unless the poliomyelitis virus has produced a diffuse and severe transverse myelitis, or more rarely a neuritis, but even here a careful sensory examination will tend to show that the alterations in sensibility follow out a peripheral or a segmental metameric formulæ (Head) respectively. In the severe types which follow the so called Landry picture it is doubtful if a differential diagnosis can be established without laboratory aids.

(To be continued.)

## THE TREATMENT OF INFLUENZA.

*From the Standpoint of the Nose and Throat Specialist.*

By IRVING WILSON VOORHEES, M. S., M. D.,

New York,

Assistant Surgeon, Manhattan Eye, Ear, and Throat Hospital.

The management of a case of influenza is essentially a nose and throat problem. As every one knows, the very first signs of the disease, or the first symptoms experienced by the patient, are referred to the respiratory system. Chills, fever, aching in the back, bones, and joints are constitutional effects of bacteria and their toxins which have migrated through the ineffective first line of defense in the mucous membrane of the nose and throat, and have been carried by the blood stream to all parts of the body.

It may seem foolish to set down these facts for the perusal of medical men; but the right thinking medical man will not object to being reminded of certain well established principles. If a troublesome discharge from the nose is present, rhinitis tablets are usually prescribed. Instead of drying up the nasal secretion, we should aim to encourage and increase nasal discharge, because activity of the mucous glands carries away a large amount of infection, especially from the depths of the glands where bacteria live, thrive, and propagate in cases which become chronic catarrh. One should, therefore, persist in irrigation of the nasal fossæ with warm normal salt solution every hour if necessary, and follow this by the instillation of argyrol, twenty-five per cent., five drops in each nostril. A nasal

irrigator or douche bag holding at least one pint should be employed, and the entire amount should be used at each sitting. There is less danger to the ears from salt solution properly employed than from leaving the bacteria free to be blown in by the patient in an unguarded moment, or to work their way in by gravity. The most rigorous advice must be given the patient not to blow the nose, but to draw the nasal secretions back into the nasopharynx and expel them by mouth. A close fitting nozzle to fit the nostril snugly should be absolutely prohibited, as it is sure to drive secretions and bacteria into the ears. The best tip is an ordinary glass medicine dropper or fountain pen filler. If the nose is so obstructed that nothing will go through, adrenalin inhalant should be dropped into the nasal vestibules until it passes into the throat. Irrigation will then be effective.

Nothing is quite so helpful in the oropharynx and in the tonsillar crypts as silver nitrate solution sprayed in as a two per cent. solution with a De Vilbiss atomizer No. 16, or applied into each tonsillar crypt upon a finely wound cotton applicator in forty per cent. solution. The tonsils are favorite sites for influenza bacilli. In taking cultures from the nasopharynx and tonsils of ninety-one patients, influenza bacilli were found only six times in the nasopharynx, and seventy-eight times in the tonsils!

When the infection extends to the bronchi, cough medicines are mostly sedative, with the exception that those cough medicines which produce excessive secretion from the tracheal and bronchial mucous membrane wash out great masses of bacteria which are ejected mechanically by coughing. Cough remedies are *not* bactericidal. On the contrary they tend to constipate the patient if opium or any of its derivatives are contained in them. The one thing to do in all cases of bronchitis is to instill medication, antiseptic medication, directly into the trachea through an intratracheal cannula. If this cannot be done, it is permissible to inject through the thyrohyoid membrane with a fine hypodermic needle, either dichloramine-T two per cent., one c. c., or menthol in oil five per cent., one c. c. Some of this medication will, of course, be coughed out, but enough will remain to kill large numbers of bacteria and in a few hours greatly relieve the previously distressing cough.

We are now beginning to know a great deal about the bacteriology of the nose, throat, and lungs. It is very important in the present epidemic to take cultures from the nose, nasopharynx, and lungs (sputum). The influenza bacilli are not found in every case, but in many instances they are present. Hemolytic streptococci occur frequently, also pneumococci, while various strains of staphylococci and the bacillus mucosus of Friedländer are often encountered. It should be borne in mind that the streptococcus can cause symptoms of chills, fever, malaise, etc., quite the same whether associated with other organisms or not, and the streptococcus is invariably present in the fatal cases, particularly the fulminating type, giving all the signs and symptoms of a real streptococcemia.

In the light of new knowledge of bacteriology in the present serious epidemic, it seems strange that

up to a few days ago so little attention has been paid to vaccines. There are still a very large group of unbelievers, a larger group who know nothing about vaccines because they have never used them, and a group who are unalterably opposed to their use on the ground of prejudice alone. For the past five years it has been my custom to culture the nose and throat of every patient coming in for treatment. This of course must be done before any antiseptics are applied. There is a standing order with my laboratory man to save the culture and prepare the manufacture of an autogenous vaccine<sup>1</sup> in case an infection does not clear up promptly under local treatment. Vaccines properly given do two very helpful things; namely, they increase the appetite, and bring about a quiet, restful sleep. In most cases, therefore, it is unnecessary to give a tonic or a sedative. My rule is to have the vaccine made up and counted as 500 million to one c. c. The first injection is one half c. c., and the dose is increased one half c. c., or doubled, every second day according to the reaction. No attempt is made to isolate one germ and make a univalent culture. All of my experience has been with polyvalent vaccines.

In the presence of such a menace to life and health as we are now facing, every precaution should be taken to immunize as much of the population as possible. This should be the rule in all hospitals, and every medical man who values his life should submit to inoculation. A number of our profession have already died, and many are now ill from receiving massive doses of bacteria from great numbers of patients. We should offer our services to all of our brothers first, so that they can go about their work of mercy with a minimum of danger. A number of Y. W. C. A. girls and other volunteer workers are trying to help in the care of the sick. None of these should be allowed to submit themselves to this great danger until immunized—which at the most should demand not more than ten days before they may report for duty. All medical students who are now acting as volunteer nurses among the poor should be vaccinated at once, for such workers are a potent source of spreading the disease, to say nothing of the danger to themselves.

It is the duty of every practising physician to acquaint himself with the principles of vaccine therapy, and then to notify his patients that they may come to him for inoculation with some hope, at least, that if they do contract the disease, it will prove to be only a slight attack and not fatal, as is so frequently the case at present. The New York Board of Health would do well to establish a clinic for the instruction of physicians in the treatment of influenza, for at the present time all is confusion, and nearly all the drugs in the pharmacopoeia are being called upon to allay this or that symptom with a result that is unsatisfactory, to say the least.

14 CENTRAL PARK WEST.

## COMPLICATIONS OF INFLUENZA.

### *Ears and Mind Affected With Symptoms of Meningismus.*

BY ALFRED KAHN, M. D.,  
New York.

As a consideration of every phase of influenza, with special reference to its bearing on the present pandemic, is of paramount importance, the finding of unusual symptoms, as a complication, may be of interest. It is with this fact in mind that the following experience is here presented:

On the evening of September 25th I was called to see a young woman, twenty-seven years of age. The substance of my examination and consultation was that she had a temperature of 105°, and that she presented the usual train of influenza symptoms—intense headache, pains in the back and limbs, chilly sensations, abdominal pain, with passage per rectum of abnormal quantities of gas. The influenza was complicated by a double bronchial pneumonia, but the lungs were not deeply or considerably involved. The pneumonia was in its earliest stage; difficulty in breathing was not marked. The respirations were in proportion to the temperature; they were repeatedly observed to be between twenty-four and thirty a minute. The pneumonia, taking into consideration the fact that the patient had a double lung involvement, did not seem to be giving much trouble. The pulse at this time was about 103, and although soft, was not excessively rapid.

The following unusual symptoms were noted at the time of the first visit: The patient, normally of a hysterical temperament, was somewhat dull and extremely hard of hearing on this occasion. In order to make her understand, it was necessary to raise my voice to quite a high pitch; her hearing was reduced and evidently impaired. I was interested to know the cause of this impairment and to determine its importance as a factor in influenza. On examining the ears, the drums showed no signs of disease. My experience along this line makes me certain in stating there was no middle ear involvement in either ear. The patient was slightly dizzy and showed a very slight nystagmus toward the right. She could hear slightly better with the right ear than with the left. Forty-eight hours after the ear symptoms were noted, the patient developed a mental condition of an insanity turn. I did not consider it a delirious state nor did it appear to be of a hysterical nature. One might be inclined to think it a meningismus. It did not present, so far as I was able to determine, signs of a meningitis—Kernig's sign, or stiffness of the back of the neck, was negative. My explanation of it was that it was a condition of toxemia, probably especially associated with the activity of this germ, whereby first the endolymph in the cochlear and semicircular canals, together with the cerebrospinal fluid, and with the juices in the nerve fibres themselves, were peculiarly affected.

Following this state of mental development, the patient's temperature dropped to practically normal. The lungs did not show an excess of involvement. The patient's condition improved; but the mental

<sup>1</sup>Dr. T. S. Schlauch, who makes these vaccines for me, says it is very important that no heat be used to destroy the bacteria as some chemical or liquid change is produced by heat which destroys the usefulness of the vaccine or, at least, makes it less effective than if a dilute solution of carbolic or cresol is used for this purpose. A good reaction is always to be desired if successful immunization is to be secured.



state never did clear. The patient died, after an illness of about two weeks. I attribute her death to a toxemia early and progressively affecting the brain tissues and probably the fluids entering into the substance of the brain tissues.

#### CONCLUSIONS.

While I have only seen one case of this type, and do not know of any similar case having been reported, it seems as though there was sufficient evidence of an intense toxemia in this patient, whose ears were normal before the onset of influenza, followed by this peculiar train of ear symptoms and mental state, to warrant an unfavorable prognosis.

50 EAST FORTY-SECOND STREET.

### PROPHYLACTIC TREATMENT OF INFLUENZA FOR THE PREVENTION OF PNEUMONIA.

By CHARLES M. BELLOWES, M. D.,

Brooklyn, N. Y.,

Consulting Surgeon, New York State Hospital, Former Visiting Surgeon, Bushwick Hospital.

The following article is based on recent observation and treatment of at least 400 cases of influenza in the present epidemic, with fifteen cases of bronchial pneumonia and two of lobar pneumonia, without a death.

The infection enters the nostrils and throat first, is then absorbed in the blood, and following this affects the bronchial tubes and glands. In the majority of cases the system lacks the ability to eliminate, and the resistance is low.

Cultures of the throat and nostrils and blood in all cases have shown both streptococci and pneumococci.

The plan of treatment pursued has been, first to neutralize the blood extension of the infection; and second, to prevent the local proliferation of germs and pulmonary and nasal absorption. The author has found that it is possible to prevent this absorption and the rapid formation of germs locally. The bronchial tubes and throat are found filled with mucus from the hypersecretion due to acute infection. The mucus—both bronchial and throat—contains the bacteria, but not in large numbers at the onset; however, in twenty-four hours the number is greatly increased.

By promptly stopping glandular secretion, including that of the throat, the nose, and the bronchial tubes, the extension of the disease is immediately checked, providing systemic elimination is attended to and pulmonary edema is immediately relieved.

I will submit, without citing individual cases, the treatment which has been used with most satisfactory results.

The internal treatment consists of the administration of the following:

Quinin. sulph.,	.....gr. xx;
Phenacetina,	.....gr. xl;
Sodii (or ammonii) salicylat.,	.....gr. xl;
Extract. belladon. pulv.,	.....gr. i½;
Extract. opii, pulv.,	.....gr. i½;
Camphor. pulv.,	.....gr. iii;
Extract. eupatorii (bonaset),	.....gr. xl.

To be made into twelve dry capsules.

Sig.: One every three hours.

In consequence of this internal treatment the temperature will be reduced, the skin will act, and there will be an immediate arrest in the functions of the mucous membrane of the nose and bronchial tubes.

The feeling of exhaustion and heart weakness, due more specifically to the intense infection, will be relieved by strychnine, in addition to the above mentioned capsules.

The cough will be relieved by the use of codeine.

The local treatment consists of the following:

Iodine,	.....gr. ii;
Oil of cinnamon,	.....min. v;
Thymol,	.....min. v;
Oil of eucalyptol,	.....min. vi;
Camphor,	.....gr. ii;
Menthol,	.....gr. ii;
Petrolatum, liquid,	.....5i

Apply thoroughly every two hours to nose and throat with swab or spray.

In addition to this, hot mustard and soda baths will help to promote the action of the skin.

Hypodermically, preceding or accompanying the pulmonary involvement, pneumonia phylacogen should always be used—five minims immediately, ten minims in six hours, ten minims in eight hours, and every day following as long as necessary—watching the resolution. Antistreptococcus and antipneumococcus serums have also been given. The serum is given within the first twenty-four hours of the sickness, and even prior to the pulmonary involvement, recognizing the importance of increasing the number of leucocytes as a protection to the system.

I most earnestly ask all doctors to carefully consider the treatment here submitted. In my hands its results have been most satisfactory, and I believe that a great many deaths can be prevented, more specifically by the prophylactic measures, as the majority of cases are serious from the beginning and should be treated vigorously before the recognition of any secondary and pulmonary involvement.

433 NOSTRAND AVENUE.

(Translated from *La Presse Médicale*, October 3, 1918.)

### THE MICROBIAN FLORA OF INFLUENZA.

By SURGEON MAJOR ORTICONI,

ASSISTANT SURGEON MAJOR BARBIE,

and ASSISTANT SURGEON MAJOR LECLERC,

French Army Bacteriological Laboratory.

Most of the writers who have observed the grippe in 1918 seem to agree in finding in it a return to the grippal pandemic that in 1889 created a worldwide sensation, having been preceded in 1833 and 1847 by analogous epidemic manifestations.

The affection that is at present raging shows the same manifestations as the former epidemics, particularly the extraordinary rapidity of extension, the suddenness of evolution, and the extreme contagiousness as well as the immunity of isolated communities. The clinical symptoms offer numerous common points.

Judging by the different reports made in France and abroad, it seems that after having assumed a mild form during the months of May and June last the grippé may actually bring about serious complications, and the so called Spanish grippé, the Swiss grippé, and the German grippé only seem to be synonyms for one and the same affection corresponding to the type of the grippal epidemic of 1889 and 1890.

We find, indeed, this year some features of difference from the former epidemics, and one of the most striking of these consists in the possibility of seeing, in the course of the year's hottest season, the evolution of pneumonic or bronchopneumonic complications of a serious, even very serious nature. The epidemic of 1889, which raged chiefly throughout the winter, had accustomed us to regard these bronchopulmonary complications of the grippé as chiefly due to the influence of the season.

But we must remember that two epidemics are never seen evolving in an altogether analogous fashion. It is with them as with the clinical aspects of most affections. Very seldom, in fact, do we see the same malady follow an absolutely identical progress in two different persons.

From the microbial standpoint, it is well known that many bacteria have been blamed as originating the grippé. During the 1889 epidemic a part had been ascribed to the pneumococcus and the streptococcus, but none of these germs had seemed to show specific features in the etiology of the grippé.

In 1892 Pfeiffer attributed a pathogenic power in the grippé to the coccobacillus known by his name; but the work that followed his researches seemed to have shown that this germ is not found exclusively in grippé. Nobécourt and Paiseau have recognized a rôle for it in the respiratory complications following the eruptive fevers of childhood. Many authors have established its presence in the sputum of the tuberculous. It has been assigned by Meunier as the only microbial agent in some cases of meningitis. On the other hand, Pfeiffer had only found it in the sputum of the diseased and had never been able to isolate it in the blood. This isolation, despite the numerous researches to which it has given rise, seems to have always been very difficult to accomplish.

In short, the present state of our knowledge regarding Pfeiffer's bacillus seemed to warrant us, with many authors, in considering it as a saprophytic germ, which, while not a commonplace one, rarely entails severe morbid manifestations.

Having had occasion quite recently to observe some grippé cases, some of them with grave complications, we deem it interesting to make a report on the bacteriological researches we have had an opportunity to make. We shall give here a succinct recapitulation of them, to be later on amplified by an article detailing our complementary findings.

#### MILD GRIPPE.

When some cases of mild grippé were recognized in May and June, we made a certain number of hemocultures, blood examinations on plates, nasal mucus and nasopharyngeal examinations, as well as experimental inoculations on the animal.

All our hemocultures, made by placing from five to seven c. c. of blood in ordinary bouillon or glucosed bouillon, remained sterile.

Blood examinations made on slides failed to verify either globular variations or alterations, while the examination of the bronchial mucus, or of the nasal or nasopharyngeal mucus, failed to show the presence of Pfeiffer's coccobacillus.

With certain patients we observed the presence of the pneumococcus, but not in any particularly predominating fashion.

Intraperitoneal guineapig inoculations of one and a half c. c. or two c. c. of blood taken aseptically from the vein of the elbow bend in patients under full febrile onset, gave the animal an increase in temperature that lasted for many days. The rise in temperature commenced in the guineapig within the twenty-four or forty-eight hours following the inoculation and persisted morning and evening, varying from eight to ten days. The verified increases in temperature are from two to three degrees, as attested by the curves we registered.

The blood examination on slides and the blood cultures from the examined animals failed to demonstrate the presence of any germ.

On the other hand, if blood is obtained from the heart of a febrile guineapig following inoculation, and two c. c. of this inoculated into a fresh guineapig, a rise in temperature is seen in the latter within the twenty-four hours following inoculation that persists for many days.

To resume, the mild grippé did not permit us to detect the Pfeiffer bacillus, or even the germs that are the habitual agents of respiratory affections.

#### GRIPPE WITH GRAVE COMPLICATIONS.

On the other hand, in a certain number of patients affected by grippé with serious pulmonary, bronchopulmonary or pleuritic complications, we have been able to isolate in many instances a bacillus having the morphologic and cultural characters of Pfeiffer's bacillus. See a report made by one of us in the *Bulletin de l'Académie de Médecine*, for September, 1917.

I. In a first series of cases, on nineteen hemocultures made, we have verified in seven of our patients the presence of an immobile, gram negative bacillus, strictly aerobic, not thriving on the ordinary media, thriving scantily on glucosed agar, and yielding in blood agar more copious colonies.

The colonies furnished by this microbe are rather small, transparent, hardly visible under the magnifying glass and located with preference at the bottom of the tube, in the vicinity of the condensation fluid.

We have never been able to isolate this germ by culturing the blood of patients in ordinary bouillon. The hemocultures were only found positive when the blood was cultured at the rate of about eight to ten c. c. in glucosed bouillon, following the usual technic in hemocultures.

The bacillus is very little visible in the fresh state between slide and cover glass; its presence is hardly ever verified except after staining. There is an advantage in overcoloring the preparation with diluted Ziehl's fuchsin in order to make the germ more clearly evident. Then it appears in a bacillary or



coccobacillary shape with distinctly larger dimensions than are attributed by classic writers to Pfeiffer's bacillus.

In a second series of ten hemocultures we have been able, by following the same processes, to isolate Pfeiffer's bacillus in the blood of the patients five times. In one of these cases, where hemoculture was made a few hours before the patient's death, we were able to obtain a pure culture of this bacillus.

2. In a certain number of purulent pleurisy fluids, we have verified the presence of the same germ, but with a slightly different morphology. They occur in rather slender and even filamentous bacillary forms, sometimes isolated, frequently grouped in twins, and for the cases that came under our observation, always associated either with pneumococci or with streptococci.

This bacillus has been found in ten different fluids of purulent pleurisy, and the culture of each of these samples of pus has furnished colonies with the characters of those of the Pfeiffer bacillus associated with colonies of streptococci or pneumococci.

The intraperitoneal inoculation of adult guinea-pigs with one c. c. of these same pleural liquids has caused the death of the animal in from twelve to twenty hours. The autopsy has revealed in the peritoneal liquid of the guinea-pig the presence of the Pfeiffer bacillus without a passage into the several organs, whereas the germs of associations (pneumococci or streptococci) were passing through the liver and spleen of the animal. The injection of one half of a c. c. of this peritoneal fluid into the peritoneum of another guinea-pig has brought about the latter's death within thirteen hours. The autopsy on the second guinea-pig showed the same conditions as for the first.

There is room for observing that the Pfeiffer bacillus is found in great abundance in the peritoneal exudate, but in a rather shorter coccobacillary form and without elongated elements.

3. In almost all of our patients, the Pfeiffer bacillus has shown itself to be associated with other germs, particularly with diplococci either isolated or in little chains, which we have recognized in the hemocultures as well as in the fluids of purulent pleurisy.

Certain diplococci had really all the morphological, staining and cultural characteristics that obtain in the pneumococcus; they were cocci, grouped in twins, lanceolated, capsulated, gram positive, uniformly clouding the bouillon in a few hours, yielding on agar colonies in characteristic dew drops and killing a mouse through septicemia in about twenty-four hours, as shown by the presence of capsulated diplococci in the heart blood.

In some hemocultures, as well as in some pleurisy pus, we have verified the presence of gram positive diplococci in little chains. These little chains were particularly elongated in the bouillon cultures and in the peritoneal fluid of inoculated animals. After coloring through the gram, they appeared as presenting some sort of a common capsule, and it may be asked whether this streptococcus does not correspond to a variety that has been described by a certain number of authors, and particularly by

Howard and Perkins under the name of *Streptococcus mucosus*. The virulence of this streptococcus has, at all events, been shown to be very great for the guinea-pig, but less so for the mouse.

4. In the sputum, the pneumococcus has been found to be the paramorph germ, even in the white, aerated and foamy expectorations that do not show the pulmonary type. We have not discovered or isolated the Pfeiffer bacillus in the sputum. However, in certain grave forms we have been able to isolate from bronchial expectoration the Friedländer pneumobacillus which was found in the expectorations of certain patients in a condition of true, pure culture.

To resume, outside of the usual microbic agents of the acute respiratory affections (pneumococci, streptococci, and pneumobacilli) and of their pleural complications, the most important fact we gather is that we have been able to detect and isolate the Pfeiffer bacillus in the blood and the pleural fluid of a certain number of grippé patients.

It is rather at the terminal period of the disease, and in the very serious cases, that we have verified the presence of the Pfeiffer bacillus, and almost always in association with other germs.

Can it be concluded that this microbe, whose specificity has been so much discussed, is the real causative agent of the 1918 grippé? It would be a premature affirmation. Further research may yet permit us to determine whether the Pfeiffer bacillus does actually play the chief rôle in grippé, or whether it is only a satellite of secondary association.

#### HEALTH DEPARTMENT SUPPLIES PROPHYLACTIC VACCINE.

*Measures for the Prevention of Influenza Adopted by the Department of Health of the City of New York.*

Owing to the demand made by the medical profession and the public of the Department of Health, the Board of Health of the city of New York has decided to adopt the use of a bacterial vaccine manufactured by the Research Laboratory under the direction of Dr. William H. Park. This vaccine was described by Doctor Park in the NEW YORK MEDICAL JOURNAL for October 16th. The vaccine is made from the influenza bacillus isolated from cultures of the present epidemic. The vaccine is in containers furnishing sufficient material for injecting from one to eight patients. The material is issued only to physicians on written request. Owing to the labor conditions produced by the war, the department is unable to mail the vaccine to physicians, who must apply by messenger or in person for it.

The dose is arranged in two schedules. No. 1, for the robust, consists of two injections, one of 1,000,000,000 bacteria and a second injection, forty-eight hours later, of 1,500,000,000. For the less robust three injections are given at intervals of two days, the first injection containing 500,000,000, the second, 1,000,000,000, and the third, 1,000,000,000 bacteria. For children, one half to two thirds of the above amounts should be administered according to the physical condition and age of the child.

The department has also established clinics in the several branch offices of the various boroughs for the free administration of this vaccine to such citizens as apply for it.

In Manhattan these are located at 331 Broome Street, 439 East Fifty-seventh Street, 431 Pleasant Avenue, 481 West 145th Street, 307 West Thirty-third Street, and 130 Prince Street. These stations are open from nine a. m. until nine p. m.

There are two offices in the Borough of the Bronx, six in the Borough of Brooklyn, four in the Borough of Queens, and one in the Borough of Richmond. Applications may be made at the office of the Department of Health in Manhattan, and at the main borough offices for further information.

Owing to the demand made by various organizations for a mask that would be simple, efficient and inexpensive, the department has had made two sets of masks, one of surgeon's gauze with a ribbon sewed to act as a loop about each ear. A piece of gauze which acts as a baffle is four by six inches and at each corner the ribbon is sewed, making a loop which fits over the lobes of the ears. This is easily removed, is inexpensive and can be quickly made. The use of a moist gauze mask has not been advised as under ordinary conditions the mask need be worn only a short time. A similar mask may be furnished in the form of crepe tissue paper. Instead of ribbon being formed into a loop over the ears the ends are folded flat on themselves and a piece of paper one half by two inches is snipped out, leaving an opening which will permit the paper to be placed around the face, baffling the nose and held in situ by the openings through which the ears can protrude. These tissue napkins can be easily replaced, the old ones being placed in a paper bag which can be carried in the pocket of the doctor or nurse and when the supply is exhausted the bag may be burned without danger of infecting others.

### INFLUENZA IN THE NAVY.

Influenza apparently has run its course in the shore stations of the navy, although there still remain many cases of pneumonia. The number of new cases last week was only about half that of the week before, in which latter week there was a marked decrease in the number of admissions for the disease over the preceding week.

The navy still declines to give out any figures regarding the number of cases of influenza and resulting pneumonia, or the number of deaths. Other than the influenza epidemic, the health of the navy is excellent. Among some 254,000 men ashore in this country, there were only four cases of scarlet fever last week, sixteen of cerebrospinal fever, eight of diphtheria, six of malaria, eighteen of measles, and 272 of mumps.

The vessels of the fleet also have suffered considerably from influenza. There also has been a considerable number of cases among troops while en route in the transports, although it is not believed that the epidemic has been as severe in that service as was feared. However, on a recent trip of one of the largest transports to France there were 100 deaths from influenza.

The Naval Medical Corps continues to pay heavy toll from influenza. Since the previous report in these columns, the following medical officers have succumbed: Lieutenant Commander Chester C. Wood, of the Battleship *Alabama*; Lieutenant James F. Feely, Dental Corps, at Pelham Bay Park, N. Y.; and Lieutenant W. I. Ryder, Naval Reserve Force, at Naval Hospital, Chelsea, Mass. Lieutenant Ryder was a brother of Commander Charles E. Ryder, of the Medical Corps of the Permanent Navy. In addition, Lieutenant Hadley H. Teter, Medical Corps, was lost on the *Ticonderoga*.

### ADVICE TO PERSONS WITH INFLUENZA.

At a stated meeting of the New York Academy of Medicine, held Thursday evening, October 17th, recommendations were submitted by the Advisory Council of the Department of Health of the City of New York as follows:

Obey all the orders of the health department.

If you feel sick all over, with chilliness or aching of the bones, and with feverishness and headache, perhaps with a cold in the head or throat, you are probably getting influenza.

Go to bed and, until you get a doctor, do these things:

Take castor oil or a dose of salts to move the bowels.

Keep reasonably but not too well covered, and keep fresh air in the room, best by opening a window at the top.

Take only simple, plain food, such as milk, soups, gruels, or porridge, or any other cereals. Eat bread and butter and any kind of broth or mashed potatoes. Eggs may be eaten, but not more than two a day. Do not take any meat or any wine, beer, or whiskey, or other spirits unless you are ordered to by the doctor.

Do not get up unless absolutely necessary, and then do not walk about and expose yourself to cold and do not go about in bare feet. In this way you will avoid getting pneumonia or bronchitis.

Do not take any medicine unless ordered by a doctor.

Do not cough or sneeze in the face of other people.

You should drink plenty of plain water all through the sickness.

Stay in bed until you have no fever and are feeling much better. Stay in the house two or three days longer.

If you are not much better, or practically well in two or three days, call a doctor, if you have not already done so, or ask the nearest hospital for help, or call the nearest nursing centre, or notify the nearest Board of Health clinic.

The recommendations were signed by Dr. A. Jacobi, Dr. W. Gilman Thompson, Dr. Antonio Stella, Dr. Walter B. James, Dr. Frederick C. Holden, Dr. Francis Huber, Dr. L. Emmet Holt, and Dr. Henry W. Berg.

**An Influenza Commission.**—Governor Whitman has appointed a commission to study and make a report on the cause, prevention, and treatment of influenza, thus making available to health officials and the medical profession generally the scientific information regarding the influenza epidemic now accumulating. Among those who have been invited to serve on this commission are the surgeon generals of the Army, Navy, and Public Health Service, Dr. Rufus Cole, of the Rockefeller Institute; Dr. Walter B. James, president of the New York Academy of Medicine; Dr. Hermann M. Biggs, State Commissioner of Health, and Dr. William H. Park, director of the research laboratories, Department of Health of the City of New York.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
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and the Medical News  
*A Weekly Review of Medicine*

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### OUR SECOND INFLUENZA NUMBER.

We are fortunate in being able to present to our readers in our second special influenza number, a series of admirable and informing papers and discussions of the epidemic. The subject is treated from various viewpoints, and every reader will find something to interest him. Major Charles L. Mix, who sets forth his experience in the observation of two thousand cases at Camp Mills, covers the situation from a military point of view in a most illuminating and helpful manner. The belief that the disease is not air borne, but is conveyed by direct contact, he again confirms. He warns against starvation, fatigue, and cold, as avoidable predisposing factors, and cautions the practitioner against the great danger of relapse in patients dismissed too soon, advising against dismissal under ten days after the normal temperature has been established. In studying the statistics furnished by Major Mix, the fact must be borne in mind that his paper was written on October 11th, and consequently represented conditions as they existed then, before the epidemic had reached the height of its wave.

Later figures will be quite different, of course, not only in numbers but in the relation of the morbidity to the mortality. The same facts should be borne in mind in considering the statistics given by other authors.

In the opening paragraph of his general survey of the conditions in New York, Dr. Royal S. Copeland, the Commissioner of Health of the City of New York, says: "It is meet and proper that in a time as critical as the present, and one fraught with tragic consequences to the lives of so many of the people of this city, that the commissioner of health should appear before the medical profession to submit to the judgment of its members a report of the activities of the health department and a statement of the reasons which have guided him in determining upon certain procedures and in omitting certain others which have been suggested from time to time." The admirable spirit shown here appears throughout the papers by the commissioner himself and those written by members of his staff, one of which, by Doctor Harris, appears in this issue, while others appeared in our issue for October 12th. Doctor Harris not only presents a record of the administrative measures taken by the city government, but gives some informing data concerning the statistical aspects of the epidemic. He confirms the observations made by Major Mix as to the effect of starvation, fatigue, and cold as predisposing factors, and directs attention to the diminution in the virulence of the infection which has taken place.

Dr. Morris Manges finds that there are three distinct types of onset and that the prognosis is fairly uniform for each of these types. The degree of asthenia, he says, is a reliable index to the degree of toxemia and consequently to the prognosis.

Doctor Jelliffe, in his broad and illuminating study of the nervous and mental disturbances of influenza, refers briefly to the history of previous epidemics which have recurred at varying intervals since the days of Homer, though the first satisfactory literature of the subject dates from the epidemic of 1300. But his most interesting remarks are based on his own clinical observations, which bring out clearly the wide variety and serious character of the neurological manifestations of the disease, a point not accentuated by the internists. These may appear in one or more of the organs of sense, may closely simulate the symptoms of poliomyelitis, or meningitis, or

may even develop into multiple neuritis. The case reported by Doctor Kahn (page 729) comes in the category covered by Doctor Jelliffe.

Another special phase of the epidemic is treated of by Dr. Irving Wilson Voorhees, who speaks from the standpoint of the nose and throat specialist and who offers hope of relief from early local treatment.

The prophylactic treatment, with a view to the prevention of pneumonia, is advocated by Doctor Bellows, who reports excellent results from following the methods laid down on page 730.

A French view of the bacteriological aspects of the epidemic is presented in an article by three surgeons in the French Army who have made a study of the microbial flora (p. 731). In our issue for October 12th, we published the observations of one of our own army bacteriologists, Major E. H. Schorer, chief of the clinical laboratories of the Port of Embarkation, and by Dr. William H. Park, director of the research laboratories of the Department of Health of the City of New York. Doctor Park's work has been carried a step further and the Board of Health of the City of New York has now undertaken to provide a serum elaborated in the city laboratories for free administration. Clinics for this purpose have been established in the various branch offices of the Board of Health. Supplies of the serum will also be furnished to physicians who apply to the Board of Health for it by messenger or in person.

In view of the gravity of the situation, we feel justified in devoting almost this entire issue to the subject of influenza, and feel sure that every practitioner, whatever his special line of interest may be, will find something of value in this number.

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#### INFLUENZA IN EASTERN CANADA.

Influenza is prevalent in eastern Canada—in some parts very prevalent. As may be imagined, the disease is extremely rife among soldiers. In the camps and barracks in and about Montreal, Toronto, Hamilton, and Ottawa, there are hundreds of cases and a large percentage of deaths. In Montreal and neighborhood there were, in the week ending October twelfth, something like nine hundred cases in the military camps and barracks, and the death rate has been about eight per cent. So serious is the situation in Montreal that schools, libraries, theatres, and all places of amusement, and even churches and synagogues, have been closed. The Provincial

Board of Health of Quebec has been accorded extraordinary powers in order to deal with the epidemic as effectively as possible. From one end of eastern Canada to the other influenza is rampant, sometimes of a virulent and sometimes of a mild type.

In Canada, as in the United States, the present pandemic is diagnosed as Spanish influenza, presumably for the reason that it is supposed to have originated in Spain. The pandemic which afflicted the civilized world in 1889 came from Russia—mainly from Asiatic Russia, which is the home of influenza and of most of the pests—and was termed Russian influenza. An epidemic of the disease which occurred in Italy some few years ago was called German influenza, because it was imported into Italy from Germany.

However, the majority of laymen and some medical men appear to regard this pandemic of influenza as a malady *sui generis*, as a new disease. Weight has been given to this view by the opinions expressed by European physicians. For example, Professor G. Sampietro, in the *Annali d'Hygiene*, June 30, 1918, referred to by the *Lancet*, September 14, 1918, has stated his belief that the pandemic which began in May and went through Europe, was, in reality, sandfly fever. Plausibility was given to this theory, owing to the fact that Pfeiffer's bacillus was met with rarely, but the presence of a gram negative diplococcus of the type of *Micrococcus catarrhalis* was isolated frequently. Moreover, sandfly fever usually prevails from the middle of May to the end of September, whereas influenza is not epidemic in the summer. The spread of the malady to this continent and to other parts of the world has severely shaken, if it has not altogether upset this theory. And again, the behavior of this pandemic is similar in almost all respects to that of 1889-1892. In some places the disease is of a virulent and in other places of a mild type. It presents itself in mystifying forms and it is assuredly true that there is much yet to be learned concerning its etiology and other protean phases.

At any rate, authorities are agreed as to its microbic origin, and to Pfeiffer is attributed the honor of discovering the causative microbe. Or perhaps it would be more discreet to say, one of the causative microbes. Finkler in his *Twentieth Century Practice of Medicine* says that he is of the opinion that there exists a pandemic influenza caused by Pfeiffer's bacillus, and also an endemic epidemic influenza of identical nature which develops after the pandemic infection has run its course, being caused by germs left by the latter.



Furthermore, various forms of catarrhal fever occur, which are often called grippe or influenza by physicians and laymen. Dr. A. Bernier, professor of bacteriology at Laval University, Montreal, and bacteriologist to the Supreme Board of Health of the Province of Quebec, coincides with these opinions. He has recently isolated the Pfeiffer bacillus in a number of cases at Victoria-ville, Quebec, but on the other hand in several cases failed to discover it. Dr. Bernier holds that there is a true influenza characterized by the presence of the Pfeiffer bacillus, and a pseudoinfluenza of a catarrhal nature, whose origin is unknown. The discovery of the characteristic microbe alone proved that the infection is true influenza. The complaints presenting catarrhal features are very numerous in this pandemic, as in the pandemic of 1889-1892, and are calculated to lead laymen and even physicians astray as to the real nature of the malady.

In any event, whether the Pfeiffer bacillus is found or not, every measure possible should be put into force to prevent the spread of the disease, and every care should be taken to safeguard the infected.

#### ATTENTION TO SPINAL SURGERY.

Spinal surgery attains much more prominence in war than in peace—nor has the present war alone brought this about. Frazier [C. H. Frazier: *Military Aspects of the Surgery of the Spine and Spinal Cord, Surgery, Gynecology, and Obstetrics*, June, 1918] has presented some of the latest features of spinal surgery and emphasized its importance in military surgical practice, and he has also called attention to its recognition as a matter for consideration at the time of the Civil War. He speaks also of the devotion with which that need was met then, when such men as Weir Mitchell, Moorehouse, and Keen devoted themselves to its practice and to the arduous task of recording their experiences.

An effort has been made in Philadelphia, under the surgeon general's direction, to train men especially in surgery of the spinal cord, that the peculiar dangers and ineffectiveness which have been apparent in this field of surgery may be lessened or eliminated. For a better understanding of the subject Frazier has prepared this review of its principal features. Every segment of the spinal cord has been subjected to injury in this war, but the thoracic region suffers most frequently because of its special exposure. The bone lesions show a variety of form, depending upon the portion of the vertebra which sustains the injury, but also upon the shape of the projectile and its course and velocity. A ricochet-

ing bullet may attack several arches and their processes and also indirectly fracture arches and processes immediately above and below those directly injured. This same force with which it strikes may carry forward into the canal spicules of bone, particles perhaps of the projectile itself, and bits of clothing. There is usually considerable splintering and fissuring of bone. Visceral wounds of the pelvis, abdomen, or thorax may be associated with spinal injuries if the missile has struck anteroposteriorly.

The bullet more often is driven through the entire spinal column or it may rebound from the bone compact and become lodged in the soft flesh at some remote region. Sometimes it merely sinks to a lower level than that at which it entered the spinal canal. The cord is liable to a variety of injuries. It may suffer severe laceration or be completely severed by direct contact with the bullet or the fragment of bone or it may be merely contused by these. Either of these may serve to compress it, or a subdural hemorrhage, adhesions, or serous exudates may have the same effect. Grave structural changes may take place in the cord as the result of concussion caused by the striking of the bullet against the vertebral column as it bounds back to be lodged elsewhere, or merely from the sudden change in atmospheric pressure caused by the exploding of shells. These structural changes are chiefly edema, hemorrhage, primary destruction, and secondary disintegration. The structural changes in the case of spinal cord injuries are a fairly constant feature. These effects of concussion have been explained as due to the pressure waves set up in the spinal canal and the disturbances of the lymphatic circulation. The oscillation of the cord within the canal at the time of impact would also cause direct injury in contact with the walls of the canal.

Operation upon the spine demands, first, accurate localization, and so calls for repeated and careful examination; neither should it be undertaken hastily. Rest and quiet are so essential for convalescence that spinal operations should be undertaken only in the base hospital. Besides, it is possible often to determine, after a certain period has elapsed, whether the injury is simply a functional one or has produced an actual lesion. If doubt still remains an exploratory laminectomy is justified and often affords relief; and it may discover a hemorrhage or undetected injury. Moreover, the clinical signs of a total lesion are often misleading and laminectomy may reveal a lesion by no means irreparable. Even direct and evident lesions of a severe nature are still matters of conjecture, and operation has, in such cases, saved lives which would otherwise have been lost. There is nothing here to be risked and good may result.

The dural sac must not be opened unless there is evidence that the bullet is there. Suturing should then be recommended, especially if there is septic material in the wound. If however, there is no infection and the cord should be so swollen and edematous that closure of the incision would cause serious pressure, the incision should be left unsutured.

### A FUNCTIONAL DISEASE.

Of all the misleading expressions in common use, none more deserves to be dropped from medical diction than the expression, "It is only a functional disease." Either there is no such thing as a functional disease, or every disease is functional. There is no such thing as function without structure; there is no such thing as normal functioning without normal structure or abnormal working, unless the organism has gone wrong in its inner makeup.

In saying this we mean that if any organ of the body has gone wrong in its behavior, either it or some other organ somewhere in the body has undergone change; and it is this larger view of the body and mind as a whole that is most needed in the practice of medicine. If, for instance, the heart beats more rapidly than usual it may be that structural changes have begun in the thyroid, and certainly exophthalmic goitre is no functional disease. Moreover, in time, the pathological changes in the heart are altogether indisputable, and, if so, they must have begun some time, and why not from the very beginning. We are altogether too prone to separate activity from the thing acting.

In the realm of nervous and mental disease it is still more difficult to get rid of old terminology. The "nervousness" of hyperthyroidism may not begin in the nerve structures, but must follow at once the disturbance of the thyroid laboratory. In insanities, because the changes in the brain are not revealed by the none too delicate eye of the microscope it seems to the mind, which must struggle still to connect itself with the body, that here at least are activities which are "purely functional."

We need to substitute some expression for "functional disease." "Beginning structural" would be better, though awkward. "Dependent disease" might express the condition where a malworking appears (or seems to appear) secondarily to the misbehavior of some other part of the body. At least we should have a term which means something more serious than the term "functional" has come to convey.

It is in this realm of the beginnings of disease

that attention is and should now be centred. A full fledged malady, such as is described in medical books, can be detected by any one as a disease, although the exact nature of the disease may not be patent. It is the inception of disease which is difficult to determine, and to know this we must thoroughly understand the normal and where the normal begins to approach the abnormal. It is a most fascinating study for the future, and the deeper it is gone into the earlier the phrase "only functional" as related to disease will be dropped. On this study, of course, depends, to a large degree, the future of preventive medicine.

### HONORS FOR SURGEONS.

Of the six officers to whom the Distinguished Service Cross was awarded on October 13th for extraordinary heroism, three were naval surgeons, attached to the United States Marine Corps. Two of these, Assistant Surgeon O. D. King, and Passed Assistant Surgeon Joseph F. Boone, won their crosses in the action at Bois de Bleau on June 9th and 10th, while the other, Passed Assistant Surgeon William T. Gill, was awarded the Distinguished Service Cross for heroism displayed in the treatment of the wounded on July 19th in the action near Virzey. On October 14th, the Distinguished Service Cross was awarded to Lieutenant Robert O. Blood, M. C., of the 103d Infantry for his heroic action under fire near Bouresches, on July 20th to 23d. Captain George E. McGinnis, of the 110th Ambulance Company, 103d Sanitary Train, has also been awarded the distinguished Service Cross for heroism shown in the night of August 9th during the action of Fismette. These are but a few of the many instances of heroism displayed by the members of the Medical Corps of the Army and Navy. The nature of their work is such that they are not likely to be given credit for the heroism displayed, which is usually less dramatic though none the less truly heroic than the services rendered by the combatant officer.

### Obituary

EDWIN BRADFORD CRAGIN, M. D.,  
of New York,

Dr. Edwin Bradford Cragin, prominent in New York for many years as an obstetrician and gynecologist, died on Monday of pneumonia at his home, 10 West Fifthth street, New York, in his fifty-ninth year. He had been in ill health for more than a year, but continued to carry on his practice until a month ago.

Doctor Cragin was born at Colchester, Conn., the son of Edwin Timothy and Ardelia Ellis Cragin; was graduated from Yale in 1882, and got his M. D. from the College of Physicians and Surgeons, New York, in 1886. He commenced the practice of medicine in this city the same year, after serving for a



time on the hospital staff of Roosevelt Hospital. He was later appointed assistant gynecologist to the hospital and assistant surgeon to the New York Cancer Hospital, and in 1899 became attending surgeon to the Sloane Maternity Hospital.

Doctor Cragin became prominent as a gynecologist and obstetrician early in his career. He was consulting surgeon to the City, Maternity, Italian, and New York Nursery and Child's Hospitals and consulting gynecologist to the Presbyterian, New York, Roosevelt, Lincoln, and St. Luke's Hospitals, and the New York Infirmary for Women and Children.

As professor of obstetrics and gynecology at the College of Physicians and Surgeons, as well as chief of the Sloane Maternity Service, he came in close intimate contact with thousands of the medical students of Columbia University. His great personal charm, kindness of spirit, accuracy of observation, and ever ready desire to help others, endeared him to all and aided him in building up a large and lucrative practice. Doctor Cragin was also vice-president of the New York Academy of Medicine, member of the New York Medical and Surgical Society, New York Obstetrical Society, American Gynecological Society, American Medical Association, and many others. He was a member of the Republican, University, and Yale clubs, and of the board of elders of the Central Presbyterian Church.

## News Items.

**General Gorgas on Active Duty.**—Major General Gorgas, M. C., who was retired for age on October 3d, has been assigned to active duty abroad, where he will inspect the service in England and France and will return to make a report of that inspection.

**Enlisted Dentists to Be Commissioned.**—Orders have been issued that all graduate dentists who are serving in the army as enlisted men shall be examined for promotion. All found fit will be given commissions as first lieutenants in the dental corps. Pending the results of the examination no examinations of civilians for commissions will be held.

**Meetings of Medical Societies to Be Held in New York during the Coming Week.**—Friday, November 1st, New York Academy of Medicine (Section in Surgery); New York Microscopical Society; The Practitioners' Society of New York; Alumni Association of Roosevelt Hospital; Gynecological Society, Brooklyn (annual). Saturday, November 2d, Benjamin Rush Medical Society.

**Influenza in Sing Sing Prison.**—Authorities of Sing Sing prison have fitted up an emergency hospital in the prison school. As a step toward curbing the spread of influenza, of which there are now over seventy cases, Dr. Amos O. Squires, prison surgeon, administered vaccine to over 600 prisoners. The regular prison hospital has fifty beds, and the prison school has twenty patients quartered there. The rest of the 1,000 inmates now in Sing Sing will receive prompt treatment to render them immune.

**Advertisements Barred.**—Recent issues of French medical journals have reached us with blank spaces where advertisements usually appeared. The publishers explain that the military authorities have prohibited the transmission to foreign countries of journals containing advertisements. We have read of the use of advertisements as a means of conveying information by spies, but have looked upon the statements as ingenious fabrications. The action of the authorities in barring the transmission of advertisements indicates that there is some truth in the reports. It is said that a code was used based on the use of misplaced, inverted, or damaged letters.

**Clinical Research Society Postpones Meeting.**—Announcement is made that, owing to the epidemic of influenza, the annual meeting of the American Association of Clinical Research has been postponed.

**Influenza in Argentina.**—According to press despatches from Buenos Aires, dated October 22d, the influenza epidemic, which has seriously hampered business and other activities, continues to spread. The government has ordered all schools closed until further notice.

**Red Cross Hospitals Taken Over by the Army.**—The American Red Cross hospitals No. 4 at Mossley Hall, Liverpool; No. 21 at Paignton, South Devon; No. 22 for officers at Lancaster Gate, London, have been taken over by the United States army. The navy has taken over the Red Cross hospital at Aldford House, Park Lane, London.

**Personal.**—Dr. Arthur A. Landsman has moved from 17 East Thirty-eighth Street to 310 West Eighty-sixth Street, New York.

Dr. George Chaffee, of Brooklyn, a member of the surgical staff of the New York Polyclinic Hospital for twenty-five years, has opened an office at 100 Hawley Street, Binghamton.

**Influenza Spreading in Canada.**—According to press dispatches, Spanish influenza has now spread throughout the Dominion of Canada. Vancouver reports 149 new cases with two deaths; Hamilton, Ont., seventy-two cases and six deaths; Winnipeg, seventy-two cases with two deaths. Ottawa had thirty-three deaths. Toronto has had 452 deaths. The epidemic is still raging in Montreal and Quebec City. Many of the smaller cities of Ontario report almost one third of the population stricken. Kingston has 4,000 cases and Stratford more than 2,000. Theatres are closed in so many of the Canadian cities that the routes of touring companies have been abandoned.

**Free Medical Treatment for Former Soldiers.**—A bill has been introduced in the U. S. Senate relating to free medical treatment. It provides that any person having served in any wars in which the United States has been engaged as a belligerent, and who has been or may hereafter be honorably discharged from the army, navy, marine corps, or coast guard by muster out, resignation, or otherwise, and who may be suffering from the effects of wounds, injuries, or sickness incurred in the line of duty while in the service of the United States, shall be entitled to receive surgical and medical treatment from the medical officers of the army, navy, or public health service, whenever practicable, free of charge, in the same manner and under the same regulations as are or may hereafter be authorized to officers and enlisted persons in the military service. It also is provided that any medical officer or surgeon of the army, navy, or public health service, who shall unreasonably or capriciously refuse or neglect to grant surgical or medical attendance to the persons authorized to receive the same shall, in the discretion of the President, be dismissed from the service of the United States and shall be rendered incapable of holding any office of honor or trust under the United States.

**The American Women's Hospital.**—This organization has recently received from Mr. Gibson, special commissioner of the American Red Cross in France, a request for six units, each to consist of ten medical women, ten nurses' aides, and a sufficient number of chauffeurs to take care of three or four cars. The Red Cross will supply the nurses. These units are to be known as American Women's Hospital Units Nos. 1 to 6. Dr. Caroline M. Purnell, special commissioner of the American Women's Hospitals in France, reports that the organization, cooperating with the American Committee for Devastated France and working with the Sixth French Army in the advanced area, has established Hospital No. 1 in a Fifteenth Century chateau near the front. Dr. Barbara Hunto, of Bangor, Me., is director of this unit. Her staff includes the following doctors: Dr. Ethel M. Fraser, Dr. Mary Getty, Dr. M. Louise Hurrell, Dr. Mary MacLachan, Dr. Mary Evans, Dr. I. Jay Manwaring, Dr. Ruth Ingram, Dr. Charlotte Fairbanks, and Dr. Inez C. Bentley. Beside this hospital, the American Women's Hospitals have several dispensaries which are doing very important work. Doctor Purnell reports that typhoid fever and dysentery are the two diseases most prevalent in the areas recently evacuated by the Germans.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

**The Frequency of Protozoic Enterocolitis in the Middle West.**—Frank Smithies (*American Journal of the Medical Sciences*, August, 1918) analyzes ninety-three cases of protozoic enterocolitis with regard to etiology, symptomatology, laboratory findings, and treatment. Under general treatment he says that it is important that all local infection foci in the teeth, tonsils, and mouth, or throat ulcers, diseased gallbladders or appendices, etc., should be removed before attack is made upon the intestinal infection. If such are not taken care of radically, reinfections may occur or subsequent ailments of such parts may lower general resistance sufficiently to again permit of enteric infection by protozoa. Encysted protozoa may lurk for years in the appendix or the gallbladder. When this is the case the host is to be considered a not altogether harmless carrier. To free the intestine from protozoa he places his patients on a liquid diet for two days, with a glass of citrate of magnesium each morning, and then begins the administration of specific medicines. Entamebæ are particularly susceptible to ipecac or emetine, while flagellate or ciliated protozoa are slightly affected by these drugs, but are destroyed by calomel. Thymol is effective against both. In the entamebæ cases the patient is put to bed on liquid diet, with hot pads moistened in boric acid alcohol mixture over the abdomen—to prevent colicky pains or abdominal discomfort. He is then given by mouth a ten grain tablet of the aluminum salicylate of ipecac (alcresta) every hour and one third grain of emetine hydrochloride hypodermically every four hours for two days. If the stools show diminution of the parasites the dose of ipecac and emetine is then reduced by one third and this continued for another two day period. No reduction is made if the parasites are still very abundant or are very active. Usually by the end of the first week the patient is taking one to two grains of emetine hypodermically daily and ten grains of ipecac ("alcresta") four times daily. The treatment is continued even when no parasites are seen. Accompanying the medicines given by mouth the colon is carefully lavaged with four quarts of hot normal salt solution or a solution of quinine, 1/3,000, and thymol, 1/5,000, in normal salt solution night and morning. On the sixth day the patient is put on fat free diet for twenty-four hours—to render thymol administration safe. At bedtime of the seventh day thirty grains of thymol in honey are administered at eight p. m., and again at ten p. m. At six o'clock the following morning the patient gets two ounces of Epsom salt in hot water, and all that morning frequent drinks of black coffee, fat free broth or malted milk. During the second week the emetine, ipecac and bowel irrigations are continued, and usually on the tenth day from the beginning of the treatment two doses of fifteen grains each of thymol—preceded by twenty-four hours of fat free diet—are given in the evening. Daily examinations of the warm stools usually indicate no parasites by this time and the diet may be

increased according to the patient's desires, provided it is low in protein and not very bulky. If parasites persist at the end of two weeks, then after thorough colon lavage with hot normal saline solution, from 500 to 1,000 c. c. of filtered, commercial kerosene are given per rectum, slowly. The external parts are greased with carbolated vaseline and effort is made to have the patient retain the kerosene for at least one hour. The author has never seen any harmful effects follow the use of kerosene. It has proved very efficacious in ridding the bowel of persistent infection.

When the entamebæ are no longer demonstrable in the freshly passed stool, then local treatment of the enterocolitis by large doses (thirty grains) of bismuth subnitrate or subcarbonate given five times daily should be carried out. Emetine and ipecac should be continued for at least five weeks, the ipecac alone for three months. The bowel irrigations are usually stopped at the end of the third week. The general state of the patient is taken care of according to indications; HCl after meals if the gastric juice is lacking in acid; iron and arsenic if anemia is present. When flagellate protozoa are the infecting organism the treatment is substantially as outlined above for entamebæ, except that emetine and ipecac are not used unless there is a concomitant amebiasis. The flagellates are readily destroyed by the administration of evening doses of calomel, five to fifteen grains, followed by two ounces of Epsom salt the next day. These doses of calomel are repeated about every five days, according to the indications furnished by the stool examinations. The flagellates are usually less persistent than are the entamebæ with the exception of lamblia.

A careful study of specimens of gallbladders and appendices removed at laparotomy indicates that in these parts of the gut cysts of protozoa may lurk for years. Reinfection of the bowel is thus possible. Consequently if these organs have not been removed, he insists that patients should have stool examinations at least three times a year and that they go through an abbreviated course of treatment similar to that outlined above. Only in this way does he believe that protozoa carriers can be eliminated or reinfection of so called cured cases prevented.

**Treatment of "Essential" Facial Neuralgia by Local Alcoholization.**—J. A. Sicard (*Boston Medical and Surgical Journal*, September 19, 1918) states that the only effectual treatment of this disease is the destruction of the branches of the nerve, "local neurolysis," by chemical substances, particularly alcohol. He uses alcohol, varying in strength from seventy to ninety-five per cent., and injects not over 1.5 c. c., under local anesthesia produced by novocaine or stovocaine, into the nerve in the foramina where it can be reached. Some of these foramina are superficial, the supraorbital and infraorbital; the opening of the inferior dental canal at the spine of Spix is medium; the foramen ovale



and foramen rotundum are deep. He prefers to make the deep injections four or five days after the others, but sometimes makes all five injections at the same sitting. Care must be taken not to inject the alcohol into a bloodvessel, as this may cause a gangrenous necrosis of the area supplied by the blood. The results are said to be remarkable, though relapses are apt to take place in from twelve to eighteen months. Certain conditions are indispensable to success. The first of these is that the case be one of the so called essential variety, and the following points are given in differentiation:

1. Whenever the pain in facial neuralgia persists continuously with no distinct intervals of relief it is not a case of essential neuralgia.
2. Cases of facial neuralgia which, not having been already treated surgically or by local injections, are accompanied by cutaneous or mucous anesthesia, are not cases of essential neuralgia.
3. When facial neuralgia, previous to any intervention, presents associated signs of stimulation or paralysis of other cranial nerves, such, for instance, as trismus, diplopia, facial paralysis, lingual hemiatrophy, etc., it is not a case of so called essential facial neuralgia.
4. A case of facial neuralgia which *ab initio*, involves the three branches of the trifacial, is not a case of essential facial neuralgia.

In these cases we are dealing with secondary facial neuralgia of either exocranial or endocranial origin, e. g., syphilis, tuberculosis, cancer, abscess, sinusitis, etc. In these the injection of alcohol, far from affording relief, may, on the contrary, aggravate matters. Nor is it of service in neuralgia following herpes zoster of the trifacial, for this is not a peripheral lesion. The second important condition is that every effort must be exerted to reach the nerve branches responsible for the pain. Cutaneous or mucous anesthesia of the area innervated by the injected nerve is the only evidence that can be obtained of a successful injection. This should supervene directly after the injection, and is accompanied by a sensation of induration and swelling, in reality nonexistent. These disturbances of sensation are very varied and peculiar.

**Gunshot Wounds of the Head.**—T. O. Graham (*British Medical Journal*, August 10, 1918) draws upon a personal experience of nearly 500 cases of this form of injury in offering his conclusions and suggestions relative to their treatment. Wherever possible operation should be performed under local anesthesia, produced by injecting two per cent. procaine (novocaine) with epinephrine into the scalp in a complete circle about the site of the operation. This should be done after the patient is on the operating table and should be preceded by the administration of forty milligrams (two third grain) of omnopon. This form of injection of the local anesthetic, not only produces complete anesthesia, but it also provides very efficient hemostasis, and is not followed by postoperative ill effects. In every case the whole scalp wound must be excised freely to avoid sepsis, as far as possible. In cases of fissured fractures without bony depression, no operation is done upon the bone unless there are definite neurological symptoms of increased intracranial pressure. In such cases the skull is trephined and

the extradural clot removed and hemorrhage controlled, but, even in the presence of subdural hemorrhage, the dura is not opened on account of the dangers of infection. Lumbar puncture is subsequently performed to reduce intracranial pressure. In some cases, however, where the subdural hemorrhage is very large one may have to incise the dura and remove the blood. In depressed fractures the bone is not disturbed unless there are signs of severe intracranial pressure, when the depressed bone is elevated and the dura, if lacerated, is sealed by a muscle graft. Where fragments of bone have been driven through the dura into the brain the track of the wound is exposed and carefully cleared of clot, disintegrated brain tissue, and all bone fragments. The dural opening is then covered with a pericranial roof, and the scalp tightly sewn with a small glove finger rubber drain running down to the dura, but not into its opening. Penetrating wounds are treated much as are those of the last type, but if the retained missile cannot be removed without further damage to the brain tissue it is left *in situ*. Hemorrhage from the meningeal vessels or sinuses, wherever found, should be controlled by muscle grafts, as far as possible, gauze and ligatures being avoided. Herniation of the brain should be of infrequent occurrence, but when present it should be treated by keeping the patient in a sitting position, the administration of sedatives, and the repeated performance of lumbar puncture with the very slow withdrawal of small amounts of fluid. In gunshot wounds of the head the mortality is five times as great when the dura is opened, either by the wound or in the operation, than when it is not.

**Tuberculosis as an Army Problem.**—Major Joseph H. Pratt, M. R. C., and Lawrason Brown, (*American Review of Tuberculosis*, August, 1918) offer a few criticisms of methods of the tuberculosis examinations in the service and suggestions for future work. The authors bear testimony to the efficiency of the authorities in charge of the tuberculosis examinations in the army, and commend, in particular, Colonel Bushnell's rapid auscultatory method. Questionnaires are valuable, chiefly because they save time, as the man transferred from board to board always has his record with him, and they keep together all records and examinations made of each man, and could be returned to the original board. The authors gained their experience on the examining board at Camp Devens, which examined 27,300 men of the first draft of the National Army. There were nineteen physicians on the board, all but two of whom gave their full time to the work. Among the entire command of 27,304 officers and men, 184 cases of pulmonary tuberculosis were brought to light. One hundred and thirty-five of these were rejected or discharged from the army. The percentage of tuberculosis found was 0.67 of 1 per cent. It was apparent from the figures that more cases of tuberculosis were passed by the examiners in some cities and towns than in others. As to the reliability of the history given by those examined, it was the impression of the authors that most of them told the truth. The volunteers were, on the whole, healthier than the drafted men.

**Otitic Meningitis.**—Edward B. Dench (*Laryngoscope*, July, 1918) calls attention to the importance of suppurative otitis media in relation to involvement of the intracranial structures, and mentions the fact that from the reports of 19,000 cases of middle ear suppuration, he found that one patient in every eighty-eight suffered from some intracranial lesion—either "epidural abscess, sinus thrombosis, brain abscess, or meningitis. Fortunately meningitis is the rarest of these intracranial complications of otitic origin. Broadly speaking, it is any inflammation of the coverings of the brain due to a middle ear infection. One class of meningeal inflammation is a comparatively simple complication and offers no menace to life, while other classes are always severe and invariably terminate fatally. The simplest form presents no symptoms aside from localized headache, local tenderness, sleeplessness, and a slight elevation of temperature, the symptoms often being so slight that the condition is frequently not definitely recognized until pus is found at operation. The spinal fluid in such cases ordinarily shows an increase of globulins and a moderate increase of cell count. In the more severe cases of complication, which are usually of the fulminating type, the symptoms are more pronounced and a cause for alarm. Cerebral manifestations are usually marked, the spinal fluid is found to be under great increase in pressure, is turbid, the cell count is greatly increased; globulins are present, and pathogenic organisms are invariably found. The ideal operative interference seems to be the removal of the primary focus of infection, the exposure of a large area of dura with subdural drainage in cases of the fulminating type, and repeated lumbar puncture in all cases.

**Constipation in the Army and Its Treatment.**—Marcel Labbé (*Presse médicale*, July 25, 1918) considers constipation among the most serious, as well as among the frequent affections to which the soldier is subject under war conditions. The chief reasons for it are the change in diet—less of fresh vegetables and more meat—the danger of being wounded during defecation in active sectors, and the inability, among those with a preexisting tendency to constipation, to carry out their usual procedures for combating it—laxatives, enemas, or suppositories. Five groups of cases may be recognized. In the first, that of simple constipation, the difficulty is due to loss of the habit of regular defecation; many cases of dyspepsia among soldiers are due to it. Purgation, and subsequently laxatives and dietary precautions are curative. The second group is that of spastic constipation, due to irritation by fecal stasis. Pain, a sensation of weight, and palpation reveal this condition. In the third group, atonic constipation, palpation, and the x rays exclude spasticity. The colon is soft and flabby, rolls under the fingers because of gaseous distention; the patient complains of puffiness after meals and vague abdominal discomfort. The fourth group is that of constipation with intoxication, with irregular or periodical attacks so marked as to cause pronounced loss of weight and even unfit the subject for any sort of military service. In these cases, at the close of the period of constipation, the urine often shows an

excess of ammonia and a high coefficient of ureogenic imperfection, due to disturbance of the liver by the enterogenous intoxication. X ray examination shows marked slowing of food passage through the intestine. The fifth group is that of constipation with colitis or pericolicitis, due to irritation. In the treatment, proper diet and regular defecation are first in order. Agar, linseed, olive oil, and mineral oil are of service in simple constipation. Besides, each subject has his own favorite remedy; one person found ten grams of bismuth in the morning the only effectual laxative. A teaspoonful of sodium sulphate, sodium citrate, and sodium bicarbonate in equal parts, taken in hot solution early in the morning for two or three weeks generally gives good results. For spasm, belladonna and valerian are appropriate; for atony, strychnine, glycerophosphates, and dried suprarenals. In toxic constipation, a vegetarian, but plentiful, diet forms the basis of treatment, and bowel disinfection should be sought by alternate use of lactic and paralytic bacilli, calomel, benzonaphthol, betol, and naphthol. Hepatic and biliary extracts are useful to excite both the liver and bowel functions. Castor oil and salines in small doses are of value, with intestinal lavage for mechanical cleansing. In inflammatory constipation, during peritonitic attacks, the diet should be limited to milk soups, vegetable bouillons, starchy purées, and fruit marmalades. Castor oil in moderate amounts, tepid enemas, and hot abdominal applications are serviceable. In inveterate inflammatory constipation with progressive malnutrition surgical treatment is indicated.

**Intraspinal Treatment of Cerebrospinal Syphilis.**—Clyde L. Cummer and Richard Dexter (*Journal A. M. A.*, September 7, 1918) take issue with a recent critic of the results of this method of treatment and contend that the method is most valuable and not associated with any danger, if properly carried out. They base their conclusions upon an analysis of the literature and their own personal experiences for five years with the Swift-Ellis and Ogilvie technics. It is fallacious either to adopt the criteria of clinical improvement or those of serological changes to the exclusion of the other. Though both usually run parallel, it is certain in some cases that the striking manifestations of clinical improvement, such as the return of a previously hopelessly incapacitated man to his occupation, must be accepted in spite of little change in serological reactions. No comparison is made between the exclusive use of intraspinal treatment and that of intravenous. The latter method often gives as good results as can be expected from any form of treatment, but in some cases it falls very far short of such results, and in these the resort to intraspinal treatment is usually followed by good recovery. The need for intraspinal therapy is especially marked in those who cannot endure intensive treatment with mercury or with arsphenamine intravenously. The improvement in favorable cases is so definitely consequent upon intensive intraspinal treatment and is so well maintained even for long periods without further treatment, that such improvement cannot be explained on the basis of a remission.



### The Intracranial Treatment of Paresis.—

Henry A. Cotton and W. W. Stevenson (*Journal of Nervous and Mental Disease*, April, 1918) summarize the results of four years' experience in the treatment of cerebrospinal syphilis as follows: The intracranial—either the intraventricular or subdural—method is the most efficacious in the treatment of paresis and should be the mode of preference. It is also the most efficient one for the treatment of tabes and luetic meningitis. Salvarsan is preferable to diarsenal and other substitutes for the treatment of cerebrospinal syphilis. The mercurialized serum of Byrnes is of doubtful value, as it is not of sufficient potency to destroy the spirochete. The success of any method of treatment depends upon the stage in which the disease is treated; the earlier the stage the better the outcome. Every case of syphilis should have an examination of the spinal fluid at frequent intervals after all symptoms of the acute stage are lost, especially if the blood Wassermann remains positive after sufficient treatment has been given. All cases of paresis can be arrested and possibly cured if treatment is begun early enough.

### Treatment of Vernal Conjunctivitis with Radium.—

William Allen Pusey (*Journal A. M. A.*, September 7, 1918) says that the results of the treatment of this form of conjunctivitis are the same with radium as with the x rays, but that the latter is far more convenient and can be limited in its application much more effectively. The technic of the treatment consists in the eversion of the affected lid and its grasp in a lid clamp which has a heavy under plate and a widely fenestrated outer blade. The metallic under plate protects the eye from the rays. The radium is then applied on a varnished applicator containing five milligrams of the element, which is of sufficient strength to cause a bright erythema on the normal skin after application for ten minutes. The applicator is passed back and forth over the lid just short of making contact with the surface. The application is made in broken doses, an exposure of five minutes being given to the whole lid on each of six successive days. Then an interval of several months is allowed and the treatment is repeated, if required. No reaction is caused by this dose and method of application and the results are very gratifying.

**Operation for Empyema.**—Hugh McKenna (*Journal A. M. A.*, August 31, 1918) describes a new method for the treatment of all forms of empyema, which has many advantages over the older methods and which gives a very much reduced mortality. It consists, essentially, in the drainage of the pleural cavity or the pus pocket, irrespective of the character of the pus, through a No. 14 French rubber catheter. A trocar and cannula just large enough to permit the passage of the catheter are introduced through an interspace, and the catheter is threaded in. The cannula is withdrawn, leaving the catheter in place. A 100 mil glass syringe is connected to the catheter and the pus is carefully aspirated. When the pus is too thick for aspiration a small amount of Dakin's solution is injected to quickly liquefy the pus. By repetition of this pro-

cess the cavity can soon be emptied. The amount of pus aspirated is measured, and half as much of the Dakin's solution is injected and allowed to remain in the pleural cavity. The aspiration and reinjection are repeated three times during the day and twice at night by a specially trained nurse. This procedure is followed for each pocket of pus when two or more are found upon examination. Of nineteen consecutive cases treated by this method, all have recovered. The advantages of the method are: That it is decidedly a minor operation; that the danger of contamination of the cavity with other organisms is reduced to a minimum; that the lung is less completely collapsed than after costectomy or thoracotomy; the condition of the discharge can be followed accurately day by day; distressing sinuses are not likely to result; pus from dependent parts of the pleural cavity can be evacuated thoroughly; solidification of the pus cannot take place; and, lastly, there is no danger of injury to the lung from the rubber catheter.

### An Improved Method of Cocainizing the Eye for Iridectomy in Acute Glaucoma.—O. Haab

(*Correspondenzblatt für Schweizer Aerzte*, May 11, 1918) injects two drops of a ten per cent. solution of cocaine beneath the conjunctiva at the place where the iridectomy is to be performed—usually at the upper margin of the cornea—and is ready to operate in from seven to ten minutes. If the conjunctiva is very hyperemic a small quantity of adrenalin is added. The elevation of the conjunctiva, produced by the injection, flattens out so as to form no obstacle to the operation within this time, particularly if the region is gently massaged once or twice through the lid. He asserts that the anesthesia produced in this way is perfect, so that the operation is painless and the patient lies quiet. The point in which this method differs from that employed by others is that a stronger solution—ten per cent.—is used instead of one only two per cent. or four per cent.

### Prolonged Bile Drainage in Pancreatitis.—Ed-

ward Archibald (*Journal A. M. A.*, September 7, 1918) presents his observations on the influence of prolonged bile drainage upon the swelling of the pancreas, loosely called pancreatitis, and occurring in cases of gallstones or infection of the bile tracts. From an analysis of the ultimate results, as judged by the relief of symptoms and freedom from recurrence, in a series of thirty-three cases, the conclusion is reached that the shorter the period of bile drainage the greater the likelihood of recurrence of symptoms or their persistence after operation. All patients in whom drainage was continued for four weeks or longer recovered without any persistence of symptoms and without subsequent recurrence. It is evident, therefore, that in such cases steps should be taken to maintain drainage for such a period whether the gallbladder is the seat of infection or of stones. It has been shown recently, however, in the Mayo Clinic that complete removal of the bladder without subsequent drainage gives equally good results. The removal of the bladder or the practice of long continued drainage cures the pancreatitis, probably by preventing the possibility of a rise in bile pressure sufficient to cause reflux of bile into the pancreatic ducts.

**Curative and Immunizing Treatment of Malaria with Mercury.**—Guido Cremonese (*Gazzetta degli Ospedali e delle Cliniche*, May 30, 1918) reports rapid cure of malaria by the hypodermic use of bichloride of mercury, the results being corroborated by the disappearance of the protozoa from the blood. He gives one centigram of the bichloride in twenty-five per cent. solution daily for ten days and then ten more injections at intervals of ten to fifteen days. By mouth he gives the bichloride in pill form. As a prophylactic measure he has found this almost infallible.

**The Medical Treatment of Graves's Disease, with Special Reference to the Use of Corpus Luteum Extract.**—Herman H. Hoppe (*Journal of Nervous and Mental Disease*, April, 1918) recommends, in addition to ordinary routine treatment, hygienic measures and partial rest, the administration of extract of corpus luteum, 0.12, with quinine hydrobromide, 0.12, and extract of belladonna, 0.006, per dose. Nearly all patients require the extract of corpus luteum continuously—some once a day, others two or three times a day. As long as this is done he believes that the patient will be improved and can be kept in a fairly normal state.

**A New Treatment in Acute Rheumatism.**—Santiago L. Brian (*La Semana Medica*, June 6, 1918) has had remarkable success with hypodermic injections, once daily, of a solution of seven grams of sodium chloride and ten grams of sodium sulphate in a litre of water. The quantity used at each injection is 150 c. c., and it is seldom necessary to give more than three or four doses to obtain marked improvement. No other treatment has given such rapid results, and there has been an entire absence of complications in the cases so treated.

**Recent Developments in Intestinal Bacteriology.**—Arthur Isaac Kendall (*American Journal of the Medical Sciences*, August, 1918) says that there appears to be an intimate relationship between the character of the diet and the nature of the intestinal flora. This relationship, bacterially considered, is manifested by an adaptive intestinal acclimatization of fairly definite types of bacteria. Changes in the diet, if prolonged, tend to change the types of bacteria. A change in the products of metabolism of intestinal bacteria is also induced, depending upon the presence or absence of carbohydrate. Positive implantation of adventitious microbes—those not accommodative to intestinal conditions—appears to be infrequent. Bacteria which are normally acclimatized do not produce metabolic products widely at variance with the wellbeing of the host. Toxic or irritating metabolic products tend to arouse the antagonism of the host. The results may be disease, expulsion of the microbe, immunity, or the carrier state. Products arising from the utilization of food for energy by intestinal bacteria are of paramount importance in determining the specificity of action of these microbes. To a limited degree a careful modification of the diet may materially alter the character of these metabolic products, with benefit to the host. Bromotherapy may be practised in acute or chronic disease. Bac-

terial implantation within the alimentary canal must follow natural lines. Bacterial acclimatization and adaptation is the resultant of complex reciprocal activities between host and parasite. Intelligent bacterial implantation presupposes an accurate knowledge of the chemistry of the metabolic products of the bacteria under varying dietary conditions. It is unwise to generalize from incomplete data. The data of bromatology and bromotherapy in relation to microbic activity in the alimentary canal are conspicuously incomplete. Nevertheless, the remarkable influence of diet upon the activities of intestinal bacteria, in so far as it is known, would warrant the assumption that a new chapter in the broad field of bacteriology has just opened. The indications are apparently favorable for a new avenue of approach to bacteriotherapy.

**Use of a Strap Around the Foot to Reduce Fatigue in Marching.**—Bonnette (*Presse médicale*, July 22, 1918) calls attention to the value of a strap fastened tightly about the foot to facilitate locomotion when the extremities are tired from prolonged marching and countermarching. Under these conditions the plantar tissues sag, the nerves are pressed and dragged upon, and the ligaments become tender. Immobilization of the tibiotarsal and calcaneostragaloid joints by means of the strap brings relief and permits of making an additional effort to complete the march. The strap is passed in figure-of-eight fashion under the instep, in front of the foot, and behind the ankle—over the shoe. This procedure has proven so effectual that some have used the straps for preventive purposes, to defer fatigue.

**An Automatic Apparatus for Carrel Treatment.**—Daure (*Bulletin de l'Académie de médecine*, July 30, 1918) comments on the inefficacy of devices for automatic Carrel instillation so far described. His own procedure consists in connecting a receptacle containing antiseptic solution with the wound through a second smaller flask attached to the distal end of a counterweighted, oscillating lever. The counterweight holds the flask in an elevated position until the solution, dropped gradually into it from the main receptacle above, has accumulated sufficiently to force up the counterweight at the other end of the lever, when the solution runs out from the flask to the wound through rubber tubing. The rate of dropping from the main receptacle to the flask is regulated by a screw cock upon rubber tubing connected with a glass tube which dips into the solution in the receptacle through the cork closing the latter. The air admitted through the tube governs the outflow of solution from the receptacle. Any desired time interval between successive instillations can thus be secured. The amount of solution passing into the wound at each instillation—from ten to eighty mls—is regulated through a device by which the centre of gravity of the lever, counterweight, and flask can be adjusted at will. The apparatus has already been in successful use for several months, under varying circumstances. The author found it highly satisfactory in the Carrel treatment of mastoid operative wounds.



# Miscellany from Home and Foreign Journals

**A Study of the Nerves and Ganglia of the Lung in a Case of Pulmonary Tuberculosis.**—William Snow Miller (*American Review of Tuberculosis*, May, 1918) describes the distribution of the nerves and ganglia within the lung in a case of rapid tuberculosis occurring in a teamster, forty-seven years of age, the duration of the disease being about seven months. The author found that distribution of the nerves and ganglia—in a tuberculous lung—differed in no respect from the normal. Tuberculosis does not occasion an increase in the number of nerves or ganglia in the lung. The lungs receive their nerve supply from the pneumogastric nerve reinforced by branches from the second, third, and sometimes the fourth thoracic ganglia of the sympathetic. These follow the bronchi throughout their course, diminishing in size with the diminishing calibre of the bronchi. In many places not only these nerves but also the main nerve trunks are highly inflamed, being surrounded by and infiltrated with a large number of lymphocytes. Ganglia were found surrounded by and infiltrated with lymphocytes, showing that they, as well as the nerves, were involved in the general inflammatory process. This study gave rise to several questions: Might not the increased activity of the glands be due to the irritation of the nerves and ganglia; might not the irritating and productive cough in some cases of tuberculosis and the dry hacking cough in other cases be due to nerve irritation; might not the nervous hyperesthetic condition accompanied by very shallow breathing which was a frequent result of gas poisoning in the present war be due in some measure to irritation of this nervous apparatus of the lung?

**Instinct Distortion or War Neurosis.**—Donald E. Core (*Lancet*, August 10, 1918) says that these cases resemble hysterias, in that environment plays a dominant part in their development; but they differ from the hysterias, since in the latter the rôle of environment is indirect and since the hysterical phenomena are based on a physiological reaction. In the war neuroses the phenomena are pathological and serve no useful purpose in protecting the consciousness from unpleasantness. The diagnosis of war neurosis is generally comparatively simple, since the symptoms conform to the various motor manifestations of fright. These are divisible into two groups. The first are those associated with flight, and include facial pallor, staring eyes, dilatation of the pupils, rapid heart, and muscular excitability, tremor or spasm. The second group includes those fright manifestations associated with the "crouching instinct" such as the inability to move the legs or walk, aphonia, whispering speech or stammering. Careful study of the case will show that, in addition to looking terrified, the patient is really terrified and is specially the victim of terrifying dreams, or even of fear, during the waking hours. Often he cannot sleep at all at first on account of his fears; later he is able to sleep, but his sleep is only fragmentary and is broken by dreams which awaken him in terror. As improvement

progresses he sleeps better but awakens in the morning with memories of distressing dreams. Gradually the element of fear and terror is lost, at first for only part of the time, later almost or quite completely. But when this stage has been reached many of the somatic symptoms, such as stammering, tremor, etc., have become habitual and require correction. The diagnosis of war neurosis should never be made in the presence of definite evidence of actual organic lesions. The treatment of war neurosis is neither very difficult nor very complicated and depends upon whether the patient is ill or is in the habit stage. When in the active or ill stage sleep should be aided by giving 0.6 gram (ten grains) of trional, with or without aspirin, and diminishing the dose as sleep improves. The patient should be kept in bed for the most part, and preferably in a ward with a few other patients. As sleep improves and fear becomes less he should be allowed to leave the ward at intervals and mix with other patients. During all this time he should be encouraged as to his ultimate recovery, and the physician should talk with him frequently and gain his confidence. In the treatment of the various motor disorders during the active as well as the habit stage encouragement, exercise of the parts and painstaking reeducation are the most important measures. Occupation in the experimental workshops is also of the greatest value.

**Celiac Disease.**—G. F. Still (*Lancet*, August 10, 1918) presents a detailed discussion of the symptomatology of this uncommon disease, calling attention to the fact that it is about three times as prevalent in girls as in boys. The condition usually begins in the latter part of infancy and in ten per cent. of the cases is preceded by infantile scurvy. The onset may be very ill defined, but in many of those cases in which it is fairly definite a history of an attack of diarrhea will be obtained. Diarrhea, however, is not a necessary antecedent. The stools are characteristic even quite early in the disease, being bulky, pale, creamy, unformed, putrescent, and very evil smelling. They are of decidedly acid reaction and float in water. Later the stools tend to change to pale gray, soft fecal matter, or to greenish or dark brown, and are often mixed with blood and mucus. The abdomen is distended, this being one of the most characteristic features of the disease. The urine is normal and the liver is reduced in size rather than enlarged. The spleen is also not palpable. There is more or less marked pallor associated with a relative deficiency of hemoglobin. Among the most striking features of the disease is the arrest of growth and physical development, which may be extreme; with this arrest there is a marked smallness of the voice. The dentition is not much retarded. Muscular feebleness is extreme, and the child often cannot walk even when several years old. The mental capacity of the child is not much impaired, if at all, in most cases. Various complications are prone to arise in the course of the illness, some of which are so frequent as almost to be regarded as symptoms of the dis-

ease. Among these more or less general edema is the most pronounced. Other common complications include attacks of tetany, purpura, and chronic glossitis. Scurvy is also a frequent complication, but is probably due as much to the dietetic treatment as to the disease itself. The development of glossitis, the looseness of the bowels and character of the movements, the abdominal distention, the wasting, the absence of enlargement of the liver, and the afebrile course of celiac disease make it resemble sprue very closely. The course of celiac disease is always very slow, and complete recovery does not occur in any case in less than one year. Gradually the digestive abilities return, but for a long time the arrested growth is not compensated for. The mortality is not high, only four out of forty-one cases seen having died of the disease. (On the other hand, in a large proportion of cases complete recovery can scarcely be regarded as occurring.

**War Commotion and Emotion.**—Dupré and Logre (*Bulletin de l'Académie de médecine*, July 30, 1918) divide commotion or diffuse concussion of the neuraxis, due to nearby explosion of a shell or other forms of violent, vibratory impact, into three syndromes—the immediate commotional, the recent postcommotional, and the late postcommotional syndromes. The first of these consists of prompt and more or less protracted unconsciousness, a more or less profound state of coma, of the apoplectic type. The second syndrome follows the first, lasts a few weeks or months, and comprises subjective disturbances of a psychic order as well as objective disturbances of a neurologic order. The subjective manifestations consist of headache, dizziness, insomnia, asthenia, apathy, and a mental sensation of emptiness and nothingness, with amnesia. In more severe cases, occurring especially in those already predisposed, there may appear anxiety; maniacal, melancholic, or confusional agitation; hebephrenic or catatonic syndromes, hallucinations, motor automatism, etc. Hallucinations, however, are sufficiently uncommon to afford a sharp contrast between the post-traumatic and an infectious or toxic mental confusion. The neurologic symptoms constitute, in mild cases, a triad, viz., impaired vascular equilibrium, one side of the body often contrasting with the other; auricular disturbances, tinnitus, hyperesthesia, and often tympanic rupture and secondary otitis; cerebrospinal stigmata, viz., slight albuminosis, appearing in two or three days and disappearing after a few weeks, spinal hypertension, excess of glucose, etc. In grave traumatism, various signs of cerebral tissue injury may be superadded. The late postcommotional syndrome is characterized by slight asthenia or emotional instability, or, in the uncommon, more severe cases, by a permanent psychopathic state with neurasthenic symptoms and abnormal irritability, anxiety, pessimism, and an extreme morbid fear of the particular form of violence originally responsible, which renders the subject unfit for further service at the front. In the most severe cases, dementia may ultimately supervene. Emotion is often associated with commotion, but may occur separately. It is due, not to an external traumatic influence, but to a purely mental shock or

series of intense affective impressions reacting upon the sympathetic and cerebrospinal systems. It results in an extreme degree of psychic and motor activity, associated with terror, flight—in brief, the defensive reactions of the instinct of selfpreservation. There follow signs of acute anxious emotion—restlessness, tremor, crying out, then quietude, with persisting irritability, fear, and a tendency to seek seclusion. Only in occasional cases are there added functional disturbances of abdominal organs, due to disordered innervation. Through a process of emotional anaphylaxis there may result continuous anxiety, incapacity for exertion, loss of weight, tachycardia, insomnia, and a grave general condition. Like commotion, emotion may ultimately cause chronic dementia.

**Studies of Urobilin Elimination in the Normal and Anemic Dog.**—Harry Dubin (*Journal of Experimental Medicine*, September, 1918) states that the output of urobilin is increased in experimental trypanosome anemia in dogs, presumably as a result of the increased blood destruction. If arsenobenzol, given during the anemic period, brought about the disappearance of the trypanosomes from the blood, and an improvement in the blood picture, the elimination of urobilin was diminished; but when there was no beneficial effect demonstrable in the blood, this was not the case. Splenectomy in normal dogs brought about a varying degree of increase in the urobilin elimination, which Dubin thinks may bear some relation to the anemia generally seen after splenectomy. During the course of the infection splenectomy had no influence on the course of the anemia nor upon the elimination of urobilin. The conclusion is reached that the present work supports the theory that the elimination of urobilin may be considered as an index of blood destruction, but it does not explain the decreased elimination occurring in man in certain forms of hemolytic anemia following splenectomy.

**The Etiology of Epidemic Poliomyelitis.**—Edgar T. H. Tsen (*Journal of Experimental Medicine*, September, 1918) is unable to confirm the results of Rosenow and others, as his attempts to transmit poliomyelitis to monkeys, guineapigs, and rabbits, by the injection of streptococci isolated from human cases of the disease were unsuccessful. He isolated streptococci from the central nervous system of monkeys who had died of poliomyelitis, as well as from the brains of monkeys dying from other causes, and from the brains of normal rabbits, and showed that the streptococci isolated in the first case were in no way different from those isolated from monkeys and rabbits who had died of causes other than poliomyelitis. From this work no etiologic relationship could be established between streptococci and poliomyelitis. In working with the globoid bodies of Flexner, Noguchi, and Smillie, Tsen was able to find organisms similar to them culturally, morphologically, and tinctorially, but he could not carry the culture for more than three generations, so that monkeys were not injected with the organisms, and no conclusions can be drawn from the culture work. Tsen was not able to produce typical poliomyelitis lesions in rabbits by the injection of either the poliomyelitis virus or streptococcus.



### Influence of Temperature upon the Velocity of the Complement Fixation Reaction in Syphilis.—

—Hideyo Noguchi (*Journal of Experimental Medicine*, September, 1918), in order to find out whether the complement fixation of syphilitic sera or spinal fluid can occur at a temperature below 37° C., carried out numerous experiments to determine the relation between time, temperature, and reaction. Such a study is a valuable one at this time, for it proves that the reaction can take place satisfactorily at a temperature which can be obtained without the use of a special incubator, so that the performance of the test may be much more widely adaptable. The reaction was found to occur equally well at 37° C. when a water bath was used, and incubation for thirty minutes was necessary; at 30° C. in a special thermostat room, where the reaction proceeds with moderate velocity, and is complete within sixty minutes; and at 23° C., the temperature of the laboratory, which required two hours' incubation. The experiments showed no disagreement in the tests made at the different temperatures, so that, provided sufficient time is allowed, an ordinary laboratory, made as warm as possible, is suitable for the examination of syphilitic sera and spinal fluid when an incubator is not available. Guinea pig complement gave a sharper reaction with the sera which contained less than one unit of the fixing substance, and fixation was complete at any of the three temperatures in twenty minutes when more than two units were present. A serum which contained one unit of fixing substance required thirty minutes for complete reaction at 37° C., sixty minutes at 30° C., and two hours at 23° C., whether human or guinea pig complement was used. Noguchi's conclusions refer only to the systems in which the acetone-insoluble fraction of tissue lipoids is used as antigen.

**The Findings on Autopsy in the Present Epidemic of Influenza.**—A. Glaus and R. Fritzsche (*Correspondenzblatt für Schweizer Aerzte*, August 24, 1918) describe the findings, on autopsy, in fifty-three fatal cases of influenza. The ages of the subjects varied from one to fifty-nine years, but forty-one were between nineteen and thirty. Almost all were victims of pneumonia, which presented an unusual appearance in the great majority. The most common picture was one in which hemorrhagic, pneumonic, necrotic, and suppurating parts alternated, each often wedge shaped with their bases at the pleura. Between these, smooth, transparent, partly atelectatic, partly air containing portions of lung tissue frequently remained. This combination of infarctlike hemorrhages, abscesses, necroses, and pneumonic foci with hyperemia and edema of the lungs seems to them to be the characteristic condition of the present epidemic, although not always present. The hemorrhagic infarcts and lobular pneumonic foci were often the most marked, while the necroses and abscesses were so slight that they had to be sought for specially. In a few cases ordinary pneumonia was present, and in one, a man fifty-three years old suffering from emphysema, the only finding was that of a purulent bronchitis. All of the cases had bronchitis; in about one-fifth it was purulent, in the rest catarrhal. The larynx and trachea showed more or less similar changes. The

pleura was usually involved, at least showing punctate or large subpleural hemorrhages. In about half of the cases there was a more or less marked serofibrinous or fibrinous pleurisy; in six there was empyema, bilateral in three. A fibrinopurulent pericarditis and epicarditis was present in three. The results of the bacteriological investigation may be summed up briefly as follows: The fatal complications of influenza, especially the pneumonia, seem to be caused by a mixed infection of pneumococci, streptococci, and staphylococci. Concerning influenza bacilli, their presence could not be demonstrated, but it was demonstrated with certainty that they were not to be found regularly in the bodies of those who died of this disease.

**An Experimental Test of Nuzum's Antipoliomyelitic Serum.**—Harold L. Amoss and Frederick Ebersson (*Journal of Experimental Medicine*, September, 1918) were unable to confirm Nuzum's claim that his serum is therapeutically active in poliomyelitis. His experiments were repeated, but it was found that his serum does not possess any more neutralizing power for poliomyelitic virus *in vitro* than does normal horse serum. The serum was then subjected to the same tests as were applied to Rosenow's antipoliomyelitic serum, with results similar to those reported previously for Rosenow's serum. While immune monkey serum completely neutralizes the virus as it passes through into the meninges and so prevents infection, the serum of Nuzum and Willy possesses no such power, but acts in the same manner as normal horse serum, so that it rather promotes than prevents experimental poliomyelitic infection. Amoss and Ebersson think that many blood cultures should be made before resorting to the intravenous injection of antistreptococcal serum on a large scale in the treatment of poliomyelitis, as they do not feel that sufficient proof has been adduced to establish the fact the streptococcus plays an essential part in the pathology of epidemic poliomyelitis.

**Experimental Study of Parotitis.**—Martha Wollstein (*Journal A. M. A.*, August 24, 1918) records the results of a large series of experiments on the virus of parotitis in which cats were used as the experimental animals because of their known susceptibility to the disease. Attempts to infect these animals were made by injecting the suspected material into the parotid glands or the testicles. In every case the material injected was rendered bacterially sterile by passage through a Berkefeld candle. It was found possible to transmit the disease to cats by the injection of such a filtrate of the salivary secretion of children and adults in the active stage of parotitis. In the cats there was an incubation period of about eight days. The virus was also successfully transmitted from cat to cat by injection of a filtered emulsion of the infected gland or by the saliva. In such experiments the virus increased in virulence for the animals for several passages and then fell off again. In no case was the virus obtained in the saliva from human beings after the ninth day of the disease, and it was most uniformly secured during the first three days. The virus was also detected in the blood serum of infected persons with severe constitutional symptoms.

# Proceedings of National and Local Societies

## NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, Held Thursday, October 17, 1918.*

The President, Dr. WALTER B. JAMES, in the Chair.

### INFLUENZA: AN INFORMAL DISCUSSION OF THE DISEASE AND THE PRESENT SITUATION.

Dr. WALTER B. JAMES, in opening the discussion, recalled the fact that a year ago at a meeting of the Academy there was an informal discussion on influenza and the various phases of the disease. The city was not at that time in the throes of an epidemic, but it was realized that at any time the disease might return as an epidemic, and today the epidemic is here, one part of it appearing to be a pandemic. This meeting had been called to discuss the disease and the present situation and a number of speakers had been asked to present their views rather informally and briefly. There was no cause for panic, but this was a disease which it had so far been impossible to check. It was fairly well known how long such epidemics lasted, but it was to the interest of the entire medical profession to secure the best possible information as to the care of the people of the city while the epidemic was raging and running its course, and it was with that end in view that this meeting was called together.

**General Survey of the Influenza Epidemic.**—Dr. ROYAL S. COPELAND, Commissioner of Health of the City of New York, read this paper which is published in full in this issue of the *NEW YORK MEDICAL JOURNAL*.

**Influenza at Base Hospital No. 1.**—Major DUDLEY ROBERTS, M. C., U. S. A., chief medical officer of General Base Hospital No. 1 (Columbia Base Hospital), presented observations made on cases of epidemic influenza at the base hospital. He considered that whatever details, characteristic of this disease that could be made clear were important, not alone in view of the present serious aspect of the situation, but because the disease was likely to recur after it subsided this time and also because it was likely to be endemic in New York after this in far greater degree than before. The present epidemic form of influenza was characterized by sudden onset with chill or a feeling of chilliness, headache and backache with congestion of the eyes, nose and throat and cough. The patient was usually dull, apathetic and the leucocyte count was low—from 2,000 to 6,000. It was important to be able to distinguish between influenza and other inflammatory conditions of the nose and throat. The course of simple uncomplicated influenza was usually very short and the temperature came down from 100° or 103° to normal within forty-eight hours; elevated temperature after this time was cause for suspicion of bronchial pneumonia.

There were four distinct groups of bronchopneumonia following influenza. The first group acted like simple influenza even to the subsidence of the temperature in forty-eight hours, but the radiograph showed areas of lung consolidation which persisted for weeks. The second group acted

like the first except that after the temperature subsided, it suddenly rose again and the cases frequently went on to rapid and fatal termination. The third group were severely ill from the onset; after a few days they sometimes appeared to improve and then the process in the lung started in violently. Cases that were cyanotic from the beginning had a very bad prognosis. The fourth group, from the hour of onset, were patently fatal. It was beginning to be apparent that there would be another group of cases in which empyema complicated the condition.

The pneumonia following epidemic influenza was not easily recognized at the beginning which was the time to recognize it if results were to be accomplished. The disease could be recognized first because of the persistence of fever after forty-eight hours; secondly by the appearance of the patient, the cyanosis, etc.; thirdly by the rusty sputum; and last of all by the physical signs in the lungs. The earliest physical sign was a peculiar, prolonged, harsh, somewhat high pitched note on expiration, usually over the affected lobe. Dullness was an unsatisfactory sign and crepitant râles were not heard as early or with the same uniformity as in lobar pneumonia. Small areas of suggestive bronchophony and of bronchovesicular breathing were the first positive signs.

Regarding treatment, they made it a practice at the base hospital to digitalize the pneumonia cases almost from the first. They had also been using a mixed vaccine, both therapeutically and as a prophylaxis. It was too early as yet to say whether the remarkably favorable results they had attained, as shown by several charts giving mortality and incident rate before and after this measure was instituted, would continue, but the intravenous injection of a mixed vaccine, had enabled them to produce figures which not only showed a mortality rate reduced twenty per cent., but the cases of influenza that were treated immediately showed clinical signs of improvement. The number of cases of influenza developing among those who had been vaccinated against it was almost nil.

The vaccine was made by Major Carey, chief of the laboratory service, and contained in one c. c. 100 million influenza bacilli, 100 million of the three groups of pneumococci, 100 million mixed streptococci, and 100 million staphylococci. The treatment by intravenous injection was the only method that was found of value. A series of cases treated by subcutaneous injection gave very unsatisfactory results. The first dose had been one half c. c., the second one c. c., the third two c. c., and the fourth three c. c., at twenty-four hour intervals. With the one c. c. dose there was usually a prompt reaction, a chill or chilly sensation, followed by a rise in temperature. It was planned to use one c. c. as the initial dose especially in the severe cases. The dose would then be doubled daily. Probably the strength of the vaccine would be doubled to avoid using too large an amount of the mixture to administer the proper number of organisms. While this



plan of treatment had apparently given striking results, it must be viewed conservatively, and certainly must be used early in the course of pneumonia if satisfactory results were to be achieved.

Major E. G. CAREY, chief of the laboratory service of General Base Hospital No. 1, said that the majority of the twenty-two cases that came to autopsy had shown a rather extensive and confluent type of bronchopneumonia or lobular pneumonia. There was only one case of typical lobar pneumonia in this series of autopsies. A striking feature of the cases admitted had been the leucopenia; in sixty admissions only eight showed more than 7,000 white cells. Even smears direct from the tissues at autopsy showed very few leucocytes. As to the benefit derived from the vaccine, that had probably been through its effect upon the leucocytosis. Gay and Claypole showed with typhoid vaccines that the intravenous injection produced a distinct increase in leucocytes in sensitized animals and patients. The organisms of the present pneumonias when cultured were found to be those that usually did not succeed in invading lung tissue—streptococci of various types and even staphylococci. Because of the failure of the usual leucocytic response and walling off of the invading organisms the lung process had been very rapid and very extensive. A leucocytic response might produce a limitation of the disease and a favorable influence in its course. In following the blood counts of the treated cases there were indications that such a response was obtained. This helped aside from any specific action that the vaccine might have, and such specific action remained to be determined.

Dr. DOUGLAS SYMMERS, of New York, gave a résumé of his pathological findings, both microscopic and macroscopic, in the several organs of persons dead of the prevailing form of influenza, as set forth in his article published in the issue of October 12, 1918, of the *NEW YORK MEDICAL JOURNAL*.

Dr. HENRY W. BERG, of New York, briefly reviewed his clinical and therapeutic observations of cases of the prevailing epidemic at the Willard Parker Hospital, as published in the issue of October 12, 1918, of the *NEW YORK MEDICAL JOURNAL*.

Dr. WILLIAM R. WILLIAMS, of New York, said that though he had not had the opportunity of seeing as many cases as Major Roberts and Doctor Berg, he had been very much impressed by the fact that this epidemic presented a real disease entity, the same disease that was described in the lectures of Francis Delafield. The striking point about it was the way it attacked the circulatory system; the word most mentioned by the speakers this evening was the word "congestion" and that emphasized the symptoms and signs that were encountered. There was congestion in the nose—epistaxis; congestion in the throat—it looked red; congestion in the lungs—the most striking finding at autopsy; congestion of the gastrointestinal tract—vomiting of blood and bloody feces; and tremendous congestion of the skin from which alone the gravity of the case could almost be guessed. In the New York Hospital there had been more than 100 cases; these cases had come in, for the most part, rather later than those at the Willard

Parker, and certainly later than cases should be in hospital at camps. The first cases were two soldiers on leave in town from camps. They came in about the middle of September. Most of the patients had had signs over the chest or shadows in the radiogram, or mucopurulent sputum containing enough blood to convince one that they had consolidation of the lung. The mortality rate had been extremely depressing; of the 100 cases twenty-two were fatal. Some of the pneumonias were rather slight and twenty-two per cent. mortality of mixed cases often with slight pneumonia seemed very high. The cases where the organs were seen at autopsy had borne out the evidence of tremendous congestion, startling one into trying to think of some adequate therapeutic remedy to control the generalized paralysis of the whole vasomotor system. Some biological means of doing this must be looked for and it was to be hoped that in the next few weeks it would be learned that this had been found, and Major Roberts had pointed out the way.

Dr. HERMANN M. BIGGS, New York State Commissioner of Health, regretted very much that he was not present to hear Doctor Copeland's address. He had not much to say as there was not much to be said, for in a way not very much was known about the situation, except what every one knew. This was the most serious epidemic of disease that had visited the civilized world in a century. He considered it a serious indictment of the methods of public health education that at this time it was impossible to check the spread of such an epidemic as this. The cause was evident enough; the secretions of the nose and throat contained myriads of the causative organisms, and no measures had been taken to enforce penalties against the careless discharge of these secretions. Twenty years ago the Board of Health of New York City adopted an amendment to the sanitary code against spitting, but that was not so dangerous as unguarded coughing and sneezing. That seemed to be the explanation of this pandemic. The epidemic could have been checked, or at least to a large extent, if this had been realized and proper precautionary measures put into effect. There was a hospital in London where they treated cases of scarlet fever, chicken pox, diphtheria, whooping cough, and other infections in the same ward in adjoining beds, cared for by the same nurses under the same conditions, and there were no secondary infections simply because of the exercise of great care in the disposal of the discharges from the respiratory tract. If this could be done with such diseases, there was no reason why it should not be possible with influenza which was also a disease of the respiratory tract. With all the modern progress in public health there had been no progress made in checking diseases which were scattered primarily and solely in this way, because there had been no progress in enforcing simple measures of cleanliness and decency. Ninety per cent. of the population did not cover the mouth and nose in coughing. This was the lesson which had come with this epidemic.

As to the conditions in the state outside of New

York City some districts had been heavily invaded and some had thus far escaped; in the last week's report there was a summary of cases in those localities where the disease was epidemic which showed about 40,000 in the state outside of New York City. This of course did not represent the actual number, but gave some idea of the extent of the outbreak in the heavily invaded areas.

Major CAREY, chief of the laboratory service of Base Hospital No. 1, said that the great majority of the cases had shown a rather extensive and confluent type of bronchopneumonia, or lobular pneumonia. There was only one case of lobar pneumonia in the series reported on by Major Roberts. A striking feature of these cases was the leucopenia, leucocytes being practically absent. Even smears direct from the tissues rarely showed leucocytes. The vaccine injections had a direct effect on the leucocyte count and in that way limited the course of the disease and influenced results.

Dr. LOUIS FAUGÈRES BISHOP, of New York, said that he had a book entitled *The Annals of Influenza*, published by the Sydenham Society in 1853 covering the epidemics for about 300 years and giving the opinions of the best men of those times as to treatment, and they almost without exception endorsed the antiphlogistic treatment of pneumonia of the influenza type. They used the lancet freely. During the eighteenth century epidemics occurred every three to five years, and there was no doubt that their treatment of pneumonia was founded upon this type, and when the antiphlogistic plan was condemned it was for an entirely different disease. A great many of the very best older practitioners to-day endorsed the early antiphlogistic treatment of pneumonia and believed that it saved many lives, and they quoted such authorities as William H. Thompson, Francis Delafield, etc., to support this contention. It was the absolute duty of those physicians, having the technical facilities, to test this treatment promptly in this type of pneumonia just as they had tested and reported on the use of digitalis in ordinary lobar pneumonia. The crisis in patients treated by aconite was indeed very alarming, but the patients did not die. As a heart specialist the speaker had been called in a number of cases to support the heart in the terminal stage of pneumonia and he had not been successful; he believed that if these patients had been treated with aconite early in the disease many of them would have responded to the active stimulation that was often necessary to tide them over the crisis.

Dr. E. LIBMAN, of New York, inquired of Major Roberts whether the series of cases which were treated without vaccination were under observation at the same time as the series which were treated with vaccine, or whether the two sets of cases overlapped. Major ROBERTS replied that they overlapped.

Doctor LIBMAN considered that this had an important bearing on the results. There had been, during the last week, a change for the better in the severity of the cases of pneumonia. Apart from the cases he had seen in hospital, he had observed between 300 and 450 cases of pneumonia following influenza since the epidemic began. During the first

two weeks the mortality was very high. There was one type of case, very frequent at that time, which had not been so often encountered during the past week, a type characterized by the expectoration of thin bloody fluid which was not frothy and contained no mucus. Nearly all such patients died. During the past week he had been able to make a favorable prognosis in a very large number of cases. Although the results of the vaccination at the base hospital looked good, it was of great importance that further studies should immediately be made, running a series of cases without vaccine at the same time that an equal number of cases of the same type were treated with vaccine. In one of the training schools for nurses connected with a large hospital in New York City, it had been reported that the results of prophylactic vaccination had been so poor that it had been discontinued. Doctor Libman hoped that some one connected with that hospital would give the facts regarding the method that was used because the cause for this failure might lie in technic. Intensive studies should be made with various types of vaccines given in varying doses at different intervals in the hope that a successful method of prophylactic vaccination would be found.

While there were many points to discuss, there were only two that occurred to the speaker at the moment. The cyanosis of the disease sometimes occurred early before there was any marked involvement of the parenchyma of the lung and before there was any evidence of the heart becoming markedly insufficient. He suspected that the cyanosis in at least some of these cases might be toxic in origin especially as it had been found that the pneumococci could produce methemoglobin from the red blood cells and could interfere with their ability to take up oxygen. Major Roberts spoke of the atypical emphysema and the difficulty of recognizing them. As Fraenkel pointed out many years ago the emphysema following the pneumonia of influenza epidemics was very apt to be interlobar in situation. If one could prophesy through the experiences of others, there would be found later in the epidemic more abdominal symptoms and more cases would have symptoms simulating appendicitis. It was important to be on the lookout for these cases and not to operate too early because as a rule they should not be operated upon. In 1901 Doctor Libman saw a number of cases of influenza with symptoms resembling appendicitis which were not operated upon and they had had no recurrence of the attack since that time. Operation was performed in one such case, where the symptomatology was so indefinite owing to the patient suffering from dementia precox that exploration was decided upon, and the appendix was found to be normal. It was probable that such pains were due to the effects of the toxin of the disease upon the sympathetic nervous system. At the same time, one must not for this reason overlook real cases of appendicitis occurring during an epidemic of influenza.

Dr. MAX EINHORN, of New York, added two points in regard to the clinical picture of the prevailing influenza. He had seen a type of case in which no mention was made in the symptoms as expressed by the patient concerning his chest, and yet



upon examination one found distinct pulmonary involvement. The second point was that in a number of patients abdominal symptoms were found to be quite marked; there was tympanites, dullness over the flanks of the abdomen and slight fluctuation. This seemed to be caused by a condition of paralysis of the intestine. Sometimes vomiting was present. In conjunction with the above there were to be found toxic symptoms—slight somnolence, headache, and at times slight delirium. This group was of great importance as it offered a very bad prognosis, usually giving about fifty per cent. mortality. Regarding treatment, in the Lenox Hill Hospital they had tried all kinds of methods, but it appeared to the speaker that alcohol did more good than anything else. In addition large amounts of fluid should be administered. In this hospital there had been 150 cases since the epidemic began, with thirty deaths. The laboratory reported recovering from the sputum the influenza bacillus, streptococci and the pneumococcus of Type IV. There were no Types I, II or III. Many Pfeiffer's bacilli were recovered from the lungs at autopsy. The pneumonia in these cases was undoubtedly secondary to the influenza.

### THE PUBLIC HEALTH COMMITTEE ACTS ON INFLUENZA SITUATION.

At a meeting of the Public Health Committee of the New York Academy of Medicine held on October 21st, the following resolutions were adopted:

#### SNEEZING AND COUGHING IN PUBLIC A MISDEMEANOR.

WHEREAS, It is the belief of most of those who have made a study of the transmission of various diseases that influenza, pneumonia, and other respiratory maladies are generally conveyed through disease germs coughed or sneezed into the air, therefore, be it

*Resolved*, That this committee urges upon the Health Department of this city that, in agreement with the Health Department of New York State, it enact an amendment to the Sanitary Code, making it a misdemeanor for any person to cough or sneeze in any public place without first adequately covering the mouth and nose.

#### THE SHORTAGE OF NURSES.

In view of the acute shortage of nurses that is being felt at the present time when large numbers of people are sick with influenza and pneumonia, the Public Health Committee of the New York Academy of Medicine urges upon the physicians and the public in general that they employ as few nurses as possible for the care of individual patients and that they relieve the nurses as soon as the family is able to care for the patient. It is also urged that in milder cases the nurses be engaged on an hourly instead of a whole time basis and in this way the services of one nurse should be made available for a larger number of patients.

#### TO CONSERVE HOSPITAL FACILITIES.

In order that all available hospital facilities might be devoted to the care of patients suffering from influenza and pneumonia, the Public Health Committee of the New York Academy of Medicine calls to the attention of the surgeons of the city the desirability of postponing the performance of nonurgent operations until the time when the present influenza has run its course. Such a decision on the part of the surgeons will not only furnish larger hospital facilities for the victims of the present epidemic, but will be in the interests of the surgical patients themselves, as it will not expose them to the danger of contracting the disease when in a weakened condition.

## Letters to the Editors.

### FACE MASK IN INFLUENZA.

ROCKEFELLER INSTITUTE,  
NEW YORK, October 21, 1918.

#### To the Editors:

During the epidemic of poliomyelitis in the summer of 1916, I suggested to the New York Commissioner of Health that attending physicians, nurses, and patients, should wear gauze masks, since the exhalation through mouth and nose is a factor in the spreading of the disease. To my surprise I received a reply from the commissioner, stating that the advisory board was against taking such a measure, as it would be of no value. In the issue of the *Medical Record* for August 12th, I published a letter in which I gave my views and in which I embodied the correspondence I had had with the commissioner. Last winter Doctor Weaver, of Chicago, reported favorable results which he obtained from the use of face masks in a hospital for contagious diseases. His communication appeared at the time when the epidemic of pneumonia broke out in the various camps. The mask became quite popular, and its use is now common knowledge. In the present epidemic the spreading of influenza is certainly facilitated by the coughing and sneezing of the patients. Under these circumstances the wearing of a gauze mask could be, to a degree, an efficient factor in checking the spread of the epidemic.

I do not know whether the wearing of a mask is obligatory in the hospitals under the control of the United States and city governments, but I would like to impress general practitioners with the fact that masks should be worn in all cases of actual or suspected influenza. Surely the attending physicians, nurses, and other persons who have to be in the room with the patient should wear masks. Whether the patient should wear a light mask on the face is a matter to be learned from experience; also whether it would be tolerated. The masks ought to be changed frequently. After they have been in use an hour or two, they should be put into an effective antiseptic; after being dried and ironed they can be used again. There should be a sterile mask in readiness for the use of the physician. Thus he will not be the means of the transmission of the disease from one family to another.

S. J. MELTZER, M. D.

### MOISTENING THE MASK WITH ANTISEPTIC SOLUTION.

JEFFERSON MEDICAL COLLEGE,  
PHILADELPHIA, PA., October 17, 1918.

#### To the Editors:

In this present epidemic through which we are passing a great amount of work has been done in the bacteriological laboratory without being able to isolate a specific micro-organism.

In my own studies upon sputum, cultures from the nose and throat, as well as cultures from the sputum, the ordinary bacterial flora of these membranes (nose, throat, and mouth) were observed.

The most constant organism in the sputum was a diplococcus, which in morphology and staining properties could be stated positively as the pneumococcus. Then the Micrococcus catarrhalis, streptococci, and staphylococci were found; and from the throat cultures besides staphylococci, Micrococcus catarrhalis, and some few cultures of streptococci, pseudodiphtheria bacilli were common.

In two or three specimens of sputum, a small thin gram negative bacillus resembling *Bacillus influenzae* was observed, but this organism was never recovered in pure culture, and was only noticed in three or four instances in mixed culture. The bacillus of Friedlander was found in a few cultures from the throat.

In all, one hundred and twenty-five or more studies were made, counting sputum, cultures from same, and cultures and spreads from the throats of those suffering from the infection.

In most all cases of patients dying of the infection, edema of the lungs was very apparent, and when a body arrived at the mortuary, cultures were made from the fluid exuding from the mouth or ears or nose. In no case was an organism isolated which resembled in any way the *Bacillus influenzae*.

Appreciating the fact that masks would be a protection in this disease, gauze from four to eight or more layers in thickness was worn over the mouth and nose.

Having had some experiments performed with brilliant green as an antiseptic, such a decided germicidal action was exhibited by this aniline dye in high dilutions (1-16,000) that I decided to use this solution on the masks. Enough brilliant green was added to distilled or tap water to make the solution bluish in color and transparent, but not enough to stain the hand. The mask was made damp with this solution and worn for several hours, discarded, boiled for at least thirty minutes, and dried.

Naturally, where more than eight layers of gauze are used this is in itself a bulky affair, but where eight or four layers of gauze are used this blue solution can be applied and worn easily without much discomfort. I wore a mask thus treated for three and one half hours; an assistant also wore one for the same length of time. A piece of the mask about three quarters of an inch square was cut out of the masks while still in situ, with sterile instruments, and placed in bouillon. No growth was noticed up to ten days. Several other masks were obtained from nurses who had worn them for a variable length of time—from ten minutes up to several hours—and while these were not sterile, in no instance were streptococci found and the pneumococci were very few.

I also had pieces of gauze saturated with the solution placed over the telephone transmitter, and after forty-eight hours I removed a piece by means of sterile instruments and immediately placed it in sterile bouillon. After seven days a mould appeared, but no other organism developed. In one instance, a piece of a mask removed from a nurse remained sterile for twenty-four hours.

I believe that moistening the mask with some antiseptic solution is better than wearing the mask dry, as particles of air and dust are inhaled through a dry mask and not inhaled through the moistened one. It acts exactly as in filtering air in large factories or department stores, where a sheet of water or a moistened sheet is used to hold back foreign dust particles.

RANDLE C. ROSENBERGER, M. D.

#### MODERATION VERSUS INTENSIVE TRAINING.

SIDIS PSYCHOTHERAPEUTIC INSTITUTE,  
PORTSMOUTH, N. H., October 18, 1918.

##### To the Editors:

Dr. Brooks, Surgeon General of the Massachusetts State Guard, gave to the press a statement about his experience of the influenza epidemic. If I understand Dr. Brooks correctly, he seems to ascribe the epidemic to the crowded condition of the ships, vitiated air, and lack of sunshine. Permit me to ask, through the columns of your journal, a few questions which may possibly prove of some practical interest:

Are we to regard the present epidemic as being mainly the result of crowded ships? Should lack of fresh air and absence of sunshine be alone considered as the principal factors of the influenza and pneumonia plague which rages all over the country? Are there not other factors equally important? Is it not biologically true that when an organism is suddenly exposed to intense exertion, exhaustion, overstrain, fatigue, cold, etc., it becomes reduced in vitality; that the general resistance to infection is lowered and that it is apt to fall an easy victim to invasions by pathogenic microorganisms? May we not, in our present plight, take such factors into consideration? May it not also be that in the present epidemic we have also to deal with such important predisposing conditions as overstrain, exhaustion, fatigue, exposure to cold, etc., due to the sudden, quick hardening process of severe training and drilling of millions of young men, unused to hardships and exposures, unable to react and be adapted to conditions of severe intensive training, fit for vigorous constitutions of veterans who have been fitted by the natural process of the sur-

vival of the fittest? Is it not quite possible that in accounting for the widespread epidemic that has broken out in the camps and among the civilian population we have to reckon with the consequences of such a fundamental factor as the intensive process of raising and training armies of millions of young adults in the briefest possible time, in a few months, in a few weeks? May we not expect that nature will exact its full penalty for the feverish activity of getting quick results?

Have not Spencer, Clouston, James, and others warned this nation against its "breathless hurry," "painful tension," "convulsive eagerness," and, more specially, against its intense "solitude for quick results?" Have we ever paid heed to the warnings of those great men?

In this supreme moment of national life may it not be the sacred duty of the medical man to sound a warning note of danger against any and all intensive processes of work and training, against the methods of getting quick results at any cost, against sudden hardening and exposure of millions of our young generation? May it not be well and practical to take a critical account of our methods of procedure, methods which may possibly defeat the ultimate purpose of a vigorous and healthy national life? May it not be quite probable that in the hurry of obtaining quick results on a large scale, by intensive training and hardening, we really exhaust, waste, and impair the energies of our people, drain the sources of our national man power, and expose the nation to serious dangers of virulent plagues?

If Dr. Brooks finds it necessary to point out the dangers of crowding in space, may not the medical profession find it requisite to warn the nation against the still greater dangers of crowding in time? Is it not probable that the medical profession may perform a great and lasting service to the country, if, with the greatest thinker of humanity, Aristotle, special stress is laid on the fundamental principle of moderation?

BORIS SIDIS, M. D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Radiographies de l'adulte normal.* Par E. BORDET. Atlas de vingt planches. Paris: A. Maloine et Fils, Éditeurs, 1918. Pp. 21.

This work presents many valuable suggestions regarding radiography. The intention is that a standard position shall be adopted for each part of the body so that the radiograph may be compared with the life size illustration upon which every structural detail is clearly marked and named. A single example is the interosseous line on the fibula, which might be mistaken for a splitting oblique fracture, the result of a twisting force. The position adopted for the anteroposterior view of the head, with the central ray passing below the occiput, differs from the standard in this country, which has the central ray twenty degrees above the base line formed by the root of the nose and the external auditory meatus. The position in the book does not show the frontal sinus as well as ours. The troublesome details of regulating the degree of vacuum in the gas filled röntgen tube makes one wonder why the Coolidge röntgen tube with its instant control throughout the entire range of x ray quality is not referred to. The size of the book, twelve by fifteen inches, necessitated by the life size illustrations, makes it inconvenient for the desk or book case, but the book is of the greatest practical value.



*The Indian Operation of Couching for Cataract.* Incorporating the Hunterian Lectures. By ROBERT HENRY ELLIOT, M. D., B. S. Lond., Sc. D., Edin., F. R. C. S. Eng., Late Superintendent of Government Ophthalmic Hospital, Madras. With Forty-five Illustrations. New York: Paul B. Hoeber, 1918. Pp. viii-95. Price, \$3.50.

This little book gives briefly the history of the operation of couching from the time of Celsus, and the technic of the different methods employed. Then follows a description of the Indian coucher and of his habits, with a statistical account of the results observed. The most interesting part of the book is that devoted to the pathological anatomy of couched eyes, which is the Hunterian lectures delivered before the Royal College of Surgeons in 1917. This forms nearly half of the work and is well illustrated. The final chapters are on the diagnosis of couched cataracts and contain points of clinical interest with regard to such cases. The work is of interest to the student of the curious, and of practical value to the eye surgeon where such operations are still performed, but is of no great value to most ophthalmologists in this country.

## Births, Marriages, and Deaths.

### Died.

BLAIR.—In Roxborough, Pa., on Wednesday, October 9th, Dr. Samuel C. Blair, aged sixty-three years.

CHAPPELL.—In New York, N. Y., on Saturday, October 19th, Dr. Walter F. Chappell, aged sixty-three years.

CLARK.—In Baltimore, Md., on Tuesday, October 15th, Dr. Admont Halsey Clark, of Johns Hopkins University, aged thirty years.

CAVERLY.—In Rutland, Vt., on Wednesday, October 16th, Dr. Charles S. Caverly, aged sixty-two years.

CORSON.—In Collegeville, Pa., on Wednesday, October 9th, Dr. William H. Corson, aged thirty-four years.

COUILLARD.—In Manchaug, Mass., on Saturday, October 12th, Dr. Pierre L. Couillard, aged sixty-eight years.

CRAGIN.—In New York, N. Y., on Monday, October 21st, Dr. Edwin Bradford Cragin, aged fifty-nine years.

CUNIFF.—In Philadelphia, Pa., on Monday, October 7th, Dr. Robert J. Cuniff, aged thirty-seven years.

CUNNINGHAM.—In New York, N. Y., on Monday, October 21st, Dr. Bertram L. Cunningham, aged thirty years.

DODSON.—In St. Michaels, Md., on Thursday, October 10th, Dr. Robert A. Dodson, aged eighty-two years.

DOLAN.—In Glens Falls, N. Y., on Friday, October 4th, Dr. M. M. Dolan.

EDMUNDS.—In Boston, Mass., on Tuesday, October 1st, Dr. Charles S. Edmunds, aged twenty-five years.

ELLIS.—In Port Chester, N. Y., on Wednesday, October 16th, Dr. Charles H. Ellis, aged thirty-four years.

FLY.—In Baltimore, Md., on Saturday, October 12th, Dr. Ernest Fly, of Johns Hopkins Hospital.

FOLZ.—In Philadelphia, Pa., on Thursday, October 10th, Dr. James F. Folz, aged forty-five years.

FRANKLIN.—In Hightstown, N. J., on Wednesday, October 9th, Dr. Charles Montanye Franklin, aged thirty-eight years.

FRENCH.—At Freeport, L. I., on Friday, October 18th, Dr. Harold Milne French, aged thirty-five years.

FRIEDMAN.—In New York, N. Y., on Friday, October 18th, Dr. Alfred Friedman, aged sixty-seven years.

GOLDEN.—In Manchester, N. H., on Saturday, October 12th, Dr. J. L. Golden, aged seventy-three years.

GRAY.—In Baltimore, Md., on Sunday, October 13th, Dr. Ernest George Gray, of Johns Hopkins University.

HASSETT.—In Lee, Mass., on Friday, October 11th, Dr. J. J. Hasset, aged fifty-nine years.

HEAP.—In New Bedford, Mass., on Sunday, October 6th, Dr. Richard D. Heap, aged thirty-six years.

HINE.—In Waterbury, Conn., on Sunday, October 6th, Dr. Harry Kingsley Hine, aged thirty-one years.

HOECKH.—In Buffalo, N. Y., on Saturday, October 12th, Dr. John G. Hoeckh, aged thirty-three years.

HORTON.—In Edgerton, Wis., on Saturday, October 5th, Dr. Clyde S. Horton, aged thirty-nine years.

KEELY.—In Brooklyn, N. Y., on Sunday, October 20th, Dr. William A. Keely, aged fifty-one years.

JACKSON.—At Fort Oglethorpe, Ga., on Saturday, October 12th, Dr. Howard B. Jackson, Captain, Medical Corps, U. S. A., aged forty-five years.

JAMES.—In Laurel, Del., on Sunday, October 13th, Dr. Charles Emora James, aged thirty-four years.

LALIBERTE.—In New Bedford, Mass., on Thursday, October 3d, Dr. Edmund Laliberte, aged twenty-nine years.

LAMBERT.—In Riverside, N. J., on Tuesday, October 8th, Dr. Chauncey B. Lambert.

LEBRET.—In Montclair, N. J., on Thursday, October 17th, Dr. Gerard H. Lebre, aged thirty-two years.

LITTLE.—In Lawrenceville, N. J., on Saturday, October 12th, Dr. John Fordyth Little, aged thirty-eight years.

MARKS.—In New York, N. Y., on Tuesday, October 15th, Dr. David Marks.

MCPhAIL.—In Brooklyn, N. Y., on Wednesday, October 16th, Dr. Leonard C. McPhail, aged sixty-three years.

MELL.—In Fredericksburg, Va., on Tuesday, October 15th, Dr. Patrick Hues Mell, aged sixty-eight years.

NASON.—In Winterport, Me., on Saturday, October 12th, Dr. Charles J. Nason, aged forty-one years.

O'CONNOR.—In Princeton, N. J., on Saturday, October 19th, Dr. Joseph T. O'Connor, aged seventy-eight years.

O'NEILL.—In Jersey City, N. J., on Monday, October 14th, Dr. Francis Joseph O'Neill, aged thirty-three years.

ORDWAY.—In Everett, Mass., on Tuesday, September 24th, Dr. Charles A. Ordway, aged forty-five years.

RICE.—In Delavan, Wis., on Wednesday, October 2d, Dr. Ray Howard Rice, aged forty-four years.

RYTTENBERG.—In Port Chester, N. Y., on Thursday, October 17th, Dr. Charles Ryttenberg, aged thirty-four years.

SHORDONE.—In New York, N. Y., on Friday, October 18th, Dr. Vittorio Shordone, aged fifty-six years.

SIFF.—In Brooklyn, N. Y., on Sunday, October 20th, Dr. Coleman S. Siff, lieutenant, Medical Corps, United States Army, aged twenty-four years.

SIMONS.—In Canajoharie, Ill., on Tuesday, October 1st, Dr. Frank E. Simons, aged sixty-seven years.

SMITH.—In Germantown, Pa., on Thursday, October 10th, Dr. George L. Smith, aged forty-seven years.

SMITH.—In Norwich, Conn., on Friday, October 4th, Dr. Newton P. Smith, aged sixty-six years.

STARR.—In Hartford, Conn., on Monday, September 30th, Dr. Thomas K. Starr.

STEVENSON.—In Baltimore, Md., on Thursday, October 10th, Dr. H. Burton Stevenson.

STOELPER.—In Philadelphia, Pa., on Tuesday, October 8th, Dr. Carl Stoelper, aged thirty-six years.

THERRIEN.—In Marlboro, Mass., on Sunday, October 13th, Dr. Edward Therrien, aged sixty-two years.

THOMPSON.—In Flatbush, L. I., on Wednesday, October 16th, Dr. Edward Middleton Thompson, aged forty-one years.

URICH.—In Lebanon, Pa., on Monday, October 14th, Dr. Isaac K. Urich, aged fifty-five years.

WATTS.—In Pawtucket, R. I., on Monday, October 7th, Dr. Walter A. Watts, aged thirty-eight years.

WELLINGTON.—In Hartford, Conn., on Tuesday, October 8th, Dr. William Winthrop Wellington, aged fifty-nine years.

WEST.—In Laurel, Del., on Sunday, October 13th, Dr. Earl Clifton West, aged thirty-five years.

WOOLLEY.—In Pelham Bay, on Sunday, October 6th, Dr. Harold Townsend Woolley, aged twenty-three years.

YEATON.—In Medway, R. I., on Friday, September 27th, Dr. George W. Yeaton, aged forty years.

YOUNG.—In Geneva, N. Y., on Tuesday, October 1st, Dr. Gardner B. Young, aged fifty-nine years.

YOUNGMAN.—In Ardmore, Pa., on Friday, October 11th, Dr. Monroe Dart Youngman, aged thirty-two years.

# New York Medical Journal

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## Original Communications

### NEW YORK STATE'S PROBLEM OF THE CARE OF THE FEEBLEMINDED.\*

By WALTER B. JAMES, M. D.,

New York,

President, New York Academy of Medicine.

When your president, Doctor Tilney, invited me to open this discussion on the problem of the feeble-minded I was glad to accept, because I realize that the solution of this difficult problem is much more apt to be found if we can have the sympathy and cooperation of the members of this distinguished society. The Neurological Society has always stood for all that is best in its department of medicine, both as far as neurology is concerned and in its relation to the public health and welfare.

Although I realize how active and interested a part your society has always taken in public discussions of matters connected with neurology and psychiatry, nevertheless, because I know how easy it is for busy physicians to fail to follow the many things that are done in Albany, therefore I am going to take the liberty of stating the present situation of the question of the feeble-minded as far as its relation to the State government is concerned.

It is almost two years since the legislature, impressed with the overcrowded condition of the State hospitals for the insane and by the general incoordinated and more or less unsatisfactory relation of the institutions for the feeble-minded to the State government, created the State Hospital Development Commission, whose duty it became to study and report upon all of these institutions and the care of the insane and the feeble-minded, with recommendations for such measures as might be needed in the interest of both groups of unfortunate. In the course of its investigations, the commission became convinced that the institutions for the feeble-minded suffered in that they were not coordinated under a single control commission, as in the case with the hospitals for the insane. I had the honor of being one of the governor's two appointees on the Development Commission, and I was much impressed with this state of affairs.

Accordingly the commission recommended that the legislature create a new and separate body to care for the institutions for the feeble-minded, and this was done last April, when the State Commission for the Feeble-minded was created by act of

legislature. There had been previously, many legislative committees to study and report upon this subject, and recommendations had been made and certain voluminous reports had been published, but until this time no concrete action had been taken, looking to the actual remedying of these difficulties.

Realizing the inadvisability of creating any new salaried positions that could possibly be dispensed with, it was decided that the makeup of the new commission should consist of a chairman who should be a physician who had had at least ten years of actual practice of his profession, and that the other two members of the commission should consist of the secretary of the State Board of Charities and the fiscal supervisor, both of whom were already receiving salaries in their respective positions, and both of whom were officially in close relation with the four institutions for the care of the feeble-minded.

The commission was charged with the duty of administering all laws that have to do with the feeble-minded, of planning a census, and of keeping a record of all persons in the State who are feeble-minded, of estimating the capacity of the institutions for the feeble-minded in the State, of inquiring into and establishing colonies and clinics in connection with the institutions, making rules for the reception, treatment and training, discharge, and transfer of inmates, and of making recommendations for such new institutions as might be needed. The commission was also commanded to draw up and present to the legislature a commitment law for the feeble-minded. The commission is intended to be a permanent one, and to coincide closely in its duties and powers with the State Commission for the Insane.

The commission came into existence on July 1, 1918, and began at once to study all of the institutions and other State activities that are maintained for the benefit of the feeble-minded.

As you all know, there are a good many agencies throughout the State which have to do with these patients. There are four asylums in which they are maintained and which accommodate about 4,000, not including the city institution at Randall's Island. Then there are the ungraded classes in the public schools and the clinics that are being held in various parts of the State and connected sometimes with universities or with hospitals, and in many cases with the courts, and all individually doing good work. Then there are large numbers of mentally

\*Address delivered at the Three Hundred and Sixty-ninth Regular Meeting of the New York Neurological Society, October 1, 1918.



defective persons who are located in jails, penitentiaries, reformatories, training schools, and county almshouses, and one of the most important functions of the commission will be to try to correlate these various groups of persons and to bring their diagnosis, study, and management into close relation, in order especially to avoid the expense of duplicating agencies for doing the same kind of work. Then there are training schools needed in the institutions for the feeble-minded for the purpose of educating attendants and especially teachers for the ungraded classes in the public schools.

But there is a whole group of questions that arise, for answers to which we must turn to the medical profession. There is the great and burning question of the differentiation between primary and secondary mental defectiveness, which in the light of Weismann's law—that acquired characters are not transmitted—becomes so acutely important in relation to the question of sterilization and the prevention of child bearing. It is perfectly evident that if the question of child bearing could be definitely disposed of, many of the most trying difficulties would drop away from the problem itself. Newark, with its 800 or 900 women of child bearing age, segregated there for the purpose of preventing them from procreating, always gives one food for very serious thought.

In addition there are many questions as to what type and what degree of education or training can be advantageously applied to these persons and at what age it is best to begin.

There is also the great question of the delinquent feeble-minded, whom we find in such considerable numbers in every reformatory and prison. The very valuable work of Dr. Bernard Gluck has pointed this out very vividly in connection with Sing Sing Prison.

The recent brilliant work by Doctors Fernald, Southard, and Taft, of Boston—*Waverley Researches in the Pathology of the Feeble-minded*—a memoir presented to the American Academy of Arts and Sciences, in May of last year, throws much light upon the brain conditions of mental defectives and opens up a fascinating line of inquiry into the relation between primary and secondary imbecility with all the questions that have to do with procreation and eugenics.

The work of Doctor Bernstein, of the Rome Custodial Asylum, in establishing colonies where these unfortunates can live a life that seems to be about midway between a normal happy home life and the dreariness of a large institution, suggests the possibility that ways might be found for utilizing, for the public good, the large human asset which is shut up in our various institutions, a detriment to the individuals themselves and a loss in labor to the community. This work is still in the experimental stage, but certainly justifies further careful trial.

The Lockwood bill, a recent law which requires that whenever in any school there are as many as ten pupils who are as much as three years behind in their studies, they shall be formed into a special class with a special type of teacher, is one distinct

step in advance in the mental hygiene of our Empire State.

The Prison Commission is inquiring into the matter of the feeble-minded delinquents, and various private committees are doing helpful work by their investigations, so that, altogether, the subject of the feeble-minded today is occupying quite a good deal of public attention and offers a fascinating field of inquiry; and probably there are few others in which there is so much to be done in the way of human betterment through careful study of conditions and possibilities from the point of view of modern medical science.

The field of research in mental defectiveness has hardly been touched in our country. The work above referred to from Waverley, gives promise of stimulating further work that is sure to be productive of good results.

This war, in which we are so intensively engaged, and the imperative need of maintaining a maximum of efficiency in our armies, has made it imperative that all mentally affected be weeded out of them. This mental defectiveness and mental disease have become an acute army question, and an immense organization had to be developed to seek out, understand, and treat these cases. Much useful knowledge will doubtless be obtained in this way, and it is to be hoped that more young medical men will be stimulated to devote themselves to this fascinating and modern branch of medicine. It is likely also that at the conclusion of the war a large number of able young men skilled in psychiatry will be turned back into civil life to occupy their time, attention, and energies with the many problems thus presented.

I am quite aware that I have succeeded in outlining, only very briefly, our problem and the steps the State has taken to attempt a solution of it, steps toward which a large number of social and other agencies have looked with much eagerness for a long time.

I have not attempted to show how we expect to meet it, for necessarily our plans are still only in the formative stage, our commission being in existence only three months as yet; but we have an office established here in New York city where active work is already being done.

There are other and difficult questions constantly arising, and on these we shall ask the advice of the profession. For instance: What is to be the ultimate fate of the feeble-minded of New York city, Are they to continue to be cared for by the city, on Randall's Island, or should they be brought under State control as was done successfully with the city's insane a good many years ago? There is no doubt that conditions upon Randall's Island leave much to be desired, but these are questions that can be settled only after careful study and much serious thought.

This then, gentlemen, is the situation and these are the problems, and this is why the commission is so glad to turn to the medical profession and to ask for its earnest aid in its important and difficult task.

7 EAST SEVENTIETH STREET.

## NERVOUS AND MENTAL DISTURBANCES OF INFLUENZA.

BY SMITH ELY JELLIFFE, M. D.,

New York.

*(Continued from page 728.)*

The autopsied case of v. Leyden (1893) is one of the first cases of influenzal Landry's polyneuritis on record. Bernhardt, Eisenlehr, Buzzard, Havage, Holmen, Westphalen, and others reported early cases in the 1890 epidemic. Senator in the discussion of v. Leyden's patient called attention to an important point in the pathology of this affection which will be taken up later—namely, not only the tendency to edematous infiltration but to the minute hemorrhagic infiltration or extravasation in the nervous tissues. This is not a massive hemorrhage and in certain patients with influenza dying of pneumonia Foa has described this type of infiltration and edematous swelling in the cord structures.

Space does not permit entering into a discussion of the respective parts played by peripheral and central changes in this rare but very sinister type of disturbance. V. Leyden, Bailey, Ewing, and others have discussed the polynuritic aspect, while Bing, Van Gehuchten, Giovanni, Raymond, Strümpell, Medin, and others have taken it up from the aspect of poliomyelitis.

An interesting polynuritic syndrome is that of *pseudotabes*. These cases have been described as acute ataxias by some observers; I have seen a few only. The absence of positive Wassermann signs has aided in the diagnosis. Dejerine has discussed them fully. Putnam, Sottas, Liverato, and others have described them. Ataxia, Romberg's sign, sensibility changes, and loss of knee jerks are the usual symptoms. The majority of the influenza polynuritics are motor, at least we have Bosser's statement to the effect that they are exclusively motor, but there are many observations showing that the sensory neurones may at times be deeply involved. Pressure over the nerve trunks in these ataxic cases is usually painful. The Lasègue sign is usually positive, whereas in the true tabetic, nerve tenderness and the Lasègue signs are usually absent. Epicritic sensibility changes are more apt to be present in these polynuritic pseudotabes cases, and the distribution of the sensory modifications is apt to be peripheral rather than radicular. A few cases of radiculitis from influenza are on record (Feinberg).

*Spinal cord changes.*—Myelitis: Not only are extensive changes in the peripheral nerves possible symptoms of influenza, even in what appear to be mild cases, but active and severe involvements of the spinal pathways and of the spinal meninges take place. The extremely severe types of ascending myelitis—related to and, perhaps, indistinguishable from the severe ascending neuritis—Landry's type, have already been discussed. They are rare. Dorsolumbar myelitis resulting in a flaccid or a spastic paraplegic picture are more often encountered. It is, however, the most frequently observed type of influenzal myelitis. I recall but one case seen in private practice. The grippé myelitides are apt to be mild, however, and often clear up very satisfactorily. The onset is apt to be slow, the

symptoms developing progressively. This is more true of the spastic types. The flaccid types usually have a more furibund aspect; several hospital cases seemed to show this variation. Varying grades of involvement are to be expected.

In the more distinctly hemorrhagic cases the onset is more acute and there is a tendency to the formation of disseminated foci. This develops, not only in the observation of the spinal symptoms, but is also seen in the occurrence of other focal involvements in other parts of the cerebrospinal axis. Thus optic neuritis and ophthalmoplegias have occurred with the spinal myelitis syndromes. Two personally seen patients with the disseminated type resembled, what is often termed, acute multiple sclerosis. Bramwell, Maixner, Marburg, Massalongo, Nolde, Oppenheim (six cases), Rendu, and others have reported similar findings. Some of these patients go on to recovery and others run a more chronic course and are often viewed as true cases of multiple sclerosis of the so called secondary type. The influenzal myelitides usually have a good prognosis; fatal cases, however, are on record and would probably be more often reported here in this country were it not for the many obstructive conditions surrounding opportunities for postmortem observation.

Eulenberg and Determann have reported curiosities in the form of spinal foci which have caused the Brown-Séquard syndrome. Capillary exudations and minute bleedings occurred in small areas involving but one half of the spinal cord. In Determann's case tetany also was present and recorded.

Before leaving the spinal cord syndromes, and particularly the differentiation of Landry's paralysis, poliomyelitis, etc.—questions which are of much importance neurologically and which are still in need of more complete clarification—a word may be said concerning the attitude of which the Scandinavian, Borgström, is the chief representative. He holds that there is a great polymorphism in the group of organisms which cause influenza and poliomyelitis. He thinks they are interchangeable, and has entered the polemic field chiefly against Wickmann in an attempt to prove, on the basis of the personally observed cases in Sweden, that influenza and poliomyelitis are the same disease. Wickmann's so called abortive cases, he maintains, are certainly to be included in this conception. His analyses, however, are filled with faulty presuppositions, his neurological technic in examination, particularly of the vegetative nervous system and of the sensory nervous system, is so faulty that it is evident that he oversteps the mark. At the same time it has been considered worth while at this time to dwell for a moment on the fact that severe spinal cord disease, while a particularly rare form in influenza involvement, nevertheless is one of the things that does happen, and that the poliomyelitic form is a possibility. The pathological differentiation of the types of lesion is still to be decisively pronounced upon. A great deal is known of the pathology of poliomyelitis; very little of that of influenza. In certain cases of influenza dying of pneumonic complications the changes in the spinal cord have been observed.

*Brain involvements.*—From the very earliest times the cerebral involvements in influenza have been



noted. The almost universal headache, the frequent occurrence of delirium, with or without high fever, have seemed to accentuate the belief among nearly all of those who have had experience with influenza that the brain structures are involved early. For the most part it is true temporarily, for the headache, to speak of the most prominent conscious symptom, usually passes with the severe pains in other parts of the body within three or four days, but in some epidemics the cerebral involvements are very pronounced and extremely severe. In all the epidemics certain cerebral symptoms are present.

While the headache of influenza resembles in most respects that of a number of other infectious diseases, still it is characteristic enough to have earned a special title early in the science of nosology. Epidemic headache, cruel and severe, was the appellation given it by Sauvages. It is cruel; at times it is fiendish, and three marked types are distinguishable. There is an early headache, which is primarily due to vegetative functional alterations in blood pressure, in the nutrition of the vegetative nervous structures of the trigeminus, particularly of the nervi vasosorum. This seems more closely related to the reaction to the toxemia of the grippe organism. It is a headache which is usually all over the inside of the head, giving a sort of sense of internal explosion, as if the head would burst. The type is frequently spoken of as a congestive headache. A number of other toxins seem to induce a closely similar vegetative nerve reaction as an indication of the attempt at vascular control. At times this headache, still in the toxic anaphylactic functional realm, may be more sharply localized. This localization, frontal, may be associated with more severe local infectious signs, such as nasal and frontal sinus predominance; occipital and lateral, when the mastoid sinus is predominantly involved.

When an invasion of the meninges occurs by the Pfeiffer bacillus, the various localized or diffused mild or severe types of influenzal meningitis occur. The headache becomes usually more of a dull character, and following the type of meningitis, active more rarely, comatose, lethargic more frequently, the headache seems to run with the meningitis and is mingled with the general meningitic series of symptoms.

A third type is particularly interesting and important. I have seen a large number of postinfluenzal headaches of a particularly severe and protracted type. So intense and so prolonged have they been that they have come in consultation as possible brain tumors. The postinfluenzal neurasthenoid syndrome is not now under discussion. I am speaking of patients who have not been very sick with the influenza, save perhaps they have all shown an extremely intense reaction to the toxemia; they have been sick for the most part not over two or three days. There has been, with these cases, a very severe general reaction with a marked sense of great illness. The sthenic reaction type has been characteristic. After recovery, which has been uneventful, they have developed a severe generalized or, more often, occipital head-

ache. This has been peculiar, in that if the patient does nothing he may be free from pain, but the moment he attempts any labor, reading, writing, concentration of effort, the pain is so intense as to force him to desist all effort. Three such patients could not even write a letter or read a paragraph in a newspaper without the onset of the headache; otherwise they were in excellent health. While I am inclined to believe that behind this postinfluenzal headache situation possibly certain definite psychical components may have been present, the fact remains that the influenza brought the pain into the foreground of active consciousness. Its function I could not learn. These headaches have persisted from three to eight weeks and have all cleared up almost as quickly as they came.

*Meningitis.*—Spinal types as well as cerebral types are known. The bacteriological evidence is now beyond cavil, for the microorganism has frequently been obtained by lumbar puncture, cerebral puncture, blood culture, postmortem culture, and by staining methods in postmortem examinations. A great variability in grades of infection is known. The simple vascular preinfection stages have already been spoken of; these are usually the more benign types and recover soon. Possibly the severe headaches which have just been mentioned may represent serous meningeal types, without infection or with minimal localized infection. Serous meningitis, then, may be a possibility. I know of no definite proof of this for the only possible type which could be proved, i. e., the focal infectious type. One patient operated upon for possible brain tumor showed a focalized serous meningitis. The history of onset of the difficulty closely following a severe influenza made this etiological factor a possibility, but culture experiments with the fluid were negative and as the patient still lives, the etiological factor is still uncertain.

Acute meningitis cases, found at all ages, more frequent apparently in childhood, especially in the milder type, may be of this congestive or hypertensive type with minimal focalized infection. A second degree of more serious involvement constitutes the suppurative meningitides of pure Pfeiffer type, or mixed with other microorganisms, notably the pneumococcus and streptococcus. The Pfeiffer microorganisms have been isolated, closely, following the discovery by Pfeiffer in 1889, by Pfühl, 1892; by Slavyk, 1898; by Trouillet et Esprit, Mao, 1903, and many others.

Influenzal meningitis differs little from other types of meningitis. It is usually an extremely severe disease and the differential diagnosis is difficult without lumbar puncture or blood culture. Grasty has called attention to a difference in the leucocyte count of influenzal meningitis stating it to run rarely above 15,000, while other purulent meningitides are apt to run as high as 30,000 to 40,000. Forbes and Snyder in a more recent study of leucocytes in influenza in general find an absence of hyperleucocytosis as a general feature of the disease, with or without any meningitis.

To the neurologist the meningeal and encephalic syndromes are still a very large grab bag, out of which, by careful clinical and laboratory observa-

tion, much may be chosen with certain degrees of definiteness. Still there are numberless patients, viewed in the large, who develop meningeal or encephalic syndromes of extremely perplexing characters.

In the epidemic of 1890 I was a hospital interne and my first personal and professional baptism was in the influenza epidemic of that year. Since then from time to time I have seen many of the syndromes which have been spoken of here. Occasionally there has been presented a type which has received of late some special mention, in which it has not been certain whether one has to do with botulism (see English reports), poliomyelitis, or an unknown infectious disorder involving the structures of the midbrain. The French have been working at it as lethargic encephalitis and attention has been already directed to it here, when speaking of paralysis of the oculomotor nerves.

The type of disorder referred to has been present in Austria, England, Italy, and France and has been given several names. It is characterized by acute onset with chilliness, headache, and fever; nausea and vomiting are occasionally present. Then a series of symptoms develops in which great lethargy and cranial nerve palsies occur. The lethargy, at times spoken of as narcolepsy, is very profound. It may come on slowly with heavy eyelids—complicated by organic ptoses in the eyelids—and an irresistible torpor. The patient may be aroused, wake up, answer in responsive or irresponsible monosyllables and sink again into deep unconsciousness. The patient may not be waked up sufficiently to be fed, urination and defecation taking place in this deep stuporous state. Occasionally this is broken by nightmares or at times a muttering delirium. Death may ensue, the patient developing Cheyne-Stokes respiration and going out. In the patients who recover, which is the rule, the lethargy slowly diminishes and the patient comes to himself gradually.

The cranial nerve palsies are chiefly of the oculomotor group; either external, internal, or double ophthalmoplegias are observed. This paralysis is a nuclear palsy, solely motor, without the neuralgic pains spoken of under the head of the neuritis and oculomotor palsies. The cranial nerves affected are chiefly of the mesencephalic localization—third, fourth, sixth. The paralyzes are usually partial, dissociated and incomplete. Ptosis is usual; diplopia not uncommon; the pupillary disturbances rare, at times very pronounced. Jacob and Hallez have noted transitory Argyll-Robertson signs. Paralyzes of accommodation are frequent (Harris).

Double facial palsy may occur; trigeminal, hypoglossal and glossopharyngeal palsies have been noted. Sensory changes may also occur, and other variable symptoms such as convulsive seizures, contractures, hyperesthesia, anesthesia, catatonic or cataleptic states. Sergent's white line is fairly constant. Although too few cases are recorded to give reliable statistics, the mortality seems to be fairly high. Sainton quotes thirty-five per cent. in the French series and twenty-five per cent. the English series. The severe type seems to be marked by great thermoregulatory disturbance. The fever mounts rapidly and does not fall. The signs of infection are very

profound. Death takes place in from eight to twelve days. The subacute type shows a rapid rise in temperature, then it falls, and has an up and down course between 99° and 102° F. for some length of time—four weeks to two months. Lumbar puncture is usually negative, a fact of considerable importance in separating this disturbance from epidemic cerebrospinal meningitis. No signs of meningeal irritation are present and the steplike mode of progression so frequent in the meningoencephalitis of infectious origin is not present.

In the autopsied cases reported on by Sainton, Pierre Marie et Tretiakoff, and Caussade, attention is called by the first observer to the incongruity that exists between the severity of the symptoms and the paucity of the findings. We are here reminded again of Senator's suggestions respecting the minute characteristics of the changes in the cord in the myelitides, and certain cases of hemiplegia without visible signs—edemas probably—come to mind. Minute hemorrhagic suffusions or microscopical hemorrhages seem to mark the congested areas in the mesencephalic structures. Histologically the hemorrhagic suffusion is most marked. In Marie's cases degeneration of the cells of the locus niger was a marked feature. The general character of the lesion is that of a polioencephalitis histologically undifferentiated from other types of polioencephalitis, not including the syphilitic or tuberculous or malarial types. Whether the influenza bacillus is able to cause this type of lethargic meningoencephalitis is still to be proven. The cases reported have all of the features of an acute infectious disease. In the early epidemics of 1889-1900 such case reports began to appear in the literature. Henry Young called it grippe catalepsy. Later studies of Longuet (1892), Wolf, Bozzali (1900) reported cases which were attributed to influenza. Thus far in the recent studies no definite organism has been reported.

Other types of encephalitis have been reported since 1890 involving not only the cerebrum, but the cerebellum as well. Guttermann (1900), Pfühl, (1892-1897), Nauwerck, and others have isolated the organism from the infected foci. A great diversity of clinical pictures has resulted from the many possibilities of such infectious foci. Abscess has been the termination in some of the cases.

Influenza hemiplegia with or without aphasia has been, personally, the most frequently observed type of symptom in this field. The otologists undoubtedly observe the abscess cases from ear or mastoid extension, which are either purely influenzal or mixed infections. Monoplegias, choreas, epilepsies, and abscesses are among the possibilities which have been reported. Influenza, as providing the necessary upset to precipitate a cerebral softening in an arteriosclerotic of sixty to seventy years, has been not infrequent in my experience. These softenings have occurred in various parts of the brain and have given rise to a very diverse syndrome varying from the slightest types of motor contractures or loss of sensibility to the advanced softening of a terminal dementia. Aphasias and mental confusions have been not infrequent and have for the most part had a good prognosis.

(To be concluded.)



## PSYCHOPATHIC CONTROL OF PROSTITUTION.

By J. O. COBB, M. D.,  
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The mobilization of the great armies now at war, with all the stupendous sanitary problems involved, has enabled sanitarians to assemble and study certain mass data not before obtainable in reliable figures. These data have been especially valuable in the study of venereal diseases. The careful surveys now in progress in our own country have already uncovered an astounding and alarming condition of society undreamed of by the general public, and only partly comprehended by certain investigators in civic welfare.

At the outbreak of war there seemed to be a wave of sexual insanity spread over the land. In this particular our country was probably neither better nor worse than the other nations at war, though knowing the experience of other countries, we might have avoided their mistakes. It was generally believed that with the strict discipline, moral lectures, and the enforcement of prophylaxis in the cantonments, the venereal rate would be negligible. There were several factors not reckoned with, however, and it was very quickly discovered that a vast majority of venereal infections were contracted just prior to the call to the colors, before the men fell within the routine and discipline of camp life. The other venereal infections mostly occurred at week end visits, or on furloughs to their own homes. The percentage of infections among the men on short liberty is surprisingly low. Of course, prophylaxis is given most of the credit for these low figures, but it must not be lost sight of that the man on short leave is not so likely to be beset with the multitude of temptations placed in his path, as is the man on longer leave.

This exposure to infection just prior to entering the camp makes the venereal curve very high for the first few days after entering. In a few weeks the curve for new cases drops far below what is generally supposed to be the normal rate for a civilian population. In other words, the army data on this point are convincing in that the percentage of venereal infections of enlisted men is much less than encountered among a civilian population in normal times, showing unmistakably that if the enlisted man enters the camp free from venereal infection, the likelihood that he will expose himself to infection is much less than if he remained under the conditions of his home environment.

The man in uniform seems to excite all the latent immorality of a community into violent activity. All kinds of pitfalls are placed in his pathway—drink and women, mostly—and it is surprising that a greater proportion of these young men have not succumbed to the insidious and subtle temptations constantly thrown in their way. It is this condition that has brought about the movement of the Government to enforce the immediate suppression of vice, as an urgent war measure, so that the enlisted man's home environment can be made safe for him now, and kept safe for him after he comes back from abroad. The Government has made the enlisted

man's camp life safe for him; it certainly is but a reasonable demand that fathers and mothers and all those at home make his homecoming just as safe.

This menace of the prostitute is real. There are no reliable figures at hand of the total number of these women in America, but an estimate based on conservative reports of several of the great cities is alarming. In Chicago, alone, the vice commission reported (1) that in 1911 there were five thousand identified prostitutes in that city. The Atlantic coast cities are said to be overrun with these women. They are scattered in every town of the land, so that sanitarians must visualize the picture of what will take place when the troops come back from Europe. Excusable emotional hysteria will grip the nation. Old and young will tingle to their toe tips. Nothing will be good enough to give our boys. To move the picture along, one must not lose sight of the temptations that will be placed at every hand for these men. Vice will vie with victory. Hero worship, drink, women, are the steps to downfall. The country must face an unpleasant fact and prepare to meet it. The chronic prostitute must be under safe keeping before that time arrives, and the clandestine prostitute must be kept in hand by forcible measures.

In the study of prevention of venereal diseases one sooner or later comes to the conclusion that this activity, to be at all worth while, involves the absolute and continuous control of the prostitute. Aside from its educational value and, of course, its necessity as an urgent war measure, the present venereal propaganda will have no real, or lasting effect on the venereal situation unless the chronic prostitute is permanently placed in custodial care. It must be clear to every one who has given the matter due consideration, that all previous reform efforts have met with almost complete failure. Politicians have not controlled prostitution. It has thrived and even progressed in the face of every moral and religious organization. It has made police and municipal court officers sneering unbelievers in its possible control. Really, when this array of failures is honestly faced, the pessimist has good ground for his contention that very little is gained by arresting these women, dragging them into the courts, curing them, perhaps, and turning them loose again to take up their evil ways of living.

In searching for reliable data on these women, one gains the impression from the many careful analytical reports upon the prostitute, that she is a person apart, an entity wholly different from others. This is but a natural assumption, for one cannot think of a normal woman in terms of prostitution, so the further one goes into the subject, the more often arises the question, What manner of person is this woman?

There was an attempt made to find out who would be the most likely to understand these puzzling women, and it was quickly discovered that it was not the general practitioner, the sanitarian, the moralist—so called—nor even the experienced police officer. Whatever is known of the prostitute, that is worth while, has been gained mostly in the municipal courts, or in the psychopathic clinics and laboratories, or in reform institutions—and largely

by women investigators, strange as it may seem. In these various institutions most valuable research has been reported, but these highly valuable surveys have not reached the general reader, because of their technical nature and because the public does not care to deal with an unpleasant situation until forced to do so.

When the facts that these investigators have to present are carefully analyzed, one is compelled to admit that the chronic prostitute is a person who must be handled differently than she has been handled heretofore. Laws and regulations must be changed or enlarged. For the present, as an urgent war measure, the venereal question is a sanitary problem, but in the end the psychopathic investigator, encouraged and aided by the sanitarian, the moralist, and the municipal courts, is the one who should have the final control of the prostitute.

A woman many times convicted of prostitution is not normal mentally. Many of these women are morons. The others fall into other psychopathic classifications. The figures are too few to justify definite conclusions, but the careful analysis of the mental condition of groups of chronic prostitutes shows that a large majority of these women should be permanently confined in psychopathic institutions.

The Massachusetts Commission for the Investigation of the White Slave Traffic reported that fifty-one per cent. of prostitutes examined were feeble-minded.

In a careful study of conditions in the Red Light District of a large city of the State, the Virginia Board of Charities and Corrections reported (2) that "All students of mental deficiency who have investigated to any great extent the causes of prostitution are of the opinion that feeble-mindedness is a principal factor in the supply. Investigations have been made from time to time in various parts of the United States with the idea of ascertaining the relation of feeble-mindedness to prostitution, with varying results. The Chicago Morals Court had 639 prostitutes examined, and found the proportion of feeble-minded to be sixty-two per cent. At another time 126 prostitutes were examined by the same investigators, and the proportion reacting as feeble-minded was 85.8 per cent. Of 104 sexually immoral girls tested in the Illinois Training School for Girls, ninety-seven per cent. reacted as feeble-minded. The Massachusetts Vice Commission examined 300 prostitutes in three groups of 100 each: 1, young girls just beginning prostitution; 2, women plying their trade in the streets; and 3, women who were old offenders. The mental defect of fifty-one per cent. was so pronounced as to warrant their legal commitment to custodial institutions for the feeble-minded. The report of this commission states that the women in this group came from shiftless, immoral, and degenerate families; they were industrially inefficient, as shown by the low wages received, and by their inability to retain a position, even in unskilled callings; they were very deficient in judgment and good sense; they lacked ordinary general knowledge and practical information, as well as ability to perform simple computations or to read or write, except in the most elementary way."

"A study of 243 women made by the Massachusetts Reformatory for Women showed forty-nine per cent. to be defective mentally, 16.5 per cent. very dull, and forty-seven out of the remaining eighty-four cases showed other defects, such as epilepsy, hysteria, and psychopathic tendencies. Only fifteen per cent. of the entire number appeared normal mentally and physically. In this group of cases were included all women in the institution in whose history there had been at any time a period of commercialized promiscuous sex immorality."

In a study of 647 prostitutes made at the Bedford State Reformatory, by Katherine B. Davis, 29.8 per cent. were feeble-minded of the pronounced type, and twenty others of this group were insane. Basing her opinion on eighteen years' study of prostitutes, Doctor Davis says that "Fully one third were so mentally defective as to be in need of permanent custodial care."

In a group of 647 girls, 107 were distinctly feeble-minded, and 193 had some serious mental condition, such as insanity, or insane tendencies (3).

In a group of 500 delinquent girls, studied by the New York Probation and Protective Association, thirty-seven per cent. were mentally defective. Of 111 prostitutes who came under the same care, thirty-five per cent. were mentally defective, twenty-six per cent. of these being classed as feeble-minded.

Edith R. Spaulding reported that over half of 205 sexual offenders of one group treated at the Massachusetts Reformatory for Women were mentally defective. In speaking of another group of 243 prostitutes, Doctor Spaulding found only fifteen per cent. normal mentally and physically. "Probably forty per cent. could be considered segregable types, and should be placed permanently, or at least during the childbearing age, in custodial institutions. If these cases who are apparently unable to care for themselves could be removed from the community, we believe the supply for prostitution would be materially lessened and that such a movement would be a help in attacking the problem."

Dr. Catherine Brannick, the present psychologist of the above named reformatory, in a later report says that "In the eleven months from September 1, 1917, to August 1, 1918, the period during which the police have shown unusual activity in dealing with the vice situation in general, 260 women have been admitted to this institution. Of these, 178 were committed for sex offences, and the histories of practically all of the remaining number show that they had been guilty of such offences but were committed on some other charge—as 'drunkenness' or 'larceny.' . . . Of the 149 definitely committed for prostitution, about forty-two per cent. are readily graded as feeble-minded. A large group still remain classified as borderline cases, and more than one half of this group will undoubtedly be graded by further testing as definitely feeble-minded. The estimate is that decidedly over fifty per cent. of these women are mentally defective."

The New York Probation and Protective Association found that one third of the girls who had gone wrong were mentally defective.

A. F. Tredgold (4) says: "My experience is that about half of the girls admitted into Magdalen



Homes on account of the 'first fall' are of this feeble-minded type."

George K. Hastings, secretary of the New York Committee on Feeble-mindedness, says that he considers it a conservative estimate that fifty per cent. of these women are feeble-minded.

In a recent group of sixty arrested prostitutes in the city of Detroit, reported by Josephine S. Davis, of the Social Service Department of the State Board of Health of Michigan, twenty-one were feeble-minded, thirteen subnormal, one feeble-minded and defective, one epileptic, three insane, eight deferred and mild paranoid trend, two psychopathic personality, and eleven showed no psychiatric condition.

Several careful investigators of prostitution have been asked to estimate, from their experience, the percentage of feeble-minded among prostitutes, and nearly all these results were conservatively placed at thirty per cent. However, in trying to find the percentage of prostitutes that have actually been committed to institutional care for feeble-mindedness, there are not enough reliable figures to make even a conservation estimate.

In fact, attacking prostitution along these lines has not been generally considered or recognized as a possible expedient, except by investigators working in psychopathic clinics or by associations dealing with delinquent girls and women. The process of commitment to custodial care of the psychopathic prostitute is entirely too rigid. There are borderline cases that have certain criminal tendencies, and if prostitution is one of these characteristics, then the law should be so amended as to enable society more easily and humanely to restrain the chronic, incorrigible prostitute in a vocational institution permanently. It may be found, and I believe it will be, that fully thirty per cent. of chronic prostitutes can be convicted on the ground of feeble-mindedness alone and placed in institutions. Most clandestine and occasional prostitutes fall under the classification of psychic constitutional inferiority. These borderline mental cases are much harder to deal with, inasmuch as the courts would be inclined to safeguard such persons on the ground of legislative expediency, owing to the lack of definite, marked psychosis. As even many well pronounced morons are exceedingly clever in memory, speech, and other characteristics, it would be exceedingly hard to convince a jury, or the court itself, that the psychic inferior, or borderline cases were low enough in the mental scale to justify such a summary proceeding as permanent custodial care.

But it is just here that public opinion must be aroused. The state laws should be enlarged and amended. It is hard to believe that a chronic prostitute is a normal woman. It would seem possible to draft a law that would safeguard the people individually and at the same time protect society from these women. Surely our reformatory schools, and like institutions, could be trusted to handle the borderline case, for it is with this type of prostitute alone, absolutely, that a worth while percentage may be reformed and restored to useful lives. The feeble-minded must be kept in institutional life and on training farms, at useful, healthful

occupations, where they will be well treated and made cheerful by varied amusements.

Already in several states wonderful work along this line is in operation. Inbreeding of the feeble-minded must be prohibited. The feeble-minded, male and female, must be removed from the ordinary walks of life. Especially is this necessary for the feeble-minded prostitute, as she is unmoral, absolutely without a sense of responsibility. This view is strongly supported by the summary of the Virginia report, quoted above, which says, "According to the Binet scale, 71.6 per cent. of prostitutes plying their trade in the segregated district of the city reacted as feeble-minded, and inquiries into their family history substantiate the findings of the psychological test. The logical conclusion is that feeble-mindedness is responsible in large degree for the waywardness of these women, and that they should not be punished for doing that which their heredity made almost sure; but society should segregate them where they will be protected from licentious men and lewd, avaricious women; where they cannot harm others and may, in a measure, redeem themselves. Place them in a colony and they can there earn their own support; put money into the State treasury instead of being a constant loss, directly or indirectly, both on the pocketbook of the taxpayer and the health and morals of the community; for not less than a million dollars is worse than thrown away in Virginia in prostitution every year, and the prostitute, wherever she may be, is a centre for the spread of venereal disease."

In fear that the trend of this paper may be misunderstood, or be misquoted, it is necessary to state that in the appeal to make the enlisted man's home safe for him no apology for his possible yielding to temptation is intended. It must not be assumed that just because the male degenerate has been left out of the discussion that he should be treated differently from the female delinquent. Both are a terrible menace to society, but there is just this hideous difference, however, that cannot be escaped, regardless of one's ideas of fairness: a woman who is a prostitute is a psychologic factor that eats at the very vitals of society. She is a commodity. She is the victim of commercialized vice. She is the prime factor in the spread of venereal diseases. For these reasons she is far more dangerous to society than any male malefactor, be he burglar, crook, or "cadet."

Hardly any one will question this position, as far as it goes, but when it comes to applying remedies to prevent immorality in all its phases, and, of course, to the control of venereal diseases, illegitimacy, and social delinquency—which are its potential results—the public administrator is at once confronted with the difficulty of adjusting conflicting views to a workable basis. The moralists hold inflexibly to the position that the question cannot be settled permanently, except along the lines of educating the youth of the land to a single standard of morals. Public health officials would handle the matter purely as a sanitary problem, with a faith that it can only be settled in that way. Then there are men who believe that prostitution is a safeguard for society, and that the practice of self-restraint would make molly-

coddles of young men. Last of all is the veteran police officer, the worst pessimist of all, who merely shrugs his shoulders and waves the matter aside with his outstretched hands.

But surely there is a common ground on which we all can stand for the betterment of this horrible condition. At the very least it is worth while to speculate upon the difficulties of the problem, and upon some of the possible remedies. Suppose, for the sake of illustration, that every house of prostitution were broken up and kept closed; that all prostitutes, undoubtedly feeble-minded, were placed in permanent custodial care; that all other prostitutes were prevented from interstate and intrastate travel; that every prostitute was held until cured of venereal diseases; that every male criminal, or sex offender, was cured of venereal diseases, if infected; and, finally, that all males, unquestionably feeble-minded, were unsexed!

Custodial control of the feeble-minded prostitute would, in a large measure, prevent profiteering in prostitution, for it is from this group, mostly, that houses of ill fame secure their supply of women. Besides the undoubted influence this method of control would have upon the incidence of venereal diseases, it would have a still further beneficial result in preventing a large percentage of illegitimacy of the very worst type.

The causes of prostitution lie deep down in our social structure, and its problem, though stupendous, should be solved now. This is an era of action, the day of big things, the time to say that this question, as an urgent war measure, shall be promptly met; that red light districts shall not stand as permanent tourist exhibits of great cities; that houses of ill fame shall not exist; that feeble-minded men and women shall not betray their kind; that a living wage shall be given to women; and lastly that the manhood of our land shall assert itself to save society by its own selfcontrol.

#### RECOMMENDATIONS.

1. The employment of psychopathic investigators for all venereal clinics for the purpose of carefully surveying the mental capacity of all arrested prostitutes, with the end in view of securing legislation in all the States for the custodial care of all chronic prostitutes that can be convicted of any of the mental defects under present statutes.

2. A State wide movement for custodial and probationary control of all convicted prostitutes.

3. And a State wide movement to buy farms, and to build reformatories, for custodial and probationary control of all feeble-minded and certain other types of psychic inferiority.

#### REFERENCES.

1. The Social Evil in Chicago. 2. A Special Report of the State Board of Charities and Corrections on Weak-mindedness in the State of Virginia. 3. KNEELAND: Commercial Prostitution in New York City. 4. A. F. TREDGOLD: Mental Deficiency.

**Treatment of Pneumococcic Peritonitis.**—Evan W. Meredith (*Pennsylvania Medical Journal*, June, 1918) advises surgical measures in the localized form. In the diffuse type nonoperative measures designed to cause subsidence and localization should be used until the stormy symptoms subside.

## DISEASED TONSILS AND FOCAL INFECTION.

*With a Report of Cases.*

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Although much has been written on this subject in the last few years, it is of such vital importance and of such great interest both to the general practitioner and to the specialist that I do not hesitate to emphasize once more all that we have learned pertaining to this subject.

The majority of us are now convinced of the close relationship of various bodily ailments, both systemic and local, to focal infection. We are concerned here mainly with the tonsils as a factor of focal infection, and the subject is discussed under the following subheads: 1, the normal tonsil; 2, the pathological tonsil; 3, relation of diseased tonsils to general and localized disease; 4, a report of my cases with the practical results obtained after tonsillectomy.

#### THE NORMAL TONSIL.

The faucial tonsils, two in number, are deeply located between the anterior and posterior pillars of the fauces on either side. They are largely composed of lymphoid tissue supported by a framework of connective tissue, and their inner surface presents many depressions or crypts. The exposed surfaces, even of the crypts themselves, are covered with mucous membrane; these are most numerous in the upper portion. Above the tonsil is a large depression called the supratonsillar fossa. This frequently serves as a pocket for the development of suppurative inflammation. On its outer surface, the tonsil is covered with a fibrous capsule from which the connective tissue supporting the lymphatic structures is derived.

#### THE PATHOLOGICAL TONSIL.

An enlarged tonsil, *per se*, is not a pathological one. Under certain circumstances the enlargement becomes a pathological condition of great importance. The tonsils usually atrophy toward puberty. If they do not spontaneously atrophy at that time, they are liable to become the seat of pathogenic changes of varying severity. Two distinct varieties of enlargement of the tonsil are recognized: One is a true hypertrophy of the gland, which is merely a physiological process; the other, a hyperplasia, is the result of repeated attacks of inflammation with corresponding increase of the amount of connective tissue in the glandular structure.

In children, simple hypertrophy is often the result of overactivity of a physiological kind. After puberty and in adult life there is no doubt that the enlarged tonsil is hyperplastic and is the result of repeated attacks of tonsillitis, which latter condition may be the sole cause of the hyperplasia. On the other hand, another pathological condition is their presence, not as enlarged tonsils but as small cryptic organs, the seat of repeated attacks of acute inflammation.



A surgical or pathological tonsil is one in which not only the tonsillar tissue is diseased, but also the tissue in association with the tonsil, thus involving the surrounding structures. The tonsils may be either large or small, bound down by adhesions, in which have been formed pockets filled with caseous material—the product of decomposed food and secretions, the crypts being filled with pathogenic organisms as well as this same caseous material.

Such a tonsil is the source of constant systemic absorption of poisonous material and, under certain conditions—when the bodily resistance is lowered, or from some unexplained cause—it becomes the seat of focal infection. Incidentally, it interferes with the physiological function of the pharynx, nasopharynx, and the free drainage of the Eustachian tube.

Some authorities consider that the tonsil in early childhood serves to arrest the entrance of microorganisms to the body. Others believe that the tonsils assist in leucocytosis and so guard the subject against disease. Still others, and they are in the majority, believe not only that the tonsillar functions, if any, are very limited but that, in addition, the tonsils are a constant source of danger. In this connection the absorption of enlarged cervical glands after tonsillectomy may be considered, also the great improvement in chorea, purpura hemorrhagica, and rheumatism after tonsil enucleation. Children with enlarged and diseased tonsils, suffering with diphtheria, scarlet fever, measles, diseases involving the nose and throat, are more likely to develop otitis media, endocarditis, cervical abscess, arthritis, and have a more protracted illness than those who have had only small tonsils or who have had the tonsils removed.

From the thousands of tonsillectomies performed, we can easily disprove any theories of greater susceptibility of these children to diseases common to early life. The majority of these diseases are transmitted by secretions from the nose and throat.

The epidemic of anterior poliomyelitis two years ago demonstrates this fact very clearly; those children whose tonsils had been removed and those who had been free from attacks of tonsillitis suffered least. When such children were stricken with this disease it ran a much milder course. In a series of very severe cases, under the service of Doctor Roper, where a fatal outcome appeared imminent and where the conditions were most serious, tonsil enucleation saved quite a few. This was considered rather heroic treatment but was certainly justified under the circumstances.

#### RELATION OF DISEASED TONSILS TO GENERAL AND LOCALIZED DISEASE.

A great deal has been written recently on the importance of the nose, throat accessory sinuses, otitis, teeth, and gums in connection with systemic infection, and particularly with joint diseases. Many workers in this field—and among them some very brilliant observers—have demonstrated beyond possible doubt the very close relation of diseased tonsils to various forms of arthritis and general disease.

We are concerned here only with the tonsils, but

all the organs of the upper air passages have been found to be the habitats of microorganisms which cause infection. The actual demonstration of causative agents in the production of joint infections, such as, for instance, the *Streptococcus viridans*, which has been studied by a most careful and brilliant observer, Doctor Rosenau, is particularly interesting and instructive. Doctor Rosenau, among other interesting experiments, inoculated animals with the organisms formed in diseased tonsils and produced promptly a streptococcic arthritis.

That persistently insidious attacks of bacteria in the tonsil can cause painful joint conditions is a well known fact. In 1877 Dr. Alfred Mantle considered and discussed the etiology of rheumatism from a bacteriological point of view. In the last few years the etiology of joint rheumatism has been positively ascertained as being caused by pathogenic bacteria. What led Doctor Mantle to associate the throat with rheumatic symptoms was the frequency of such symptoms in children suffering with scarlet fever. He observed that throat joints and serous membranes became infected during bacterial invasion, and he suggested the possibility of acute rheumatism having a like origin. By means of a sterilized hypo syringe, he extracted, under strict antiseptic precautions, a dram of serum from the rheumatic knee joints of half a dozen patients. He then made blood cultures, and in nearly every case streptococci were found. Poynton and Pain, in 1900, published the next work of importance in this connection.

We now know that, in a great many instances, the tonsils are the foci of this bacterial invasion. We have learned beyond any possible doubt that in the tonsils certain forms of bacteria will settle and thrive, multiply and emigrate into the blood stream to seek the region of the body where they can live to the best advantage, the joints being most susceptible, are attacked more often than any other part of the body.

#### HISTORIES OF PATIENTS BENEFITED BY TONSILLECTOMY.

Before presenting these histories, I wish to state that it is our custom and routine at the Hospital for Deformities and Joint Diseases to examine all tonsils which we remove. Our pathologist has demonstrated in most of such tonsils the presence of pathogenic bacteria, particularly various streptococci groups, and in a number of these organs he has found abscesses circumscribed and imbedded deeply in the tonsillar tissue and near the capsule. Only rarely do we find tubercle bacilli.

With regard to vaccines, our results thus far have not been satisfactory before operation. In some patients, after tonsil enucleation, the symptoms have become aggravated temporarily, and it is in this class of cases that autogenous vaccines might be helpful.

The following histories were taken of patients upon whom I have operated at the above named hospital. These histories are typical of the results obtained in the majority of our patients suffering with joint conditions as a result of tonsillar infection. I have selected a number of cases to illustrate

the type of joint conditions we meet with as result of focal infection, due to diseased tonsils.

CASE I.—J. G., age sixteen years.

Present history.—Patient has been suffering with pain in his right shoulder for a year. Most severe pain when moving, and particularly on raising his arm. Right shoulder and arm swollen and motion impaired.

Diagnosis.—Infectious arthritis.

Tonsillectomy was performed January 18, 1917. One month after operation swelling and pain had subsided and patient was very much improved. Three months after that, patient was free from all symptoms.

CASE II.—Herman D., age twenty-six years; occupation, photographer.

Present history.—As far back as patient can remember he had had pain in left knee; slight swelling present. Had been diagnosed as tuberculous knee. Was referred to an orthopedic hospital, where a brace was advised. Has worn brace for the past six months. Pain was slightly relieved for a time. X ray showed atrophy of joints.

Tonsillectomy was performed November 27, 1917, followed in a week by marked improvement as to pain and discomfort. One month after, swelling of joint was less marked and pain had entirely disappeared. Never returned for observation.

Diagnosis.—Infectious arthritis.

CASE III.—Bertha R., age twenty-five years.

Family history.—Negative.

Present history.—Pain, stiffness, swelling of nearly every joint in the body. Had been treated for rheumatism by baking, massage, etc., which had reduced the swelling somewhat, but pain persisted. Patient also suffered with frequent attacks of tonsillitis. Tonsillectomy was performed February 15, 1917. Within four weeks considerable improvement was observed. Swelling of joints very much diminished; pain and stiffness of joints very much improved, which improvements continued.

Diagnosis.—Infectious arthritis.

CASE IV.—Louis S., age twenty-nine years. Admitted into the hospital November 15, 1916.

Family history.—Negative.

Present history.—For one and a half years has had pain in the right hip. No gonorrhea or syphilis. Wassermann, negative.

Diagnosis.—Rheumatic sciatica.

Liniments and internal medication prescribed, which failed to relieve pain. Tonsillectomy performed November 8, 1916. One month after operation sciatica cleared up markedly and at the present time is free of all pain and discomfort.

CASE V.—Leonard L., age seven years.

Present history.—For past week patient had been complaining of severe pain in both ankles and knees. At time of admission to the hospital left knee and left arm were infected. Had difficulty in walking. Gives history of frequent attacks of tonsillitis. Wassermann, negative.

Tonsillectomy was performed May 20, 1917, followed by immediate improvement, and within six weeks completely cured. No recurrence of symptoms at the present date.

Diagnosis.—Infectious arthritis.

CASE VI.—William L., age twenty-four years; occupation, clothing cutter.

Present history.—For nine months pain and swelling in left arm and left elbow, radiating to the fingers. For the last two months also complained of pain in the left leg; swelling appeared at the calf of leg.

Internal and external treatment, with no relief. Tonsillectomy February 23, 1917. Within six weeks pain and swelling of joints and muscles disappeared. Patient did not return to the clinic after that for future treatments.

Diagnosis.—Infectious arthritis.

CASE VII.—Max M., age twenty-five years.

Present history.—For three years patient complained of pain and limitation of motion of right shoulder and arm. No swelling present, no discoloration. Symptoms more severe at night, interfering with sleep. No relief from internal medication. No syphilis. Wassermann, negative.

Tonsillectomy December 11, 1916, followed by marked improvement, so that the patient could sleep and pain was

greatly alleviated. Limitation of motion still present though less marked. Three months after the operation the patient was practically free from pain, though a certain amount of fixation of shoulder joint persisted.

Diagnosis.—Infectious arthritis.

CASE VIII.—Alfonso J., age twenty-seven years.

Family history.—Negative.

Previous history.—Negative.

Present history.—Pain and swelling of the left shoulder and knee joints. History of frequent tonsillitis.

Tonsillectomy performed May 28, 1917. One month after the operation symptoms had entirely subsided, so that at the present day we consider him cured, no recurrence of symptoms having occurred.

CASE IX.—Natalie C., age twenty-six years.

Present history.—For the past three months patient complained of snapping of bones in the right temporomaxillary region, especially when chewing. On opening the mouth widely, would suffer a great deal of pain in that joint. Also complained of interscapular pain.

Tonsillectomy performed September 13, 1916, followed by relief of pain and discomfort shortly after.

CASE X.—Ruby S., age seventeen years.

Previous history.—Negative.

Present history.—Nine weeks before admitted, left wrist and fingers of left hand swollen. Right middle finger swollen.

Diagnosis.—Infectious arthritis.

Tonsillectomy December 1, 1917, followed within two weeks by almost immediate improvement in all symptoms, and at the present day practically normal, and motion good.

CASE XI.—Theresa G.

Present history.—Had been treated in the clinic since July 31, 1916. Had been complaining of pain and swelling in both knees and elbows.

Diagnosis.—Infectious arthritis.

Tonsillectomy March 3, 1918. Two weeks after the operation patient improved. Two months after, improvement became much marked; pain and swelling reduced, though movements of joints affected were limited.

CASE XII.—Mary H., age fifty-one years.

Previous history.—Negative.

Present history.—Pain in both knees and elbow joints, with slight amount of swelling present. Finger joints also painful and swollen. Frequently attacks of tonsillitis noticed. No gonorrhea or syphilis. Wassermann, negative. Tonsillectomy performed July 29, 1916, followed by marked improvement in all the joints, particularly the small joints. Patient has been observed several times since the operation. Her improvement has continued and at the present day is free from all pain, although the fingers are still stiff and movement limited.

Diagnosis.—Infectious arthritis.

CASE XIII.—Abraham G., age eighteen years.

Previous history.—Negative.

Present history.—Right shoulder joint painful and swollen for some time.

Diagnosis.—Infectious arthritis.

Tonsillectomy performed April 19, 1918. Within a short time symptoms were relieved and improvement noted at the present day. One month after operation complained of pain in his left shoulder, which, however, has disappeared.

#### CONCLUSIONS.

In view of the experience of others as well as my own in this field, I feel justified in recommending removal of tonsils in all patients suffering with local and systemic infection and where the tonsils are at all diseased. On the other hand, the condition of the accessory sinuses, the teeth, ears, etc., should be studied for possible forms of infection and as connecting links in the chain of causative agents in the production of painful joints and other ailments, enumerated above.

Pyorrhea, sinusitis, gonorrhea, syphilis, colitis, the entire genital tracts—all these conditions must



be thoroughly investigated. Wassermann tests, x ray examinations of the ethmoid frontal sinuses, the antrum of Highmore, complement fixation tests, etc., should be made before arriving at a definite conclusion in regard to the seat of focal infection.

I am indebted to Dr. Henry W. Frauenthal and members of our staff, who have been kind enough to help me in my work and who have furnished our department with the proper materials and facilities for pursuing this highly interesting line of work.

780 WEST END AVENUE.

## THE ALLEN-JOSLIN TREATMENT OF DIABETES MELLITUS.

By ALBERT WOLDERT, M. D.,  
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The modern method of treating diabetes mellitus is based on certain facts established principally by von Noorden, Naunyn, and later by Allen, Joslin, Hill, Eckman, and others. In this country Allen was perhaps the first to emphasize the importance of fasting and to introduce the starvation treatment to control the output of glucose in the urine. Joslin has made certain methods more practical.

In the treatment of diabetes mellitus it is very essential that the physician should at all times have in mind the amount of food necessary to maintain the normal nutrition of the body in health and should also know the tolerance of the patient for carbohydrate, protein, and fat, i. e., the amount of carbohydrate, protein, and fat the patient can assimilate or digest without the occurrence of glucose, diacetic acid, D-oxybutyric acid, and acetone in the urine. The following tables should practically be memorized.

The data contained in this contribution are printed in many instances verbatim from the publications of Joslin (1), and of Hill and Eckman (2) on the subject of diabetes, to which volumes all interested are referred.

In determining the tolerance for various foods, after the patient has fasted and the urine made sugar free, the first question to be determined is the tolerance for carbohydrates; secondly, for protein; and lastly, for fat.

In addition to learning the data pertaining to the diet, it is equally as important for the physician to determine the actual percentage of glucose that occurs in the urine, and such examinations should be made at intervals of one day or two days, in order to keep a check on the actual condition of the patient at all times. It is essential that the patient should be made to know that the treatment of his condition through dieting is permanently necessary.

Joslin (3) has arranged the following schedule, indicating the number of calories required by an adult in proportion to his weight, weighing seventy kilograms, or 154 pounds:

TABLE I. Calories per kilo- gram body weight.		
At rest	25-30	1750-2100
Light work	35-40	2150-2800
Moderate work	40-50	2800-3150
Hard work	45-60	3150-4200

Therefore the diet of a person in health weighing seventy kilograms, or 154 pounds, when at moderate work, would be forty to fifty calories per kilogram body weight, or a total of 2,800 to 3,150 calories per day. For a person weighing sixty kilograms, or 132 pounds, 2,400 calories would be required.

Joslin agrees with Chittenden that the diet in health should contain thirty calories per kilogram body weight, and that there should be one gram of protein in the food for each kilogram body weight. He summarizes (4) the caloric needs of children during the twenty-four hour period, in the following manner:

TABLE II.

Age in years.	Weight.	Total calories.
2	12 kilograms (26 pounds)	950
6	20 " (44 " )	1400
12	36 " (80 " )	1800

Hill and Eckman state that most adults do well on about thirty calories per kilogram body weight; children of four years need seventy-five calories per kilogram, children of eight years need sixty calories, and children of twelve years need fifty calories. They further state that it is surprising to see how well patients do on 1,500 or 2,000 calories per day.

Regarding the proportion of carbohydrates, protein, and fat in the normal diet of an adult, Joslin gives the following (5):

TABLE III.

Food.	Quantity in grams.	Total calories.
Carbohydrate	400	1600
Protein	100	400
Fat	100	900

In the treatment of diabetes, food values are an important consideration. Joslin (6) has summed them up in this manner:

TABLE IV.

30 grams (1 ounce) contain approximately:

	Carbohydrate. Grams.	Protein. Grams.	Fat. Grams.	Calories.
Oatmeal, dry weight	20	5	2	120
Cream, 40% .....	1	1	12	120
Cream, 20% .....	1	1	6	60
Milk (sweet) .....	1.5	1	1	20
Brazil nuts .....	2	5	20	210
Oysters (six) .....	4	6	1	50
Meat (uncooked, lean) ..	0	6	3	50
Meat (cooked, lean) ....	0	8	5	75
Bacon .....	0	5	15	155
Egg (one) .....	0	6	6	75
Vegetables, 5% group ..	1	0.5	0	6
Vegetables, 10% group ..	2	0.5	0	10
Potato (Irish) .....	6	1	0	30
Bread .....	18	3	0	90
Butter .....	0	0	25	225
Fish, cod, haddock (cooked) .....	0	6	0	25
Broth .....	0	0.7	0	3
Small orange, or ½ grapefruit .....	10	0	0	40

The same author has given this table (7), arranged approximately, according to the percentage of carbohydrates:

Five per cent. carbohydrate vegetables (either fresh or canned): Lettuce, cucumbers, spinach, asparagus, rhubarb, sauerkraut, beet greens, celery, cooked onions, tomatoes, okra, cauliflower, eggplant, cabbage, radishes, leeks, string beans.

Ten per cent. carbohydrate vegetables: Pumpkin, turnip, squash, beets, carrots, fresh onions.

Fifteen per cent. carbohydrate vegetables: Green peas, artichokes, parsnips, canned lima beans.

Twenty per cent. carbohydrate vegetables: Potatoes, shelled beans, baked beans, green corn, boiled rice, boiled macaroni, ripe olives.

Fruits containing five per cent. carbohydrates: Grape-fruit, lemons.

Fruits containing ten per cent. carbohydrates: Oranges, cranberries, strawberries, blackberries, gooseberries, peaches, pineapple, watermelon.

Fruits containing fifteen per cent. carbohydrates: Apples, pears, apricots, cherries, raspberries, huckleberries.

Fruits containing twenty per cent. carbohydrates: Plums, bananas, prunes.

Nuts containing five per cent. carbohydrates: Butternuts.

Nuts containing ten per cent. carbohydrates: Brazil nuts, black walnuts, hickory nuts, pecans, filberts.

Nuts containing fifteen per cent. carbohydrates: Almonds, English walnuts.

Nuts containing twenty per cent. carbohydrates: Peanuts.

Nuts containing forty per cent. carbohydrates: Chestnuts.

METRIC SYSTEM AND SOME APPROXIMATE EQUIVALENTS, AVOIR-DUPOIS WEIGHT, ETC.

A gram is 15.432 grains, or approximately speaking, 15½ grains.

15 grams is approximately ½ ounce or 1 tablespoonful.

30 grams is approximately 1 ounce or 2 tablespoonfuls.

A kilogram is 2.2 pounds.

60 kilograms is 132 pounds, i. e., 60 times 2.2 pounds.

A level tablespoonful is approximately 25 grams of food, such as cabbage, after being cooked.

A heaping tablespoonful of cooked food such as asparagus (9 stalks 4 inches long) is equal to 100 grams.

A heaping tablespoonful of cooked turnips or spinach is equal to 100 grams. One hundred grams is equal to 3½ ounces.

One small serving of steak would, roughly, equal 100 grams.

Two slices of bacon about 6 inches long would approximately weigh 50 grams.

A level tablespoonful of butter will approximately weigh 15 grams or ½ ounce; and a heaping tablespoonful of butter will weigh 30 grams or 1 ounce.

In determining the carbohydrate tolerance Joslin gives from 150 to 300 grams daily of five per cent. vegetables, or about one third of the following full diet:

TABLE V.—FIVE PER CENT. VEGETABLES.

Protein .....	10 grams
Carbohydrate intake .....	15 grams
Fat .....	7 grams
Total calories produced .....	200

*Breakfast.*—String beans (canned), 120 grams, or 2½ heaping tablespoonfuls; asparagus (canned), 150 grams, or 3 heaping tablespoonfuls, or 13½ stalks 4 inches long; tea or coffee.

*Dinner.*—Celery, 100 grams, or 6 pieces; spinach (cooked), 135 grams, or 3 heaping tablespoonfuls; tea or coffee.

*Supper.*—Asparagus, 100 grams, or 2 heaping tablespoonfuls, or 9 stalks 4 inches long; celery, 100 grams, or 6 pieces 4½ inches long; tea or coffee.

It is best to boil these vegetables three times with changes of water to reduce the amount of carbohydrate in them.

TABLE VI.—FIVE PER CENT. VEGETABLES.

Protein .....	7 grams
Carbohydrate intake .....	15 grams
Fat .....	6 grams
Total calories produced .....	150

*Breakfast.*—Asparagus (canned), 75 grams, or 1¾ tablespoonfuls (chopped); cabbage, 65 grams, or 1 heaping tablespoonful; tea or coffee.

*Dinner.*—Onions (cooked), 100 grams, or 2 heaping tablespoonfuls; celery, 50 grams, or 3 pieces about 4½ inches long; tea or coffee.

*Supper.*—Spinach, 100 grams, or 2 heaping tablespoonfuls; celery, 50 grams, or 3 pieces 4½ inches long.

In determining the carbohydrate tolerance the

patient is kept upon one third of the amount of food mentioned in Tables V or VI for one day; or if the case is particularly severe, for two days and the urine tested for glucose.

After the carbohydrate tolerance has been obtained (see method below), the protein tolerance is ascertained, and following that the fat tolerance is determined. When the tolerance for carbohydrate, protein and fat have been determined the diet can be gradually increased and the patient put upon a more or less permanent diet. The following are Hill and Eckman's tables for gradually increasing the diet after the urine has remained sugar free:

TABLE VII.

Protein .....	24 grams
Carbohydrate .....	8 grams
Fat .....	22 grams
Total calories produced .....	340

*Breakfast.*—String beans, 100 grams, or 2 heaping tablespoonfuls; one egg; coffee.

*Dinner.*—One egg; 100 grams turnips, or 2 heaping tablespoonfuls; 100 grams cabbage, or 2 heaping tablespoonfuls; tea.

*Supper.*—One egg; 100 grams turnips, or 2 heaping tablespoonfuls; 100 grams spinach, or 2 heaping tablespoonfuls; tea.

TABLE VIII.

Protein .....	31 grams
Carbohydrate .....	17 grams
Fat .....	14 grams
Total calories produced .....	327

*Breakfast.*—One egg; asparagus, 100 grams, or 2 heaping tablespoonfuls; tomatoes, 100 grams, or 2 heaping tablespoonfuls; coffee.

*Dinner.*—Chicken, 35 grams, or one small serving; string beans, 200 grams, or 4 heaping tablespoonfuls; cabbage, 100 grams, or 2 heaping tablespoonfuls; tea or coffee.

*Supper.*—One egg; cauliflower, 240 grams, or 5 heaping tablespoonfuls; spinach, 100 grams, or 2 heaping tablespoonfuls; tea or coffee.

#### METHOD OF TREATING DIABETES.

Joslin divides diabetes mellitus into the following three types: Mild; moderately severe; and severe.

In order to get rid of glucose, diacetic acid, and acetone in the urine, the following patients should fast only after a preparatory treatment: 1, severe cases; 2, long standing cases; 3, complicated cases, that is, cases complicated with diseases of thyroid, heart, or kidneys, or with abscesses; 4, obese cases; 5, elderly patients; 6, all patients showing acidosis, or predisposed to acidosis who might succumb early if placed upon fats and proteids, fat according to Joslin being the chief source of acidosis. In all other cases, except those of mild type, fasting should be begun at once. When a patient enters the hospital Joslin's plan is to have him begin to fast, by prescribing five per cent. vegetables, 150 grams daily, and a small orange at each meal, if uncertainty exists in regard to the character of the case.

#### MILD CASES.

In mild cases Joslin considers it unnecessary for such patients to practise fasting, and finds that the simple omission of fat and sugar will lead to a great reduction in the amount of sugar excreted. Therefore in mild cases he excludes fat, sugar, and bread, and puts the patient on a diet of baked Irish potatoes, which contain twenty per cent. carbohydrate, instead of a bread diet which contains sixty per cent. carbohydrate, and limits the protein to 1.5 gram per kilogram body weight. A kilogram equals 2.2



pounds, and sixty kilograms would equal 132 pounds. Sixty times 1.5 grams (twenty-three grains) would amount to 1,380 grains, or approximately three ounces of protein daily, for a person weighing 132 pounds. The milder cases in a few weeks attain a tolerance of more than 100 grams (or three and one third ounces) of carbohydrates a day. The carbohydrate should be held at about 125 to 150 grams a day, provided the patients have a tolerance for that amount. After the urine remains sugar free, fat is added to maintain the weight, but the amount of carbohydrate taken is restricted for years, even though no sugar reappears. In mild cases the patient should be taught to take long vacations, secure an abundance of sleep, keep the skin active by frequent baths and massage, avoid constipation, avoid excess in mental and physical labor, shun obesity, and practise daily exercises.

#### SEVERE CASES.

In the treatment of severe cases, those of long standing, complicated or obese cases, those of elderly patients, and cases showing acidosis or predisposed to acidosis, Joslin endeavors to make fasting as safe as possible by adopting a routine plan of preparatory treatment before fasting is begun. This preparatory treatment consists in the omitting of fats immediately, and the gradual reduction and final omission of protein, followed by the continued reduction of carbohydrate, with fasting eventually if required. This preparatory treatment therefore is as follows: Without otherwise changing the habits or the diet, the fats are omitted from the beginning, and after two days the protein is omitted and the carbohydrates are halved daily until the patient is taking only ten grams, 150 grains, of carbohydrate.

This preparatory treatment is instituted for the purpose of preventing the development of acidosis—a condition occurring in chronic diabetics who might succumb if placed on a fat protein diet.

*Fasting.*—The patient should be advised to fast for four days unless he is sugar free before the end of that time. Water may be allowed freely, tea, coffee, and clear meat broths as desired.

*Intermittent fasting.*—If glycosuria persists at the end of four days, one gram protein or 0.5 gram carbohydrate per kilogram body weight for two days may be given, and the patient advised to fast again for three days unless he is sugar free before the end of that time. If glycosuria remains, repeat this treatment, and then advise fasting for one or two days, as necessary. If there is still sugar, protein should be given, as before, for four days, then a day of fasting, and then gradually the periods of feeding increased, one day each time, until fasting one day each week. Joslin says that he has seen no uncomplicated case fail to get sugar free by this method.

*Determination of the carbohydrate tolerance.*—After the patient has undergone the fast and when the twenty-four hours' urine is free from sugar give five to ten grams carbohydrate (150 to 300 grams of five per cent. vegetables), that is to say, one third of the amount of foods mentioned in Table V, and continue to add five to ten grams carbohydrate daily up to fifty grams or more until sugar appears, or the approximate quantity is

reached which it appears probable the patient will tolerate. Following the trial with five per cent. vegetables one can proceed to the ten per cent. group, and these can be empirically reckoned as containing six per cent. carbohydrate or approximately twice that of the five per cent. group, or five grams carbohydrate for seventy-five grams vegetables. From this point onward the addition of carbohydrates can be made according to the desire of the patient. It is often best to replace a large portion of the five per cent. vegetables with ten per cent. vegetables in order to get additional carbohydrates, and if these are borne to add carbohydrates, as cream, grapefruit, strawberries, orange, twice a day, and then progress to peas, in the fifteen per cent. group. After the carbohydrate tolerance has been found, the tolerance for protein should then be determined, and lastly the fat tolerance.

*Determination of the tolerance for protein.*—As soon as the urine has been sugar free for two or three days add about twenty grams of protein, and thereafter fifteen grams protein daily in the form of fish, lean meat, or eggs, or until the patient is receiving one gram protein per kilogram body weight, or less if the carbohydrate tolerance is zero. Thirty grams of fish (one ounce) or an egg of average size contains approximately six grams of protein, and thirty grams of lean meat contains approximately eight grams. The white of an egg contains three grams of protein. By this arrangement a patient weighing sixty kilograms (132 pounds) would be taking, within six days from the time he became sugar free, one gram of protein per kilogram body weight. This quantity, Joslin says, is quite satisfying to all except children, and he says he is astonished to find how few patients care to take as much as 1.5 grams protein per kilogram body weight. Children need two or three grams protein per kilogram body weight.

The advantage of giving and increasing protein simultaneously with the determination of the carbohydrate tolerance is that one approaches nearly normal conditions. The physician is attempting to determine the carbohydrate tolerance while the patient is on a full diet and not the tolerance for carbohydrate alone. There are few patients who will not bear at the outset as much as one gram of protein per kilogram body weight, and Joslin is very loath to allow the protein to remain permanently below this figure. The Chittenden standard is one gram protein per kilogram body weight, as stated above.

*Determination of the tolerance for fat.*—Add no fat to the diet until the protein reaches one gram per kilogram body weight (unless the protein tolerance is below this figure), and the carbohydrate tolerance has been determined; then add five to twenty-five grams fat daily, according to previous acidosis (some cases can only take five to ten grams fat daily without causing acidosis) until the patient ceases to lose weight or receives in the total diet about thirty calories per kilogram body weight. So long as the acidosis (diabetic acid, B-oxybutyric acid, and acetone) and glycosuria occur the fat must be kept low. The tolerance for fat is shown by the reappearance of glucose and diacetic acid in

the urine. While testing the protein tolerance of course a small quantity of fat is included, which is present in eggs, fish, and lean meat.

There are two important reasons why fat should not be given a diabetic patient immediately upon his becoming sugar free: 1. By the omission of fat partial fasting is continued, and thereby the patient is gaining a tolerance for carbohydrate; and 2, the continued omission of fat is beneficial in counteracting the last vestige of acid poisoning or preventing the appearance of acid poisoning, which might easily occur in a diabetic patient whose metabolism has not become accustomed to so low a quantity of carbohydrate. If the patient is one in whom acidosis has been an essential factor, or if the patient is obese, the fat should be increased slowly, and for such a patient an increase of five to ten grams a day may be all that can be taken without the recurrence of a positive ferric chloride reaction in the urine.

The return of sugar demands fasting for twenty-four hours, or until the patient is sugar free. This rule should be inflexible in the case of children. When the child learns that a reappearance of sugar means a fast, there is little tendency to break the dietetic regimen. If the sugar reappears after having determined the tolerance for carbohydrate, protein, and fat, the former diet should be resumed, gradually adding fat last in order to maintain as high a carbohydrate tolerance as possible, sacrificing body weight for this purpose. Whenever the daily tolerance is less than twenty grams carbohydrate, fasting should be practised one day in seven. Great care should be exercised not to break down the tolerance a second time, since weeks or months may be required to restore the powers of proper assimilation of the food, lost by the patient. After he has become sugar free, he can get along with a smaller amount of food than an ordinary person. Since a patient with diabetes mellitus may have to be put upon a restricted diet for life, it is very important for him to learn the amount of food he may take, and he should learn by heart the tables of foods mentioned above. Joslin states that one day of fasting may accomplish more than many days of moderately low diet in ridding the urine of glucose.

#### SUBSTITUTES FOR BREAD.

Regarding bread Joslin (8) says: "Never give bread substitutes early in the treatment of diabetes. Teach patients to live without them." He seldom advises breads, and says it is better for the patient to forget the taste. In some instances bran bread may be given. He adds that it is bulky and acts favorably in constipation. The so called bran breads and cookies may contain as much as sixty per cent. carbohydrates. In purchasing bran, Joslin advises the patient to purchase it at a feed store, and to ask for coarse bran for cattle, not bran for the table. The starch may be washed out with water by tying the bran in cheesecloth and fastening onto a faucet, allowing the water to run through the bran to wash out the starch. It should be kneaded and thoroughly mixed from time to time, and should be washed until the water comes away clear—a process which may require an hour.

To make bran biscuits Dr. F. M. Allen advises the following:

Bran, 60 grams, or 660 grains, or 2 ounces.

Salt,  $\frac{1}{4}$  teaspoonful.

Agar-agar, powdered, 6 grams, or 90 grains.

Cold water, 100 c. c., or  $\frac{1}{2}$  glass.

Tie the bran in cheesecloth and wash under cold water tap until water is clear. Bring agar-agar and water, 100 c. c., to the boiling point. Add to washed bran the salt and agar-agar solution (hot). Mold into two cakes. Place in pan on oiled paper, and let stand half an hour; then, when firm and cool, bake in moderate oven thirty to forty minutes.

Joslin says gluten breads are made by removing the sugar forming material from the flour, and that it is surprising how thoroughly this can be done. The large quantity of protein in small bulk which they contain is objectionable. Joslin also speaks of casoid flour, Lister's diabetic flour, and Hepco flour made from the soya bean, Barker's gluten food, and other bread substitutes.

#### MILK.

Milk should be given to diabetics with caution, on account of the large quantity of carbohydrate, protein, and fat which it contains.

#### DRUGS.

In the treatment of constipation Joslin prefers to administer one fifth grain aloin, or ten to thirty drops fluidextract of cascara sagrada, or compound rhubarb pill. Bran bread and coarse vegetables or fruit for breakfast may prove efficient. For diarrhea he prefers to keep the patient in bed, and kept warm, and at the same time to administer hot water. To overcome acidosis Joslin prefers not to use alkalis but to get rid of diacetic acid and acetone by fasting and dieting as advised.

#### REFERENCES.

1. JOSLIN: *The Treatment of Diabetes Mellitus*, Lea & Febiger, Philadelphia.
2. HILL and ECKMAN: *The Starvation Treatment of Diabetes*, W. M. Leonard, Boston.
3. JOSLIN: page 242.
4. Idem: page 243.
5. Idem: page 244.
6. Idem: page 250.
7. Idem: page 260.
8. Idem: pages 505 and 510.

## A FEW AVOIDABLE ERRORS.

BY ROBERT H. MACNAIR, M. D.,  
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Lamentably unfortunate is that psychoentity that is incapable of realizing that every individual soul is prone to make mistakes. However, and again, it is truly an unfortunate circumstance to be insufficiently trained for the life work one is to follow to be armed against those blunders that must be counted among the avoidable.

It is also lamentable that a certain proportion of persons are either so highly endowed with the element the scientist calls exaggerated ego, that they seem unmindful of their proneness to commit error, or they seem to fail to profit, for the future, by the mistakes of the past.

It is very distinctly recalled, from the student days, in the halls of learning, how, along one important branch of professional work, Professor Theophilus Parvin grew eloquent and exclaimed in unmeasured indignation against the fearful negligence, in the face of a very sacred duty, of the obstetrician who hurriedly applied the delivery forceps before Dame Nature had indicated her inability to complete a very natural function without mechanical aid.



How interestingly the good professor's strong teaching was recalled, but a few years' after beginning medical practice. It chanced that the acquaintance was made of a physician, a genial man, of very large, strong build, who enjoyed quite a large practice. But as this brother physician disliked the practice of surgery (he enjoyed the theory very much) I was very much favored by being called in for most of the surgery that came to my kind friend. As he also had an extensive obstetrical clientele, it happened, on many occasions, that there were ruptured perineæ to repair. As may be imagined, even though there was occasion for a great deal of serious thought and reflection, it would have seemed real presumption for a very young man in the profession to admonish one with such wide experience; besides it would have been exceedingly poor policy, especially as the younger man would have accomplished nothing, save, most probably, the chance of losing much good business, the same that was needed to pay office rent, fuel, and feed bills, etc.

However, all of that caution of the distant past cannot stand in the way of some present reflection. On one occasion the good doctor hurried into my modest office to ask if I could go very soon to a certain patient (a primipara) at whose delivery he had used the forceps—and, of course, produced rather an extensive rupture. With so much heft, in live avoirdupois, at the distal end of the forceps something had to give way, and the accoucher said that, when the giving way came, he landed in one corner of the room, all in a heap.

Another emergency that Professor Parvin dwelt at length upon, connected with the same branch of the profession, was postpartum hemorrhage. This good, most conscientious teacher, whom I thought exceedingly able—besides, he was truly inspired by very highest motives—would eloquently draw a picture, deeply colored, with the real pathos of human experience: That of the young mother, whose soul had just been gladdened by the apparently safe delivery from long travail, whose heart joyfully welcomed the reproduction in a sweet, innocent little life, suddenly, to be snatched away from such maternal happiness, by the onrush of a postpartum hemorrhage.

During a vacation period from medical studies, it became a very painful experience to see the attractive young wife of a dear friend die from postpartum hemorrhage. What seemed to bring the sad tragedy nearer to my own soul was the fact that the young woman had been a great social favorite, had a host of friends, with whom I had the honor of being classed. Be it said at the outset for the accoucher who attended this primipara, he seemed to be too opinionated—a sort of old time country practitioner, one of the sort that depended rather too much upon that same unfortunate ego exaggeration. Hence he was not there in a severe crisis. But later, and it is only charitable to assign the defeating cause, the doctor completely lost his head, and consequently lost my good friend's young wife. As the case was attended in a small town, and there were no specialists in obstetrics to appeal to for assistance, it seemed quite out of place to either offer or accept any suggestions from a half baked medical

student. However, even then I knew "McClintock's rule," and the patient's pulse rate just subsequent to delivery—the latter not abnormal nor very tedious—was a few beats over one hundred to the minute. Yet the accoucher had turned the patient over to the care of the nurse, received the usual pat upon the back for good work, and gone on his rounds. It became my painful privilege to know that hot vinegar and syptic iron solution were used by the gallon. But strict aseptic precaution was not used, nor were bimanual support and massage nor the emptying of the relaxed uterus of clots practised. Gentle, firm pressure upon the abdominal aorta, against the lumbar spine, was, probably, not known then; at all events it was not tried. Absolutely nothing was done to aid a relaxed uterus to get rid of the clot obstruction, to get just a slight breathing spell of rest, in order to do more normal contraction and close up the mouths of bleeding arteries. The good, patient, old Dame Nature was then really up against a very severe proposition, yet there was not a practically trained, competent servant, in the person of an obstetrician, to lend the efficient hand. Consequently, here was, indeed, another one of dear old professor's pathetic pictures.

Again, the good admonition of this able teacher came home most vividly at the eighth year of private practice. Having been engaged to attend a primipara in a labor that the little woman was looking forward to with great anticipation of happiness, for she was one of Nature's mothers—one of the normal handmaidens—I was quite a little annoyed when upon asking the messenger, who called for me in an old sleigh, how long the patient had been sick, the messenger replied, "All night." It was then after breakfast on a snowy morning. When the patient was asked why she had delayed until morning to summon me, she replied that Mrs. ———, a neighbor (a typical old Mrs. Butinski), had insisted upon waiting until morning, while Mrs. B——— prevailed upon the patient to keep upon her feet and in motion, throughout a good portion of the night. The delivery was absolutely normal, there was no hitch anywhere, but just as soon as the placenta was delivered the brave little woman indicated complete weariness, muscular relaxation. The pulse rate was counted at just 105 and, as good fortune seemed to arrange it, an excellent trained nurse arrived. The nurse had been expected the night before, but the snow storm blocked the trolley line and she had to wait until morning. Sustaining fluid diet had been administered to the patient before the nurse arrived. The old standby, brandy stimulant, was not allowed, because I then suspected hemorrhage, even though the uterus had made a fairly good effort at contraction. While the patient seemed to be resting normally I took the nurse aside and explained my strong suspicion that there was a decided likelihood of having to fight against hemorrhage—McClintock's symptom was there most clearly. I then had an urgent call to make, but the nurse was informed just where I could be reached by telephone, and she was instructed to summon me upon the first appearance of hemorrhage. While fussing with a very high strung, restless driving horse, to get the blanket off and get into the sleigh,

the gentleman at whose home I had just called ran out to announce that the nurse had telephoned a hurried summons for me to return to my confinement patient. Fortunately the restless horse did not waste any time on the way and, after applying the usual, ordinary means to control a moderate degree of postpartum bleeding, we were rewarded by a complete, apparent return to the normal condition. The pulse rate seemed to drop much nearer to a firm, rhythmic beat. Hence after remaining with the patient for an extra hour, she was again left to the care of a very competent nurse.

Somewhere about the mid hour of a very cold, dreary night the night gong rang furiously, to be followed by the wailing voice of a poor heart stricken man: "My poor little wife will die I know, because she is now bleeding something awful." Upon arriving at the bedside of my patient, I was immensely encouraged to see, upon the pale sweet face, a smile and the expression of true grit. The nurse also was in the true fighting trim.

Lots of sterilizing fluid was hurriedly brought in, while a hypodermic was being administered to the patient. The obstetrical hands were most thoroughly sterilized, well lubricated and, with the right hand gently introduced far enough up so that the fingers could get into action within the womb, the left hand went to a firm position on the outside, just over the fundus. With the bimanual manipulation, a combination of gentle massage and clearing out of clots from the uterus was accomplished. At the same time the nurse had been instructed to make firm but gentle pressure upon the abdominal aorta, which, owing to an exceedingly lax abdomen, could be readily isolated and pushed against the lumbar spine.

There were not many pleasanter impressions recalled than that produced by the gradually increasing contraction of the uterus upon the cramped, tired fingers that were doing duty within. But, with the recuperated muscular power given by nature, the uterus did indicate its contraction by expelling the fingers of the helping hand. Having remained long enough to take early breakfast with the husband, who had recovered his manly courage, I departed with the firm belief that there would be no further trouble. Subsequently, that patient was attended in four other confinements, at none of which was there a suspicion of postpartum hemorrhage.

The latter case has been described, not with the slightest intention of taking credit for an accomplishment, but simply to illustrate how easily Dame Nature's work may be thrown out of normal process by the error of ignorant meddling. It may also be appropriate to suggest that, had a suggestion been offered, by a "half baked medico," of any of the means employed in the latter case to the doctor who attended the southern friend's wife, doubtless the offer would have been considered little short of effrontery.

What may be alluded to as another—a most serious—error, can best be described in the words of a very able New England surgeon, a friend who is inclined to be somewhat of a pessimist: "The medical profession is going to the bow wows, by the air line of commercialism." We are forced to

admit that a very popular modern stunt is bluffing, but, in order to get by with the bluff, it is always essential to have a good, strong rearguard. Nowhere is the necessity greater than in medical practice. For, as we are also forced to admit, the rank and file of humanity is very much inclined to judge a professional man by the external showing that he can put up. Modern competition has become such a sharply drawn process of a progressive era that a good external showing must be used in the getting by stunt. There is hardly any statement that more clearly defines real merit than a certain declaration of holy writ, viz., "The servant is worthy of his hire." But, while no honest man may make the claim of being above making serious, unavoidable mistakes, in all efforts that are put forth in medical practice, above all he must be a thoroughly trained servant, efficient in his special calling.

## REFLEX CONVULSIONS DURING DENTITION.

### *Their Treatment by Lumbar Puncture.*

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Convulsions occurring during dentition have been the subject of sharp division of opinion among authorities. The relation of eclamptic seizures to the eruption of teeth is given as an important factor by many, although equally competent observers have denied the relationship. In a treatise by M. Baumes written in 1783 the following observation is made: "Thus convulsions, the most common and often the most fatal of all the accidents of dentition, present different important considerations. They generally proceed from excessive mobility and the pain of dentition is frequently the exciting cause." That he recognized the fatal character of some is evidenced by the following: "Convulsions as well as the lethargy of dentition may terminate fatally by apoplexy, generally of the serous or lymphatic kind." His observations are confirmed in the main by subsequent writers, notably Ashburner, Jacque, Savoye, Vanel, and Strumpell. In sharp contrast, Jacobi in a series of lectures delivered in 1862 makes the following observations: "The practice of explaining attacks of convulsions occurring during dentition, in a period of life where a large number of unwonted influences are brought to bear upon the unresisting infantile organism, by nothing but the irritation of the fifth pair of cerebral nerves, is entirely one sided and unjustified." Kassowitz after years of clinical observation considers teething a physiological process unattended by any untoward disturbances. Holt seems to adopt this viewpoint, for he states that "dentition must be regarded as an exceedingly rare cause of convulsions."

I have purposely quoted the opinions of authoritative clinicians and hold that in spite of the sharp division of opinion, convulsions do occur during dentition and at rare times become so formidable as to seriously threaten life. The mechanism that initiates the eclamptic seizure is not discussed



here. The pathways by which peripheral sensory stimuli are transformed into excessive motor manifestations are quite devious and intricate. It is rather the persistence of the convulsive attacks that is emphasized. An analysis of the causes underlying the continuance of the morbid process will elucidate the problem and justify the use of the therapeutic measures proposed.

It is assumed that at the height of the convulsive attack there results an intense congestion of the cerebral sinuses and veins. This state of affairs must affect the free flow of cerebrospinal fluid in the ventricles, communicating channels, and subarachnoid spaces of brain and cord. If the attack is not repeated, the venous congestion subsides and the flow of cerebrospinal fluid is reestablished. However, if the convulsions are repeated, the initial venous congestion and interference with the free passage of the cerebrospinal fluid is increased immeasurably. A vicious circle is thus created, each succeeding eclamptic seizure adding greater difficulties to the overburdened ventricles and blood spaces. Finally an acute hydrocephalus develops. This increased intracerebral pressure is without doubt responsible for the continuation of the convulsions. Upon this point the observations of M. Baumes made 135 years ago are worthy of note. He states: "Acute hydrocephalus, whether we consider it as a result of cerebral plethora, or whether it be derived from a morbid affection of the serous membrane of the brain, or whether it be caused by the imperfect absorption of the humour which lubricates the ventricles of the organ, has a close connection with difficult dentition." It is this very "imperfect absorption of the humour which lubricates the ventricles" that perpetuates the convulsions and menaces the infant's existence. Naturally the use of lumbar puncture to relieve this pressure at once suggests itself and has been used in three cases under my observation with striking effect. The convulsive attacks were coincident with the eruption of teeth, the persistent spasms were clonic and tonic in character, and had consistently defied the usual remedial measures. Lumbar puncture showed the cerebrospinal fluid to be under considerable tension and the removal of an adequate amount was followed by a cessation of the attacks.

One of the cases under the care of Dr. S. A. Jahss is worthy of an extended note. This child was wont to have a series of convulsions with the eruption of every tooth. Its health was unimpaired in the interim. The number of attacks would increase with each succeeding tooth and the intervals between the spasms were so shortened that the convulsions were almost continuous. The last attack lasted twenty-seven hours and Doctor Jahss noticed that the child during this entire period was never relaxed; clonic convulsions were followed at once by tonic spasms in the entire somatic musculature. Heroic medication seemed to have no effect, and the precarious condition of the child was quite evident. The coma was absolute and the signs of increasing intraventricular pressure were quite manifest. By lumbar puncture about forty-five c. c. of fluid were withdrawn under a great deal of tension. The convulsions stopped, the muscles

gradually relaxed, and the child fell into a quiet slumber of several hours' duration. There was moderate stupor and a state of muscular asthenia in the ensuing twenty-four hours, followed by a complete and uninterrupted recovery.

Naturally so radical a method for treating the reflex convulsions of dentition is hardly advocated as a routine measure. Other well tried methods are available and no doubt are just as efficacious. It is only for those rare cases where the convulsions persist and an acute hydrocephalus develops that lumbar puncture is recommended.

370 CENTRAL PARK WEST.

**Harmlessness of Serum Therapy in Massive Doses.**—A. Jousset (*Presse médicale*, August 5, 1918) states that, among tuberculous patients, normal equine or bovine serums give rise to the same kinds of untoward reactions and in the same proportion of cases as do active antituberculous serums. As to the relation of dose to reaction, the more severe reactions are actually less frequent after massive amounts given at short intervals than after small doses. The author commonly injects 100 to 150 mls of antituberculous serum at one dose in adults. Comparing the untoward reactions after such amounts with those following the ordinary doses of ten to forty mls, skin manifestations, local or general,—urticaria, erythema, purpura,—proved three times as frequent after the larger amounts, and joint manifestations twice as frequent. These disturbances are, however, amenable to calcium chloride, adrenalin, belladonna, and sodium salicylate, and deserve no greater consideration than the toxic quinine or iodide effects in malaria or syphilis. The more severe general reactions, those often considered the result of anaphylaxis, were practically no more frequent after large than after small doses—five and four per cent., respectively. The author strongly objects to considering these reactions as anaphylactic manifestations, and reports over 1,500 subcutaneous serum injections without a single instance of true anaphylactic reaction. The general reactions resemble rather the nitritoid attacks which sometimes follow arsenobenzol, or may appear only after several hours or days. They often occur after the first injection of serum, without any preparatory inoculation. They arise merely from special susceptibility of the subject to the material injected, and their prognosis is no less favorable than that of the skin or joint reactions already referred to. The most serious reactions attending serum injections are those constituting the Arthus phenomenon, in which after repeated injections there develops locally what appears to be a suppurative hematoma. This may prove so painful that the patient will refuse further treatment. In this instance, however, large, frequently repeated doses proved less dangerous than small doses, awakening the Arthus reaction in only two instead of ten per cent. of all cases. On the whole the massive doses prove both safer and more efficient. Intravenous serum injections should not be used.

# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.

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### BONE TRANSPLANTATION.

In the treatment of wounds of the lower jaw experienced in warfare, Johann von Ertl, director of the surgical department of the Royal Reserve Hospital, No. 6, at Budapest, classifies the cases suitable for transplantation in the following way: Cases which do not consolidate under conservative treatment result in pseudarthrosis, and those which result in severe and distinct destruction of the lower jaw.

Cases which do not heal by conservative treatment are those treated by splinting and which do not respond to a fixation apparatus. They invariably end in a pseudarthrosis and, from the viewpoint of conservative surgery, are today still an open question.

Basing his theories upon the experiences of his operative work, von Ertl looks upon these cases in the same way as those where a little destruction of bone has occurred. Bone injury from firearms, just like those of the lower jaw, represent a total interruption of continuity in the majority of instances, and in this way the defect may be small or, considerable in extent. If such a fracture does not unite spontaneously, callous cicatricial tissue will develop between the fragments which, little by little, become hyaline and then surround the bone fragments and partially hold them in such a way that the loss of bone assumes the nature of a pseudarthrosis.

The majority of cases coming to von Ertl's special clinic for treatment are jaw lesions of about a year's standing, which during this time have been treated by conservative methods but show no tendency toward consolidation. The changes which have taken place in the bone fragments are such that at this stage union of the parts can no longer be hoped for, and on account of the cicatricial contraction, regressive changes of the bone ends will shortly occur. Now, if these pseudarthroses of the lower jaw are freely exposed and freed from the cicatricial tissue, in most cases one will find a distinct loss of bone tissue. In every case von Ertl has found changes in the structure of the bone. For example, the bone ends reveal an osteosclerotic induration when the fracture is seated in the region of the chin, while when seated at the angle of the jaw softening from resorption is met with. These regressive changes of the fractured ends involve the bone to the extent of some one to two centimetres and, occasionally, considerably more.

These "aplastic" portions of the bone, as they have been called by Verebely, cannot be utilized at operation on account of their low vitality, and it is for this reason that in order to transplant and obtain a good consolidation, these bone ends must be freshened until healthy bone tissue has been

reached. Therefore, the original defect is increased considerably in extent and the primary pseudarthrosis will have to be filled in with new bone, to the extent of four to five centimetres of bone. It is for this reason that von Ertl takes a similar view in cases of small loss of bone and prefers to treat them by transplantation. This conservative treatment with a prosthesis is preferred by many German surgeons who patiently wait for consolidation to take place. Von Ertl does not go so far as to deny the possibility of this taking place incompletely, inasmuch as in some few cases the periosteum of the bone ends may undergo regeneration under good conditions, with the ultimate union of the fracture.

Calcification of the cicatrices may also occur, but all these conditions are uncommon in practice. Some surgeons do not consider bone transplant as absolutely necessary, and are content with the functional results that may be obtained by splinting and other conservative treatment. At all events, there is one merit that must be recognized in stomatology, and that is, with its system of splinting and prostheses, the functions of the lower jaw may be reestablished in quite a few cases when the splinting can be accomplished on good, strong teeth, although the functional activity may be only temporary. The functional results are, however, exclusively dependent upon the duration of the life of the teeth, and the extra work thrown on them by a prosthesis unquestionably shortens it.

Some surgeons treat pseudarthrosis with injections of serum, tincture of iodine, chlorine, etc., and lately Schröder has essayed injections of an emulsion of periosteum. The Vienna school is for operating. For example, Pichler has successfully employed a pedunculated bone plastic operation. From one of the fractured ends he forms an osseous flap with the chisel and brings it over the defect. Esser has united the pseudarthrosis with nails, with what success is a question. The Vienna school has also advocated bone transplantation, particularly Weiser, Foramitti, Pichler, and Wunschheim.

In von Ertl's service fresh wounds of the jaw immediately treated never result in pseudarthrosis because they are all operated on when, after a trial of from six to eight weeks of prothetic splinting, no consolidation has taken place. They are dealt with by an osteoplastic operation and union always ensues. Von Ertl's working principle is to reestablish as quickly and radically as possible the lost function, and from this viewpoint he is of the opinion that it is better to interfere surgically rather than to wait for the uncertain results of conservative treatment.

Small and limited losses of bone of the lower jaw, in the region of the chin, are common, likewise in the rami, but almost the entire lower jaw may be missing in some instances. The small losses of bone are usually due to a missile fired at a distance of over 500 metres, resulting in splintering of the bone, both at the entrance and exit apertures. These splinters are in part carried away with the



missile and in part scattered about in the surrounding soft parts where they act as foreign bodies. The exit aperture is apt to be the larger of the two and offers a loss of substance to the extent of two to three centimetres.

Cases are received in von Ertl's service either directly after the receipt of the injury in an acute state, or, on the other hand, they are long standing chronic cases which have undergone a futile conservative treatment. In what he calls the acute cases, von Ertl resorts to conservative treatment in the first place, but if after the lapse of six weeks there is no tendency toward consolidation, the patient is operated upon. In cases where the loss of bone is not greater than two centimetres, it is treated by an osteoperiosteal plastic procedure, but if the resulting bone defect is more than this, experience has shown that it can only be cured by bone transplantation. In those cases which he calls chronic, with extensive cicatrices and suppurating fistulae—if they have not already been treated by some special orthodontic procedures—von Ertl says that the bits of bone are usually held in their dislocated position by cicatricial tissue.

The gap due to loss of bone is usually filled in by dense cicatricial tissue, which only permits of a very limited movement of the fractured ends, so that the defect resembles a pseudarthrosis. However, by digital examination one can exactly locate the defect and gently push the exploring finger between the fractured ends, which in most instances are rounded. Radiographs in these cases usually show a loss of substance varying from three to four centimetres, generally in the form of a segment.

In cases where the process of repair of the soft parts is yet in the acute phase and an exclusive intrabuccal treatment is being carried out, the resulting cicatrices will be elastic and superficial. A pseudarthrosis does not exist, because the mobility of the fracture is much freer, and during mastication the teeth which have remained in the larger branch of the fracture will be found to slide against the defect. In these cases a diastasis of from one to two centimetres will be found, and in defects of the horizontal branch one may, with a diastasis of three to four centimetres, easily slide the larger fragment toward the smaller one. A similar free mobility is met with in pathological loss of substance, particularly following osteomyelitis, when the sequestra have been removed by the intrabuccal route.

In cases of larger defects in the acute stage, the clinical picture is marked, besides the extensive lesions of the bone and soft parts, by gaping of the structures from actual loss of tissue. These cases represent the most serious types of wounds of the lower jaw, the patient's face being disfigured to such an extent as to be unrecognizable. The wounds result from a missile fired at short range. This would produce the impression that it might have been caused by a dum dum bullet, but such is not the case, because if the lower jaw is hit in the centre by the missile or pierced in two places, the resulting wound is absolutely similar to that resulting from a dum dum.

Bits of teeth and pulverized bone blown into the

wound along with the missile act as just so many projectiles and produce really fearful destruction of the soft parts. A missile producing such destruction in most instances involves a considerable portion of the lower jaw. For example, the missile enters obliquely at the angle of the jaw, goes through the horizontal branch and may or may not make its exit through the opposite side of the bone. Such a wound may readily result in complete destruction of the cheeks and chin. Through the gaping and lacerated borders of the wound the root of the tongue, or what remains of the organ, may be extensively damaged, while the pharyngeal arch is freely exposed to view. The entire surface of the wound is filled with bone splinters undergoing necrosis as well as sloughing, and purulent bits of tissue, and a fetid, purulent saliva flows away from the wound. On account of secondary infection the discharge becomes larger in amount, the soft structures become tumefied, so that the patient can be fed only by means of a sound.

In other cases the damage to the soft parts is really very small, although the destruction of the jaw may be very extensive. Such conditions are usually due to a missile which hits the horizontal branch of the jaw at a very acute angle, shatters the bone at the entrance aperture, continues its course along the entire half of the lower jaw, breaks the region of the chin, and makes its exit through the opposite horizontal branch, which in turn may be completely destroyed. In such cases the soft structures may be only slightly injured and still the jaw may be reduced to atoms, commencing at the ascending branches and extending to the frontal aspect. The minute bone splinters soon undergo necrosis and are eliminated by an abundant suppuration. If these cases can be treated early and if the sequestra can be removed subperiosteally by the intrabuccal route, the periosteum can be preserved and, later on, may become active in bone reproduction.

In the cases of great defects the acute phase will generally go smoothly because the entire field of the wound is open and easily accessible to treatment. The bone lesions, however, must be attended to with great precaution, especially when the floor of the mouth is also injured. The bone splinters, acting as secondary missiles, will destroy the floor of the mouth and wound the ligular artery and vein, with the result that aneurysms or hematomata arise. These vascular lesions in turn may ulcerate from the suppuration and give rise to serious secondary hemorrhage, to such an extent that, besides ligating the vessels, intravenous transfusion must be done to save the patient.

These very extensive wounds usually come to von Ertl's clinic for treatment when they have reached the chronic phase. Conservative treatment being practically powerless, operation only is to be considered. In a number of cases, von Ertl has observed the poor results of previous attempts to restore the parts. At this phase there is great deformity and unsightly cicatrices, and what is very striking is the tendency to exaggerated cicatricial contraction of the soft parts, with the result that the free bone fragments occupy the most varied positions.

If, when treatment is first undertaken, no attempt is made to fix the bone fragments in exact position, or if this cannot be done on account of the great extent of the destruction, these fragments will assume certain typical positions due to retraction of certain groups of muscles. For instance, when there is total loss of the middle portion of the body of the lower jaw both horizontal branches will draw together and may unite in the form of a V, in which circumstances the result will be that the lower jaw takes the shape of a crow's beak, following cicatricial contraction of the musculature of the floor of the mouth.

In defects of the horizontal branch the bone fragment at the angle of the jaw is usually retracted inwardly and forward, this being due to the fibres of the masseter and contraction of the temporal muscle, while the larger distal fragment, when it is not fixed by cicatricial tissue, may be freely movable.

In defects of the angle of the jaw similar conditions are met with. In these cases the ascending branch is usually retracted inwardly and slightly forward, this being due to retraction of the temporal and pterygoid muscles. In defects of the ascending branch the portion remaining is ordinarily retracted inward and slightly forward. It is interesting to note that this branch is usually firmly fixed in this position, due, as von Ertl supposes, to secondary changes in the joint. The temporomaxillary ligaments being inactive, probably pull the condyl strongly on the tuberosity, while the retracted capsular ligament holds it fixed in this position. In almost all cases of these defects of the angle of the jaw the lateral facial and parotidomasseter regions are depressed in the form of a trough. This is due to atrophy of the muscles of mastication and cicatricial contraction.

Another symptom useful for diagnosis for small defects of the horizontal branch consists in the fact that on the injured side the distance measured from the middle of the body of the jaw to the angle is shorter than on the normal side. Mayor, who recommends this procedure, has always found it exact in cases of pseudarthrosis.

These patients, on account of the difficulties in feeding, are generally very anemic, and gastric disturbances in them are far from uncommon; von Ertl states that they become subjects of phthisis.

I should like to discuss the operative technic employed by von Ertl, but this would extend this article far beyond its intended limits. However, I will say that as far as results and ingenuity go, the work of von Ertl in no manner surpasses that of American or French operators.

#### CRANIOCEREBRAL INJURIES IN WAR.

It has been the experience of some English surgeons that comparatively few cases of brain injury reach the larger base hospitals, but it is now generally admitted that all foreign bodies lodged within the brain should be removed. When the bullet has gone through the brain, the hydrostatic pressure is transmitted in all directions and many wounded die from arrest of the respiration, the local lesion not in itself being the cause of death. For this reason some surgeons have gone so far as

to advise performing artificial respiration directly these patients are seen, but it is evident that this practice cannot be carried out, given the circumstances of war surgery.

Craniocerebral injuries may be conveniently classified as follows: 1, Wounds of the scalp, with or without denudation of the skull, without fracture, but very frequently with cerebral contusion; 2, scalp wounds with cranial fissures; 3, scalp wounds with fracture of the skull of varying types and degrees (in this variety the lesions are usually more important in the internal than in the external table); 4, comminuted fractures of the skull with slight cerebral lesions; 5, comminuted fractures of the skull with extensive cerebral lesions; 6, craniocerebral perforation with missiles lodged in the brain substance, and 7, transfixing wounds.

The best brain surgery can be accomplished at the base hospitals, but a certain number of interferences must be undertaken at the first line ambulances as has been made evident during the past four years, particularly in the French and Italian armies. Quite a number of symptoms offered by these patients when first seen at the ambulance are not the result of the cerebral lesion itself, but due to shock, local edema or contusion of the brain. They are merely temporary manifestations and do not require surgical interference.

The fundamental principles of treatment of craniocerebral injuries are: 1, A careful cleansing of the wound and surrounding scalp; 2, an examination of the surrounding area after the wound has been surgically enlarged; 3, hemostasis; 4, removal of bone splinters and, if possible, the removal of the missile, and 5, establishment of free drainage. In infected wounds a crucial incision is preferable to the U shaped flap.

Decompression may be useful in certain cases of war injuries during the first few days following the receipt of the wound, on account of cerebral contusion or edema or both, while later on it is required in cases of meningitis or meningoencephalitis. Decompression can be realized by resort to lumbar puncture, which is unquestionably excellent in the serous form of meningitis. It may also be obtained by craniectomy, but simple craniectomy is useless on account of the inextensibility of the dura. On account of the danger of infection from the primary wound, it is preferable to carry out decompressive craniectomy on the opposite side to that of the wound. Meningitis is the one great danger in cranial lesions of warfare, and all the measures resorted to up to date, such as posterior bilateral trepanation or irrigation of the spinal canal, have been ineffectual. Cerebral abscesses usually develop some time after the receipt of the injury, when adhesions have walled off the subdural and subarachnoid spaces.

The lymphatic sheaths of numerous small blood vessels distributed in the cortex are in direct communication with the subarachnoid space, so that infection of the white matter is easy. Now, while the gray matter assumes an excellent offensive against infection, reacting by throwing out a fibrous tissue barrier against the infectious process which



limits the destructive process to a small area, the white matter is far more fragile and it would appear that the farther away the white matter is from the cortex, the easier it is destroyed by the infectious process. A cerebral abscess may open either into the ventricles or into the subarachnoid space, thus resulting in a fatal meningitis. Drainage of these pus collections is a difficult matter and the drain should be left in situ until recovery of the patient is complete.

Cerebral hernia is the result of infection of the brain and underneath it, in the subjacent tissues, will be found either a localized abscess, a septic softening of the cerebral substance, or a foreign body, either a bone splinter or a bit of missile. The application of alcohol to the hernial surface and compression are quite useless, while excision of the hernial mass is dangerous, because it exposes the patient to meningitis, not to say permanent functional deficiency.

Intravenous injections of antiseptics have been found useful and Ballance has used for this purpose ten c. c. of a 1:1000 mercuric bichloride, eusol (hypochlorite and boric acid) solution, 100 to 200 c. c. in a saline medium, as well as diiodosalicylic acid in doses of five c. c. Various vaccines and sera should likewise be essayed. The Italian surgeon, De Sarlo, has performed seventy-seven craniectomies at the front; he advises an exploratory operation in all cases of cranial wounds, even if the wound in the scalp is to all appearances slight and although no serious cerebral disturbance is manifested. If upon exploration bone or endocranial lesions are discovered, the interference should consist of an atypical craniectomy, whose essential object is to obtain a careful and complete cleansing of the parts involved with the aim of preventing the ultimate development of meningoencephalic infection. Such procedures belong in the class of urgent surgery at the front, and all cases should be given the benefit of the operation as soon as possible, because it is absolutely essential that the injured man shall not be subjected to the dangers of transportation to a base hospital. The divergence of opinion between English, French and Italian operatives is still great; the two latter surgeons with quite as much experience in brain work as Ballance or Cushing advise immediate operation at the front.

#### DEAFNESS FOLLOWING TRAUMA.

The causes of deafness following wounds of warfare are of two sorts; 1, A piece of bursting shell or shrapnel shot or bullet hits the skull at some spot more or less distant from the ear without causing any direct lesion of the brain due to depressed fracture. More or less generalized headache ensues with tinnitus aurium, slight loss of memory, decrease in audition and slight tremor of the limbs, all being symptoms common to a more or less violent blow on the skull. 2, A large calibre shell explodes in the neighborhood where the soldier is standing at a distance, say, of one to four yards. No apparent wound can be discovered, but the symptoms above mentioned develop and to a more marked degree. There is loss of consciousness varying from a few hours to

several days, and violent frontal headache which may persist for several months. Tinnitus aurium is very marked but slowly subsides. There is also a complete loss of memory and an absolute or almost absolute loss of hearing although occasionally, the patient hears but does not understand. Tremor is pronounced especially in the upper limbs, while some patients often are deaf and mute. All these are symptoms of severe cerebral commotion.

Lesions giving rise to deafness are of two kinds: 1, Lesions of the middle ear, with depression, laceration and hemorrhage of the tympanum, often with a resultant suppurating otitis media which runs its course in about three weeks, or on the other hand, continues for months, finally ending in classic otorrhea. 2, In the second class, there are no apparent lesions and these are the most serious cases, because they offer severer symptoms and it is assumed that they are due to labyrinthine or cerebral commotion.

The lesions of the auditive centres are the result either of direct blows on the skull or sudden atmospheric displacement. They are visible if they involve the middle ear and occult when they involve the nervous centres, and in the latter case, the curves of auditive acuity are the same as those of deaf dumbness, a fact which gives a clue to the probable cause of the latter process.

The question of treatment of these hypoacusias, is outlined by Doctor Marage, in his excellent little work entitled: *Rééducation auditive des surdités consécutives à des blessures de guerre*. (Paris: Vigot Frères, 1915.)

The selection and choice of patients in France depend entirely on the surgeons of the military hospitals, who send their deaf patients to the otological service of the region, which examines them and then, in turn, refers them to Doctor Marage's special service. Doctor Marage accepted all cases, no matter what degree of deafness they offered, eliminating only those patients who were unable to follow the treatment on account of a bilateral suppurating otitis media. The patients are first examined both from the medical and otological standpoints, that is to say after making the clinical diagnosis the degree of auditive acuity and the type deafness is determined with a special instrument devised by Marage, called a *sirène à voyelles*. The most careful account is taken of the cerebral condition, tinnitus aurium, vertigo, headache, loss of memory, tremor, disturbances of sleep and sight, and these data once obtained are noted on a special card, with the nature of the treatment, which not only varies with each patient, but is also changed from day to day according to the daily condition.

In point of fact, these subjects are very sensitive to the slightest variation in temperature or humidity. For example, an attack of influenza of mild degree is quite enough to awaken an otitis media from its latent state, resulting in renewed discharges which must be treated immediately. Auditive reeducation is an exclusively medical proposition and if not carried out directly under the supervision of the physician it will be unsuccessful. There are three sorts of deafness: 1, Patients presenting only lesions of the middle ear, ten per

cent.; 2, patients with cerebral commotion, without apparent lesions, thirty-eight per cent., and 3, patients presenting both lesions of the middle ear and symptoms of cerebral commotion, fifty-two per cent. Auditive reeducation has been carried on by Doctor Marage with only his *sirène à voyelles*. For five minutes each day sound vibrations are made to act on the tympanum. Atmospheric pressure in the apparatus rarely attains five mm. of water, but it should be remembered that even a very deaf subject is frequently very sensitive to the weakest sounds.

Since we are in a state of war, he considers that a successful treatment is attained when a patient hears well enough to be able to rejoin his regiment. Sixty-eight per cent., i. e., more than two-thirds of the subjects, were able to return to the front and almost fifty per cent. of these subjects were very deaf, some even being regarded as incurable. The latter can be divided into two categories: some, ten per cent., have remained absolutely deaf, the others, twenty-two per cent., can hear when spoken to directly into the ear and they can therefore be employed in certain auxiliary services.

#### HOSPITAL ORGANIZATION IN FRANCE.

Elizabeth Frazer tells in a most interesting manner of the hospital organization on the western battle front in the *Saturday Evening Post* for October 5th. Her very sympathetic narrative includes a description of the methods first followed and of the modifications which were made necessary by the more intimate intermingling of the troops of different nations after General Foch took supreme command:

One of the most distinctive features of the old régime was the hospitalization system. Here as elsewhere each nation carried on in its own fashion. The British evolved one type of organization; the French another; the Americans a third; so that there existed side by side three separate networks of systems, each elaborate, ramified, complete, which never touched each other. In the British sector, for example, the seriously wounded are evacuated as rapidly as possible back to England, where are situated most of their big base hospitals. In the French system the evacuation hospitals are dotted all along the sector a few miles behind the firing line, with their large base and convalescent hospitals scattered throughout the interior, in the Midi or down on the Riviera, far from the rude northern winds. And when the Americans were assigned their sector in Lorraine they organized their system along similar lines.

First come the evacuation hospitals, as close up behind the front as possible, in order to catch the wounded man within two, three, or four hours of the time he falls on the field. Here he is operated upon without delay, rendered fit for transportation, and then shipped to some big base farther back in the rear. As the hospital formation recedes from the advance zone of the army, and therefore from acute danger and unstable tenure arising from likelihood of capture, shelling and bombing raids, the

bases grow in size and elaboration, until at some points they are vast beehives, community centres with a capacity of ten to twenty thousand beds. Between the two extremes of the formation, the evacuation hospitals just behind that invisible and most uncertain quantity called the front line and the big solid base situated some hundreds of kilometres away—between these two types there exists the greatest difference.

The base, as its name implies, is solid, immobile, permanent, steady as the Rock of Gibraltar or the skyscrapers of New York. The evacuation hospital, on the contrary, creeping up as close as possible behind the fighting forces, is light, mobile, supple, easy to move, consisting largely of tents, stuff that can be loaded swiftly on trucks and motor lorries and carried away. If during a big push the line begins to sway perilously, to strain, to crack, with breaches showing here and there, and the order comes to retire, the evacuation hospital can fold its tents like the Arabs and silently steal away, not on camels but their modern substitutes, camions, with the orderlies on the rear truck, thumb to nose, wagging derisive fingers at the oncoming boche, who if he does break through will find—just nothing at all.

That is one difference between evacuation and base hospitals. And there are others. The bases do good straight honest and honorable surgical and medical work of the type that is known in America. They have a fine régime, and this régime is rarely overturned. They are, therefore, prosaic. But an evacuation hospital is dramatic, picturesque, full of potentialities and surprises, with tragedy, comedy and broad farce competing for first place every hour in the day.

Here during a big offensive, when Allied and enemy wounded are pouring in in a continuous stream, surgeons, nurses, and personnel work like fiends under a tremendous pressure, twelve, twenty-four, even forty-eight hours at a stretch. Here are to be witnessed in the operating room running fights with death as tense and thrilling as anything upon the battlefield. Sometimes the wounded man is exactly upon the great divide, hovering between life and death, an extra hair's weight capable of sending him to either side; shrapnel in his chest, his lungs full of blood, breathing like a trumpeter, suffering from shock, exhaustion, lack of food—and still able to smile up into the surgeon's eyes and say faintly: "I'm all right, sir. Take that other poor guy. He's worse off than me."

In cases like these, three minutes more or less in the length of the operation spells all the difference between time and eternity. The surgical team works with the perfect union of a football eleven. In their white aprons, caps, and masks they look like priests performing a rite. The sweat stands out on their foreheads. Their expert fingers move like lightning, yet precise, unhurried, sure.

In an operation of this kind, with life and death in the saddle and both riding hard, I have seen the assistant hold a watch on the operating team, as if it were a horse race, and call aloud the minutes, thus: "Three! Five! Seven! Ten!" Two minutes too long, and the patient may expire on the



table, or die of pneumonia from the added strain of ether on the lungs. Here margins are short and time more precious than the weight of iron in rubies.

Here also is to be seen what is known as the new war surgery. The wounded men are x rayed before entering the operating room, and the exact position of the foreign body indicated by an indelible cross on the patient's skin. Consequently the surgeons need not go delving and exploring and guessing all over the landscape, but make a clean straight dive for the intruder. As the greatest danger in all these wounds is that of infection from the gas gangrene germ, which infests the soil of France and therefore every particle of the soldier's clothes, and as in addition the wounded are often forced to lie twelve, twenty-four or even thirty-six hours on the field on account of a violent enemy barrage, these wounds are often badly infected by this germ before ever they reach the evacuation hospital, near as that may be. In order, then, to prevent the further spread of the poison throughout the body the wound is laid wide open, the crushed and torn tissues shorn clean away, and a big clean wound created. This is thoroughly cleansed, packed with gauze soaked in Carrel solution, after which the entire area is wrapped in compresses, solidly bandaged, strapped or splinted—and the patient is ready to be shipped a hundred miles.

From this it will be seen that it is at the outset of the game, after the man is first wounded, that the time element is most precious. Upon the speed with which an ambulance can deliver a soldier to the nearest evacuation hospital, divest him of his dirty, infected clothes and lay him on the life-saving operating table depends largely the speed of his recovery and return to the lines. Delays there are bound to be—violent shelling of trenches, back areas or crossroads, which may block every form of transportation for hours. And it is to counteract these unavoidable delays that evacuation hospitals are creeping closer and closer up to the front, risking bombardment and air raids in order to save a greater percentage of life and limb.

Behind these hospitals, then, stand the big solid bases, imposing, safe, and sane. In front of them is still another formation. Briefly, it is something like this: A soldier is wounded on the field, in the trenches, in a wood. If alone, he applies his own first aid. If he has given it away to a comrade, he uses his belt for a tourniquet, his bootlaces—anything. If he cannot get at his wound or if he is knocked unconscious, he lies until he is picked up by friend or foe. If he is not picked up he "goes West," joining the great host of immortal comrades, and all is well. That is the first step, where each individual attends to himself, is attended to by others, or is lost.

The second step consists of getting him to a dressing station, usually in some *abri*, where he is bandaged, given a hot drink, an injection of antitetanus serum, and an iodine cross is marked on his forehead to indicate that he has received the same. If he is suffering acutely he is in addition given a morphia tablet. After this he is transported by ambulance to the divisional field hospital, where if

he is in good condition he is not even unloaded but sent straight on to the evacuation hospital a few miles farther back. Thus he receives personal, regimental, and divisional first aid before ever he strikes the evacuation hospital.

All of which, if he is lucky, he may get inside of two or three hours, and be safely tucked away in his cot coming out from under ether, raving not of home and mother but of going over the top, shouting in stentorian accents: "Shoot 'em to hell, boys! The dirty skunks! Shoot 'em to hell!" to the infinite delight of his comrades in the tent ward, who cheer him on: "That's the stuff, buddy! Atta-boy! Eat 'em alive!"

Finally, after much batting of wobbly eyelids, he opens his eyes feebly upon the white-capped nurse at the foot of the bed and murmurs in weak flat tones of pleasure: "Well, hello, chicken! How'd you ever get here? Gosh! That's a foul taste in my mouth. Say, can a guy spit in this place?" And if he has come through thus far alive the chances are he will stick. He is the stuff that survives.

This sketches in the large the hospital formation that the American Army built to care for its wounded behind the Lorraine sector under the old régime. All of the units, the string of evacuation hospitals, base hospitals, and transportation facilities were designed and constructed on the principle of America's holding that particular sector.

#### MEDICAL NEWS FROM WASHINGTON.

*Acquisition of Surgical Instruments.—Activities in Medical Department of Navy.—Addition to Naval Hospital at Washington.—Progress of Reconstruction Work in Army.—Appointment of Additional Dental Officers.*

WASHINGTON, D. C., October 28, 1918.

In view of the fact that foreign sources have been largely shut off, the army medical officers who have to do with the acquisition of surgical instruments have been obliged to overcome many unexpected obstacles and to create sources of supply that have not existed hitherto.

In obtaining some instruments it was necessary to go to the dropforging people and get them to make dies, while the rough forgings were furnished to all sorts of finishers. It became necessary, for example, in obtaining bone drills, to develop a supply from the people that make drills for other purposes. One of the sewing machine companies converted its plant temporarily for the manufacture of surgical needles, up to that time unobtainable in this country.

Destruction and loss of surgical instruments abroad, such as the individual instruments that every medical officer carries with him, is beyond the estimate originally made. The wastage has been enormous, and during the month of September it was necessary to send to France no less than fifty-five tons of instruments. This is partly due to the demand made by a change in the hospitalization system—instead of a small number of large centres, it was found necessary to establish smaller hospitals, many of them in villages, resulting in a dissipation of material and equipment.

The forthcoming annual report of the Surgeon General of the Navy will contain an interesting account of the various enterprises in which the medical department under him has been engaged in connection with the war.

The subject of gas warfare, the use of masks, the neutralization of poisonous gases, and the treatment of the gassed have been fully mastered. The ventilation of submarines and the food appropriate to men serving in them, have been investigated and improved. Antiflash clothing has been devised to minimize the dangers from liquid fire, burning gunpowder, and explosives.

Traveling laboratories have been organized at the naval medical school, and on telegraphic request their units, fully equipped, can proceed to the scene of an epidemic where personnel is overworked or facilities for bacteriological work are limited.

The medical departments of the vessels of the fleet are fully prepared for the hazards of battle. The battle dressing stations, located behind armor and equipped with hot and cold water, electric sterilizers, operating tables, and ample supplies of surgical dressings, manned by skilled and devoted physicians and attendants, are ready.

Careful study has been made of all problems connected with the food and clothing of the men. Epidemic diseases have been investigated, both as regards prevention and treatment, and elaborate statistics have been tabulated. Instruction in all these topics has been given, as required, to doctors and nurses, and the personnel of the medical department has been kept fully abreast of scientific advancement through quarterly and weekly publications, which embody our findings and all that can be observed by our representatives abroad or learned from current foreign literature.

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An addition to the naval hospital at Washington, to furnish accommodations for 300 beds, which was started about three weeks ago, is about completed. A heating plant is included in this plan.

The structure, which is of wood covered with stucco, consists of three separate wings, containing six wards in all, two stories in height. It is built to meet the growing demands for naval hospital facilities at Washington. The permanent hospital buildings had become inadequate, and with the epidemic of influenza in Washington the hospital situation had become very serious. The navy had drawn upon the various civil hospitals for its overflow of sick, but these institutions were badly overcrowded in caring for the civil population.

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The reconstruction division of the Office of the Surgeon General of the Army has returned to active duty abroad more than two hundred men sent home from the American expeditionary force as hopeless cases. It has restored to limited military service many hundreds of men supposed to be of no military value when they were ordered back from France or England. These men have been formed into battalions singled out for special duties for which they have been developed in their hospital restoration. Thousands more are under

treatment for further usefulness in the war and in civil employments after the war.

Medical officers at the base hospitals are laying the foundation for the later rehabilitation of the wounded, the sick, and those suffering from nervous disturbances. In this way they are preparing the patients that cannot be restored to active duty for the care to come later by the War Risk Insurance Bureau and the Federal Board for Vocational Training, which will take up the training and make it continuous after the reconstruction division determines that the time has come when it is safe for it to turn them over to the former for ultimate care or to the latter to continue vocational training for their economic support.

The results show that more than eighty per cent. of those passing into the base hospitals sooner or later filter back into the service either as full service or limited service men, and of the others ten to fifteen per cent. are discharged to the Federal Board for Vocational Training, leaving only about five per cent. ending fatally.

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Upon the recommendation of Colonel William H. G. Logan, Medical Corps, head of the dental section of the Surgeon General's Office, a policy to govern the appointment of additional dental officers needed as a result of the recent increase in the allowance of such officers and increase in the military forces has been formulated.

By orders recently issued, the allowance of dental officers in the army was increased in the United States to one for every 500 men, three for each camp hospital, and three per 1,000 for each general hospital. The allowance for the forces overseas was also increased, the new allowance amounting approximately to one for every 500 of the total strength of the army.

Under the new schedule, a total of some ten thousand dental officers will be needed by July 1, 1919, or about thirty-five hundred more than now are on active duty or temporarily commissioned in the Dental Corps and still in an inactive status.

The regulations that will govern the new appointments are based on the premises that those dentists that are in, or will be taken, as a result of the draft, into the enlisted grades of the military service should first be given an opportunity to qualify for commissions in the Dental Corps. Therefore, opportunity for commissions will be confined to those dentists who now are serving in the enlisted grades and to those that may come in through the draft later. If the vacancies are not all filled from these classes, then dentists within the draft ages and rated in Class 1A and not then called to service, and those between forty-six and fifty-five years of age, will be given opportunity to take the examination for appointment.

There are now about seventy vacancies in the permanent Dental Corps of the Army. Candidates, will be examined, commencing November 4th, by boards that have been ordered to convene at Fort Slocum, N. Y.; Camp Meade, Md.; Fort Oglethorpe, Ga.; Camp Lee, Va.; Columbus Barracks, Ohio; Fort Sam Houston, Tex.; Camp Funston, Kans., and Letterman General Hospital, San Francisco.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

### Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine*

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### PUBLISHERS' ANNOUNCEMENT.

To our great regret our second Special Influenza Number, which should have appeared on October 26th, was delayed through a printers' strike. The strike began with the press feeders and involved practically all of the printing offices in Greater New York. In view of the important character of the information contained in that number bearing upon the treatment of influenza, every effort was made to prevent any delay in its printing and distribution. On advising the Surgeon General of the United States Army of the circumstances, that official sent the following telegram to the feeders' union, which had dictated the strike.

WASHINGTON, D. C., October 25, 1918.

"Am advised on account of printers' strike  
NEW YORK MEDICAL JOURNAL cannot be published. Contains important articles concerning influenza epidemic. Request everything possible be done to ensure the publication on time."

As a result of this telegram, the union agreed to make an exception in favor of the NEW YORK MEDICAL JOURNAL and to allow its members to aid in the printing of that particular issue. But for this action on the part of the Surgeon General and of the union in complying with his request there would have been still further delay. The matter of the strike was taken up by the War Trade Board, and former President William H. Taft, accompanied by other members of the board, came to New York and at this time is engaged in a hearing concerning the final settlement of the strike.

It is confidently anticipated that the matter will be settled during the week, but even if it is definitely settled the accumulation of publication work caused by the idleness of the presses for more than a week will probably entail some delay in the issuance of the current number. We must beg the indulgence of our readers for any such delay, which is unavoidable so far as the publishers are concerned.

A. R. ELLIOTT PUBLISHING COMPANY.

### INFLUENZA THERAPEUTICS IN HISTORY.

Probably nothing serves so well to add emphasis to the warning of the great fathers of medicine, that the first duty of the physician is expressed in the Latin phrase, *non nocere*—to be sure to do no harm—as the history of therapeutics for influenza. In the last epidemic in the early '90's, the coal tar drugs were very largely used and undoubtedly did an immense amount of harm. There is no doubt that they reduced the fever, lessened the pain and made the patient feel ever so much more comfortable, but their action is intensely depressing, and one of the most serious effects of the disease itself is depression. The excessive use of depressants added to the death rate of that epidemic. The lessening of pain was undoubtedly a benefit to the patient, but the reduction of the fever in this crude chemical way was more than dubious. The question is still open as to whether fever is not a conservative reaction on the part of nature to help in the increased tissue metabolism that will add to vital resistance and overcome bacterial invasion.

The preceding epidemics in the nineteenth century were treated by venesection and the free use of whiskey or some other form of strong alcoholic

stimulant. The venesection was undoubtedly weakening and yet there always remained the possibility that the removal of a considerable quantity of toxic material in the blood, thus taken away, may have, at least in vigorous persons, given nature a fresh start on the road to the production of such reaction as would eventually overcome the disease. Too many good clinical observers for centuries saw almost immediate good effects from bleeding for us to think that it was always a mistake. Too many physicians in our time have seen tossing, restless, strong pneumonia patients, at the height of their fever, quieted by bleeding, to permit us to stamp it is just an old fashioned error.

As for whiskey, its good effect is now well understood and it has been used with some very satisfactory results, even in this epidemic. It is not, as we used to think, a stimulant, but on the contrary, it is narcotic and perhaps slightly depressant, but it is its narcotic effect that makes it valuable. We have heard so much about the fatality of pneumonia in our time that most people, after contracting the disease and realizing it, are very seriously scared. As a rule they are thoroughly conscious and they watch themselves breathe some forty times a minute and note the solicitous looks of friends and are likely to become much disturbed. This may gravely interfere with their resistive vitality and power to throw off the disease and something must be done to relieve their mental anxiety and, above all, keep them from interfering with their heart action by depression. A certain amount of whiskey will do this easier and probably better, and with less risk, than almost anything else, so that it becomes easy to understand the popularity of whiskey in the nineteenth century epidemics.

In the eighteenth century epidemics, calomel and antimony were the favorite drugs, though in certain of them tar water was looked upon as almost a specific. Calomel and antimony were very largely administered on the unfortunate general principle that when a physician is summoned he must prescribe something, though of course the elimination of toxic materials through the intestines was thought to be very desirable; and undoubtedly the removal of offending material of any kind from below the diaphragm, so that there shall be no hampering of lung activity from there, must always be a desideratum. Tar water was, however, entirely another thing, popular much more among the "intellectuals" who thought they knew everything, including medicine, than men who were in any sense scientific physicians. It was used very largely by the profession generally, who thought that they saw some wonderfully good results from it. Of course, it was practically water, with an odor of tar in it,

and therefore must have done very little harm. It was made by stirring a gallon of water with a quart of tar, allowing it to stand forty-eight hours, and pouring off the clear water. It was taken very freely and Bishop Berkeley, the English philosopher, particularly was its advocate and proclaimed it of the greatest service. He went through an epidemic of what was probably influenza and felt that it had been a life saving remedy. He said, "I have had all this confirmed by my own experience in the late sickly season of the year 1741, having had twenty-five fevers in my own family" (they had larger families in those days and this number includes three generations) "cured by this medicinal water, drunk copiously."

The good bishop had his experience, doubtless, when the epidemic was waning, and when the great majority of those attacked were improving, but he was quite sure that the reason why his folk did not die as did so many others of those attacked at the beginning of the epidemic was because tar water was used. The value of the whole story is in not jumping to hasty conclusions in therapeutics and being sure not to do any harm, for it would be indeed too bad if we were to have to go through this epidemic without being able to gather from our experience with it something that will be of value for the future. We cannot but commend the thoroughly conservative attitude of the United States Public Health Service with regard to the various remedies that have been recommended. There is much more likelihood that jumping to conclusions in the midst of an epidemic shall prove wrong rather than right and much more than a possibility that biological remedies of various kinds, except when employed under the most rigid control, may do ever so much more harm than good. History still remains a precious resource, as a warning at least, in such matters.

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#### TREATMENT OF HYPERTROPHY OF THE THYMUS.

The latent forms of hypertrophy of the thymus gland which do not give rise to accidents of compression and which are only recognized by objective signs (percussion, radiology) are most frequently the result of tuberculosis and especially syphilis, as Marfan has pointed out. In these instances medical treatment is alone indicated.

Such, however, is not the case in the forms of this morbid process which provoke accidents of compression, such as cyanosis and suffocation. They require energetic treatment, particularly



with radiotherapy. Surgical interference is dangerous and has been rejected by some of the best French operators since Weill communicated his results with radiotherapy in several cases of hypertrophy of the gland.

In extremely urgent cases intubation with a long tube is to be done at once, and immediately afterwards an intensive séance of radiotherapy should be held. By these measures one may expect to see good effects follow within forty-eight hours after their application. That these results are no myth is evident from the considerable number of radiologists who have had only successful results to register.

The treatment of the early operators was manifestly insufficient, and it was not until Regaud and Cremieu had shown a better procedure that the good results began to be recorded. The results of their researches led these two writers to propose, in serious cases, to give a single dose of x rays, giving the tint No. 3 to the skin, measured by Bardier's chromoradiometer, read by daylight after interposition of an aluminium filter four millimetres thick—in other words, a dose corresponding to sixteen H units; and they recommended that twenty days later a second, but weaker, irradiation was to be given, should indications require it. In milder cases of the process they proposed a less severe dose, but they personally preferred the intensive method.

A less severe treatment has been recently proposed by Weill, of Lyons, who states that the dose of x rays should not exceed three to seven H units, through an aluminium filter one to two millimetres thick, and that this will suffice to bring about a regressive process in the gland and an ultimate cure. At present Weill employs four millimetre aluminium filters in order to eliminate all the rays which may have a deleterious action on the skin, but which after filtration do not exceed five to seven H units.

For these applications the anode is kept at fifteen centimetres from the skin and the filter at 7.5 centimetres. The rays should be directed on the anterior and posterior areas corresponding to the thymus. Muller's or Chabaud's tubes are used. The intensity of the Muller tube is 1.5 milliampère, that of the Chabaud from seven to .8 milliampères.

In order not to immobilize the children too long, fractional doses of the rays may be given, and it is only in cases of thymic asthma with repeated subintractant paroxysms that very strong doses, for example, sixteen H units, with a four millimetre filter, should be employed.

## WHY THE CHIROPODIST?

The chiropodist flourishes in the land, and flourishes in numbers, for in some cities there are as many as one to twenty-five hundred people. Considering how few of the population can afford to have corns treated, this is a large percentage of specialists. For the same number of people there will be, perhaps, two or three dermatologists and one or two orthopedic surgeons. The chiropodist combines these two branches of medicine and besides limits his practice to the feet. Every skin specialist knows something of orthopedics and every orthopedist has studied skin diseases more or less. Yet a dozen or more chiropodists exist and flourish where there is one doctor of medicine who devotes his time to diseases of the skin and to deformities of the bones and joints. Moreover, every doctor of medicine is presumably better trained in both these subjects than the chiropodist, and yet the chiropodist gets the practice in this line. The chiropodist is not more or less a human than is the doctor of medicine, and the latter is not one whit less anxious for the almighty dollar. Why does the latter miss all these good fees? They are often larger than the general practitioner of medicine receives for his services. It is certainly not because he does not want the money; neither is it because it is a lowly and disagreeable task to treat the feet. Compared with genitourinary work it is an exalted and delightful practice.

Is it because the patient considers the physician a too exalted personage to doctor feet? We are getting warmer in our search. There is some clue here, but if so, it is the physician's fault if the patient has such a notion. His highness, the man of medicine, has too frequently handed the owners of sore feet a prescription, and that was the end of it. The patient was not cured by the medicine, but went to a chiropodist who did cure him. This has been so often the case that it is no wonder people refuse to bring their feet to the physician's attention, considering them as either too busy or—whisper it—too incompetent. Then there is the surgeon, and we know of one instance, who, for the sake of a fee, secured a nurse, anesthetized his patient, and removed a wart by "operation." The good chiropodist would have removed it for one tenth the cost, with less risk and distress.

There have been "corn cutters" from away back, and since 1785 they have become chiropodists. Until recently they have "picked up" their accomplishment, but of late they are establishing schools of their own. They have organized in

local, state, and national societies. They have in three states brought about legislation, so that a chiropodist must at least have a certain degree of schooling and must pass an examination. The corn cutters are coming along and the doctors of medicine should take notice.

The graduate of a four or more years' course in medicine ought to be more skillful in caring for the feet than a chiropodist, though practical evidence seems to be against this statement. There are two things which must be done to make this theory true. In the first place, the medical schools must pay more attention, both in theoretical and in clinical teaching, to corns, callosities, and deformities of the feet. They may seem too common, but they are of almighty importance to their possessor. In the second place, the practitioner must give corns, callosities, and deformities of the feet the care and attention they deserve.

It will pay to study these things, for here is a field of practice that is not likely to shrink. Typhoid and malaria are passing, but corns we shall have with us always, for the reason that ill fitting shoes are likely to be worn, despite all preaching of hygienists. The future of chiropody is assured, for it has Dame Fashion always as a helper.

### THE INFLUENZA SITUATION.

From almost every section, there comes news of a decline in the number of new cases of influenza reported. The number of deaths has increased as a result of the pneumonia following the disease, but the falling off in the number of new cases indicates that the apex of the epidemic has probably been reached. If the decline continues, the city of New York will have escaped with relatively much less loss than most of the larger cities on the Atlantic seaboard but it is too soon as yet to make any definite statement on this head. The situation in the military camps is very much better and in most of the camps the internal quarantine has been lifted though the public is still barred, except from the few camps that have suffered least. The nursing situation everywhere still continues unsatisfactory, the number of nurses available being inadequate. The disease has taken terrible toll from the medical profession. Ordinarily we have notices of about twelve deaths in the medical profession and the majority of these are of men of mature years. In our last issue we recorded sixty deaths, and in this fifty-one, a majority being physicians under forty.

Various preventive vaccines are being tried. In Massachusetts and in New York, a vaccine made from the influenza bacillus by Leary and Park, respectively is being used. In Chicago a mixed vaccine of pneumococci, streptococci, staphylococci, and influenza bacilli is being tried. Several commercial

mixed vaccines are also being used. The Surgeon General of the United States Public Health Service is watching the results but has not arrived at any conclusion regarding their value.

### GOOD NEWS FROM FRANCE.

The new Surgeon General of the United States Army, Major General Merritte W. Ireland, brings back the most encouraging news as to the medical and surgical aspects of the work of the American Expeditionary Forces of which he has been chief surgeon. While there have been many cases of influenza, they have been mild and have rarely been followed by pneumonia. The out-of-door life and the vigorous condition of the troops seem to have protected them from the disease, to a great extent. The sick list runs about forty-three to a thousand and about twenty, or a little less than half, are sick, the remainder being wounded. Since this includes the influenza and pneumonia cases as well as those suffering from other diseases, it will be easily seen that there is relatively very little influenza and pneumonia among the troops. The Surgeon General has only the highest praise for the surgeons, the nurses, and the combatant forces of America. "No army of any nation in the world has ever had better doctors and surgeons in its personnel than have the American Expeditionary Forces overseas," said General Ireland. In this connection, he also said: "Too much cannot be said of the women doctors and nurses doing their work of self sacrifice among the wounded. They are of the highest standard and the people should understand that they must be of high standard because of the sacrifices they must endure. One of the things which most impressed me was the arrival of fresh contingents of American soldiers from the United States. These men, every one of them, the draft men as well as the regulars, when they set their feet on French soil seem to lose all thought of selfishness. They all expressed themselves as having come over there to win the war and lost all sight of their individuality. The morale among these men was fine. The wounded never complain, and everybody is optimistic. We have the finest body of men in France that ever lived anywhere."

### Obituary

ROBERT COLEMAN KEMP, M. D.,  
of New York.

Dr. Robert Coleman Kemp died of pneumonia on October 23, 1918. He was born in 1865 and was a graduate of Columbia University, receiving his medical degree in 1889. After an internship at Roosevelt Hospital, he was associated with Dr. W. Hanna Thomson for a number of years and carried on a series of physiological researches in shock. Of late years, he has had a large practice in his specialty of gastroenterology and had just completed the second edition of his textbook.



## News Items.

**General Kean Becomes Deputy Surgeon General.**—Brigadier General Jefferson R. Kean, M. C., U. S. Army, was, before we entered the war, chief medical officer of the American Red Cross. He went to France in that capacity, and after General Pershing arrived in France, was made assistant chief surgeon of the American Expeditionary Forces. He returned to the United States with General Ireland on October 28th, and has been appointed deputy surgeon general.

**Public Health Service Reserve.**—A resolution has been passed by the Senate providing for the establishment of a reserve for duty in the Public Health Service in times of national emergency, under rules and regulations prescribed by the President, who alone will be authorized to appoint and commission officers in the reserve. Officers commissioned in this reserve shall have no rank above that of surgeon and shall be distributed in the several grades in the same proportion as now obtains among the commissioned medical officers of the United States Public Health Service, and shall at all times be subject to call to active duty by the surgeon general. When on active duty they will receive the same pay and allowances as are now provided for commissioned medical officers.

**The Surgeon General Returns from Europe.**—Major General Merritt W. Ireland, who has been acting as chief surgeon of the American Expeditionary Forces and who was appointed surgeon general to succeed General Gorgas, who retired on October 3d, returned to the United States on October 28th and assumed command of the Medical Department. General Gorgas is still in France, where he went some time before the date of his retirement, and has been assigned to special duty in connection with the American Expeditionary Forces. Brigadier General Charles Richard, who has been acting surgeon general ever since the departure of General Gorgas, retires for age on November 10th. In point of length of service, he is the ranking officer on the active list in the Medical Department.

**Loss to the Army from Venereal Disease.**—From the beginning of the war to September of this year venereal disease lost for the United States Army 2,300,000 working days. This statement is made by Lieutenant Colonel William F. Snow, head of the Social Hygiene Division of the War Department Commission on Training Camp Activities. The loss, figured in another way, amounted to the total incapacity of 6,300 soldiers for an entire year. Army statistics indicate that each case of gonorrhea means a loss to the army of a soldier's services for 9.53 days. The total loss from this disease was 1,486,680 days. For each case of syphilis a loss of one soldier's time for 20.75 days is figured—a total loss of 550,250 days having been charged against this disease. Each case of chancroid results in a loss of 11.69 days, and the total loss from this cause was 258,230 days. It is estimated that five sixths of this burden was brought into the army by men already infected at the time they first arrived at camp.

**Influenza in the Navy.**—Reports from the naval districts in the east indicate that the spread of influenza in the naval personnel in that section has been checked, and only the stations on the western coast continue to show any increase in the number of cases. In many of the eastern stations the disease has receded to normal. In the southern stations there has been far less virulence than in the north and east. Conditions in the fleet are considered satisfactory, and generally throughout the naval service the epidemic is well under control. The cases of pneumonia continue, however, with about the same percentage of fatalities. The epidemic apparently has run its course in most units of the navy, but an outbreak may still occur among the personnel that so far has not been exposed. Other than influenza and its attendant diseases, the health of the navy ashore continues to be satisfactory. Only seventeen cases of spinal meningitis were reported last week—part of these being presumably the result of the epidemic of influenza, and four cases of scarlet fever and one of diphtheria. The small number of other communicable diseases is attributable to the precautions taken to prevent the spread of influenza.

**Drug Addicts Among Drafted Men.**—Figures published by the War Department show that of 990,592 men examined in the draft up to January 1, 1918, only 403 were rejected on account of drug addiction and only seventy-six were discharged for this reason.

**American Association for the Study and Prevention of Infant Mortality Postpones Meeting.**—The ninth annual meeting of the American Association for the Study and Prevention of Infant Mortality, which was to have been held in Asheville, N. C., November 11th to 14th, coincidentally with the Southern Medical Association, has been postponed until further notice, on account of the prevalence of influenza.

**Southern Surgical Association Cancels Annual Meeting.**—On account of the prevalence of influenza the Southern Medical Association will hold no meeting this year. The annual meeting was to have been held in Asheville, N. C., November 11th to 14th, under the presidency of Dr. Lewellys F. Barker, of Baltimore.

**Evacuation Hospital Commended.**—By direction of General Pershing, Evacuation Hospital No. 7, American Expeditionary Force, commanded by Lieutenant Colonel W. H. Tefft, M. C., U. S. Army, has been highly commended for its admirable work in handling battle casualties at Chateau Montanglaust, June 15th to August 11th. The letter of commendation was signed by Brigadier General Le Roy Eltinge, deputy chief of staff.

**Personal.**—Dr. William C. Woodward, health officer of Washington, D. C., since 1894, was appointed health commissioner of Boston on August 1st, and assumed his new duties immediately.

Dr. Charles H. Chetwood, former head of the department of urology, New York Polyclinic School and Hospital, has been appointed consulting surgeon to the French Hospital, New York.

Dr. Allen J. Smith, of Philadelphia, has been appointed dean of the medical department of the University of Pennsylvania, succeeding Dr. William Pepper.

**Food Nutrition Officers for All Training Camps.**—Colonel John R. Murlin, chief of the division of food nutrition, Surgeon General's Office, reports that by December 1st all the camps in the United States will be supplied with food nutrition officers from the school at Camp Greenleaf, Fort Oglethorpe, Ga., established by the surgeon general to train experts in food values and nutrition as applied to military camps and troop bodies. All camps of more than 10,000 men are entitled to one of these officers, but thus far it has been impossible to train more than about fifty, thirty of whom are on duty in France and England, and the remaining twenty in the larger camps in this country. At the school at Fort Oglethorpe two months' instruction is given in camp sanitation, military methods and organization, and the function of nutrition officers in military camps.

**Meetings of Medical Societies to Be Held in Philadelphia.**—During the coming week medical societies will meet in Philadelphia as follows:

*Monday, November 4th.*—Blockley Medical Society; Clinical Association.

*Tuesday, November 5th.*—Medical Examiners' Association.

*Wednesday, November 6th.*—College of Physicians.

*Thursday, November 7th.*—Academy of Surgery; Obstetrical Society.

*Friday, November 8th.*—Atlantic County Medical Society; Northern Medical Association.

**Meetings of Medical Societies to Be Held in New York.**—During the coming week medical societies will meet in New York as follows:

*Monday, November 4th.*—Clinical Society of the New York Polyclinic School and Hospital; Brooklyn Hospital Club.

*Tuesday, November 5th.*—New York Academy of Medicine (Section in Dermatology and Syphilis); Medical Society of Harlem Hospital; New York Neurological Society; Society of Alumni of Lebanon Hospital.

*Wednesday, November 6th.*—New York Academy of Medicine (Section in Historical Medicine); The Bronx Medical Association; Harlem Medical Association; Psychiatric Society of New York; Society of Alumni of Bellevue Hospital; Brooklyn Hospital Club; Brooklyn Society for Neurology.

*Thursday, November 7th.*—New York Academy of Medicine (Stated meeting); Brooklyn Surgical Society.

*Friday, November 8th.*—New York Academy of Medicine (Section in Otolaryngology); Clinical Society of the German Hospital and Dispensary; Eastern Medical Society of the City of New York; Flatbush Medical Society; Society of Ex-Interns of the German Hospital in Brooklyn.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

**Treatment of Wounds.**—John T. Morrison, J. N. J. Hartley, and E. F. Bashford (*Lancet*, August 24, 1918) believe that the most satisfactory of all methods of treating infected war wounds is the combination of thorough mechanical cleansing with the application of the Carrel-Dakin treatment. The results will vary, depending upon whether or not there has been a preliminary surgical cleansing of the wound, the results being decidedly better where there has been such primary treatment. No attempt should be made to excise the wound when the infecting organisms have already invaded the tissues, as this does not hasten recovery and materially increases the risk of septicemia. In such cases operation should be limited to securing free exposure of the entire surface and of all recesses. In the preinflammatory stage, however, excision should be radical. Partial closure of wounds at the primary operation should not be practised as it usually delays healing. Among the patients operated upon within twenty-four hours of being wounded eighty-two per cent. reached suture standard in twelve days as compared with sixty-seven per cent. in fifteen and one half days where the operation was not performed within twenty-four hours. When compared with other methods of treatment the advantages of the Carrel-Dakin method are striking, as indicated in the following table:

Carrel-Dakin with early operation, 77.5 per cent. closed by suture.
Carrel-Dakin without early operation, 53.5 per cent. closed by suture.
Dichloramine-T in eucalyptol, 43 per cent. closed by suture.
Flavine, 22 per cent. closed by suture.
Hypertonic saline, 12 per cent. closed by suture.

Early excision with primary suture is the only other method comparing favorably with the Carrel-Dakin. Dichloramine-T in eucalyptol gives very fair results, but it does not possess the advantages which were anticipated for it, and epithelialization is somewhat slow with irregular and imperfect formation of scar tissue.

**Restoration of Function in Penetrating Gunshot Wounds of the Knee.**—John Everidge (*British Medical Journal*, August 24, 1918) believes that many of the ultimate failures to secure wide or complete range of motion in the knee joint after favorable healing of penetrating gunshot wounds can be avoided by beginning movements of the joint early and continuing them until a range of at least 90° of flexion is secured before the patient is transferred to the home hospital. He has devised an apparatus whereby this movement can be carried out without danger to the patient and without any pain and can be started on about the seventh day after operation. It consists of the Thomas knee splint made with extra heavy side bars and hinged at the knee joint with a lock hinge. A wooden frame is then constructed over the patient's bed and the splint containing the injured extremity is

supported by counterweights. The splint is supported in its upper portion by cords running from points immediately above the hinges, while the cords from the lower segment are attached about fifteen inches below the hinges. The cords from the upper part are weighted with one counterpoise, those from the lower with another, both, however, being sand vats with openings at their lower ends to permit the slow escape of sand. Above the upper counterpoise is a sand reservoir while below the lower is a container to collect the sand. The extremity is perfectly balanced in this apparatus and when movement is to be started sand is allowed to escape very slowly from the vat supporting the lower part of the leg into that for the upper, thus gradually causing angulation of the splint and flexion at the knee. The range of movement is small at first and is slowly increased until 90° is secured, when the patient can begin to make active flexion in the counterpoised splint. After this a course of massage, faradism, and active and passive movements is given and the patient sent to a convalescent hospital at home. By slight modification in the method of fixing the extremity in the splint the knee flexion can also be used in cases of fracture of the femur as soon as acute sepsis has subsided and good alignment has been secured.

### Local Effects of Hepatic Lipoids on Wounds and Inflammatory Processes.

—E. Savini (*Paris médical*, August 17, 1918) prepares hepatic lipoids by hashing up liver tissue, drying it well at 70° C, reducing it to a powder, and placing it in a Soxhlet apparatus for ether extraction. With the lipoids thus obtained a five to ten per cent. emulsion in sterilized olive oil is aseptically prepared. To keep it aseptic a few mls of ether are added from time to time. Before use the emulsion is slightly warmed in hot water and well shaken up. The emulsion is applied to wounds every other day, after cleansing them with sterile saline solution and an aseptic dressing is then employed. In sinuses and suppurating cavities the preparation is introduced with a gauze wick or syringe. Small, uninfected wounds heal in three to five days under this treatment. Pain and burning in wounds are immediately allayed by the emulsion. In broad, suppurating, sluggish wounds, the hepatic lipoids soon arrest the suppuration and lead to complete healing in eight or ten days. Where Thiersch skin grafting is done the preparation has a most useful action, powerfully assisting fixation of the grafts and accelerating their progress. Where possible, the wound should be treated with the emulsion a few days before the grafts are applied. Large, obstinate, varicose ulcers of the leg may be cured by persistent use of the hepatic lipoids. These also act rapidly and effectually against the inflammatory complications of hemorrhoids, suppuration, dermatitis, rhagades, ulcerations, phlebitis, etc. In conjunction with their use glycerin soap should alone be employed externally,



and by mouth sodium bicarbonate should be taken. Preparation of the parts with the lipoids before excision of hemorrhoids leads to rapid healing and prevents infection. In burns the emulsion immediately allays the pain and promotes healing. Intestinal lavage with an emulsion of the lipoids gave encouraging results in mucomembranous colitis. In ulcerations of the uterine cervix good results were likewise obtained. In the local treatment of eczema and of syphilitic chancre or chancreoid, however, no benefit was noted.

**Autoplastic Bone Transplantation for Tibial Pseudarthrosis.**—Riche (*Presse médicale*, August 5, 1918) reports a case of war traumatism of the tibia with extensive loss of bone tissue and complete functional impotence of the limb. One year after the injury, under spinal analgesia, two transplants ten centimetres long were removed from the lower end of the tibia and fastened with catgut across the interval. Complete consolidation was noted upon removal of the plaster apparatus on the ninety-first day. After further use of a Delbet walking apparatus for three months, the patient was able to walk without the artificial support. Ten months after the operation the results obtained seemed permanent; x ray plates showed the transplants apparently fused with the shaft of the bone and free from any tendency to reabsorption.

**Continuous Extension in Fractures of the Phalanges and Metacarpals.**—Lance (*Presse médicale*, August 8, 1918) notes that in bullet or shell fragment injuries of the phalanges or metacarpals the ends of the fractured bones are frequently spared, the diaphysis, however, being comminuted. In the absence of infection, healing is rapid but there is much callus, deformity, shortening, pain from pressure on nerves, and diminished motor power. In infected cases free removal of bone fragments is essential if prolonged osteitis and elimination of sequestra are to be avoided, and this free removal favors marked shortening of the bone. For three years the authors have been instituting in such cases continuous extension, to prevent shortening and deformity. Special palmar board splints, differing in shape to correspond to the particular finger injured and extending from the wrist to a point some distance beyond the finger tip, are used. The uninjured fingers are allowed free motion. The extension is applied by means of a strip of adhesive plaster passing, usually laterally, along two opposite aspects of the finger, and secured more firmly by two or three circular rings of adhesive plaster at the base and toward the extremity of the finger. The wrist is circled with eight or ten turns of plaster bandage extending below the styloid processes, over which they are molded to afford counterpressure. The splint is then fastened to the wrist by a second plaster bandage passed around the first. When the plaster is dry, extension is instituted by means of a piece of rubber tubing, five or six millimetres in diameter, passed through the loop of adhesive plaster beyond the finger tip, through a hole in the splint, and then knotted at the proper degree of tension. The latter should be sufficient to reduce the deformity in twenty-four to forty-eight hours, and continued until x ray ex-

amination shows an adequate degree of bony reconstitution, viz., for about six weeks in the case of phalanges and two months in the case of metacarpals. In the foot the method is applicable only to the great toe and corresponding metatarsals.

**Suggestions for Treatment of Septic Wounds.**—Frederick W. Robinson (*British Medical Journal*, August 24, 1918) calls attention to the frequency with which severe and disabling scars result from septic wounds in the present war, and suggests that this is largely the result of the invasion of the tissues by infecting organisms which are not reached by the usual methods of antiseptic treatment. To overcome such deep tissue infection he suggests a method of treatment and an apparatus for carrying it out. The method consists in elevation of the entire wound by means of the passage well beneath the infected zone of several threaded bars over the projecting ends of which wire splints are passed and held by milled nuts. By approximating the splints on the opposite sides of a linear wound, or by passing a stout ligature beneath all of the nuts in an irregular wound, the entire wound is not only elevated, relaxed, and perfectly immobilized, but its surface is opened out for the better application of antiseptics and the deeper tissues are caused to be bathed in bactericidal lymph. The method of application of the apparatus is shown in illustrations. Of equal importance is the prevention of all damage to the healing surface by avoiding the use of gauze or other dressings which require frequent changing and by eliminating, so far as possible, the deleterious effects of antiseptics. To replace the gauze dressings decalcified, perforated sheets of cancellous bone are very useful, since they can be left in place, are absorbent, permit the escape of the secretions, and are readily absorbed by the tissues.

**Treatment of Celiac Disease.**—G. F. Still (*Lancet*, August 24, 1918) says that since the disease cannot be traced to any one specific cause its treatment must be largely symptomatic and empirical, but experience points to certain definite measures and shows the futility of others. The principal field of treatment is dietetic, and one of the most marked and constant features of the disease being failure of fat assimilation, the diet must be regulated to exclude all fats or reduce them to a minimum. The fat least well borne is that of cow's milk and the most important of all steps in treatment is to eliminate milk and butter, or to curtail their use most rigidly. Dried milk, containing a small amount of fat only, asses' milk, or, in extreme cases in early life, human milk may be tolerated as substitutes for plain cow's milk. The various available fats other than those of milk are also not well tolerated and must be largely eliminated from the dietary. Although there is some difficulty in dealing with carbohydrates there is much less than with fats and these can be employed in limited amounts and variety. The best tolerated carbohydrates are prepared from lentils, small amounts of wheat flour with dried milk, and rice cooked to a jellylike state. Sugar can be taken in small quantities only. To these articles may be added veal or chicken broth, sweet jellies and eggs if well borne. This diet is decidedly scorbutic, and

there is often difficulty in giving vegetables or fruit juices on account of the looseness of the bowels. Grape juice seems the best tolerated. A so called "fat free" diet can sometimes be taken with success, and the potato which it contains is an efficient antiscorbutic. It is questionable whether fats can be administered successfully by inunction, some cases seeming to indicate that they can, while others show the contrary. The use of the various digestive extracts does not seem to be of any value and the same seems to be true of the organic extracts. The only astringent which has proved of value is castor oil and salol in the proportion of 0.3 mil of the former with 0.15 gram of the latter thrice daily. Other drugs seem relatively valueless.

**Ipecac by Rectum in Amebic Dysentery.**—George B. Lawson (*Journal A. M. A.*, September 28, 1918) reports excellent results, even in cases which have proved refractory to the injection of emetine, by the administration of an infusion of ipecac by rectum. The infusion is prepared fresh for the patient by adding from four to eight grams (one to two drams) of powdered ipecac to about 750 mls (twenty-four ounces) of hot water. This is kept hot for an hour, but not allowed to boil. The bowel is then washed out with warm water and the whole of the infusion is injected slowly and retained as long as possible. This treatment is repeated daily and has the advantage of being easy for the patient to carry out without having to stop his work. Along with this local treatment emetine should also be given in the usual manner, though it has been possible to cure cases of obstinate amebic dysentery with the local treatment alone.

**New Principle in Surgical Treatment of Brain Tumors.**—A. C. Strachauer (*Journal A. M. A.*, September 14, 1918) groups cases of brain tumors into two general classes: Those in which the tumor can be found readily by localizing signs or by the usual methods employed after opening the cranium, and those in which the tumor cannot be discovered by any of the usual means after craniotomy. Cases of the latter type have been considered hopeless and it is among them that the new principle of treatment finds its field. In a considerable proportion of such cases, following craniotomy with the failure to discover the tumor, if the patient is allowed to wait for some time after decompression a second operation will reveal the tumor in an easily accessible position. In such a case a single exploratory operation gives the patient only half a chance, since with time and adequate decompression an inaccessible lesion may develop, come to or near the brain surface, and become readily removable. In addition to this new principle, the author points out that the two greatest dangers in brain tumor surgery are shock and hemorrhage and says that the dangers of both may be much mitigated. Shock can be largely avoided if the operator will work slowly and gently instead of as rapidly as possible and will employ large decompressions and make large exposures of the operative field. Hemorrhage can be almost entirely controlled by the proper use of Horsley's bone wax and wooden pegs for bone hemorrhage and Cushing's cotton compresses and the Haidenhein hemostatic suture for other bleeding.

**Arteriorrhaphy and Neurorrhaphy.**—Michael Casper (*International Journal of Surgery*, August, 1918) reports a case of arteriorrhaphy, and gives the technic of vasa anastomosis as follows: 1. The isolation of six to ten centimetres of the vessel; 2, the application of proper clamps; 3, the severing of the vessel transversely with resection if required; 4, the removal from the vessel ends of periaortivital tissue, and also blood from between the clamps; 5, the placing of traction threads to evert the edges and insure contact of the endothelial surfaces; 6, completion of the anastomosis by continuous suture from within outward through entire vessel wall; 7, the removal of clamps. Hemorrhage through stitch holes, as a rule, is controlled by compression. In regard to neurorrhaphy Casper states: 1. Primary neurorrhaphy is the most logical procedure in peripheral nerve injury and should be applied in the absence of contraindications. 2. Secondary neurorrhaphy may be successfully performed where primary operation seems inadvisable, and no instance of peripheral nerve injury should be considered hopeless until after the aid of surgery has been invoked. 3. Where the distal and proximal nerve extremities have become widely separated with formation of intervening fibrous tissue, careful dissection with approximation by the aid of mechanical devices may be successfully accomplished in a percentage of instances.

**Treatment of Peripheral Nerve Lesions.**—W. L. Crosthwait (*Texas Medical Journal*, August, 1918) divides the treatment of peripheral nerve lesions into two classes: operative and expectant. The operative treatment is again divided into primary or immediate, and secondary or remote. Factors which determine success are: Early and careful diagnosis, correct anatomical approximation, and the maintenance of nutrition and relaxation of parts supplied by the injured nerve. The treatment of a divided nerve is suture, and primary suture is the operation of choice. If the diagnosis is not absolute, primary suture should not be performed. It should be done by a wide or open exposure. One of the essentials of success is asepsis; and if there is a reasonable chance that the wound is sterile, primary suture is desirable. If infection is present it is better to wait until it has subsided and then perform secondary suture. The muscles which are affected by the division of a nerve should be treated either manually or by electrical massage while waiting to perform secondary suture. In the expectant treatment a limb in which a nerve has been injured should be carefully protected against cold, pressure, fixational positions unfavorable to recovery, etc. The tendency of the antagonistic muscles to pull in the opposite direction must be considered. The best method of union is end to end suture through the nerve sheaths. The suture material should be either fine, plain catgut, or silk. Care must be taken to prevent adhesions. Fascia taken from the thigh, with the smooth side turned in, is the best material to enclose the nerve at the point of union; fat is sometimes used. To bridge a gap in the nerve either gelatin tubes, fascia, or fat are employed. A gap of two inches may be bridged under favorable conditions.



**Treatment of Prostatitis.**—Frank Lydston (*Urologic and Cutaneous Review*, September, 1918) in treating severe, acute prostatitis, recommends: 1. Putting the vesical neck at rest by perineal section, stretching, and drainage; 2, opening the prostatic capsule on both sides and exploring the gland with the finger. The objects accomplished are: Relief of tension with relief of pain; drainage, and evacuation of pus, if present, or if not present, prevention of its formation. If operation is performed as a routine in severe, acute prostatitis the unsatisfactory results following undetected and unoperated prostatic abscesses will be few, and the large, hard, chronically inflamed prostate will be a rare phenomenon. In chronic prostatitis operation is followed by good results if not delayed too long. The operation should be limited to opening the capsule and breaking up the lateral lobes by finger exploration and pressure. This is to be followed by perineal drainage.

**Treatment of Syphilis with Galy.**—Paul Richard (*Canadian Journal of Medicine and Surgery*, September, 1918) reports the results obtained in twenty-eight cases of primary and secondary syphilis, following the use of galy instead of salvarsan and neosalvarsan. It was used intravenously. A series of injections of 0.2 gram were given, an interval of four or five days being allowed to elapse between the injections. After the fourth injection the Wassermann reaction was usually negative and continued so. After the Wassermann reaction became negative the injections were given at five or six day intervals, until two grams had been administered. The reaction was of a slight nature, no induration of the veins, diarrhea, albuminuria, or nervous reaction having been noticed. Small chancres healed in from four to eight days; larger ones in from ten to twelve days. The very large, ulcerative, phagedenic chancres may take from twenty-five to thirty days. In cases treated from the outset no roseola or mucous patches developed.

**Vaccine Treatment of Gonococcal Infection.**—G. Baril (*Bulletin de l'Académie de médecine*, August 13, 1918) reports good results in acute and chronic gonococcal urethritis from the use of a polyvalent vaccine made from a large number of samples of the gonococcus, together with other aerobic and anaerobic germs. The vaccine is injected in the buttocks every other day, beginning with 100 and increasing to 400 millions. The vaccine alone sometimes cures acute gonorrhea in fifteen to twenty-five days. After the first or second injection the discharge and, at times, the pain are increased, and there may be a slight constitutional reaction. After the fourth or fifth injection, however, the discharge is generally reduced and becomes more fluid. After the eighth injection the discharge may completely cease. Gonococci disappear after ten to twenty days. Where the vaccine fails to arrest the discharge completely, added urethral irrigations suffice to produce the desired result. The routine treatment is therefore to begin urethral irrigations of mercury oxycyanide after the fourth or fifth vaccine injection. By this method a cure was effected in fifteen to twenty-five days in ninety-five per cent. of a series of about 300 cases.

In chronic urethritis of bacterial origin, vaccine injections coupled with irrigations to the posterior urethra yield a cure in the same average time as in the acute cases. In chronic urethritis with stricture of the deep urethra, vaccine injections reduce the discharge and eliminate the gonococci with sufficient rapidity to permit of prompt dilatation or other surgical procedure necessary for complete drying of the tissues. Among ten cases the vaccine generally relieved the pain in four or five days, the swelling simultaneously diminishing. Among ten cases of cystitis, pain yielded in four or five days; pollakiuria and hematuria somewhat later. Among six cases of gonorrheal rheumatism good results were obtained in five and doubtful results in one.

**Postoperative Treatment of Mastoiditis.**—C. H. Smith (*American Medicine*, August, 1918) treats mastoid cavities in the following way: After the operation is completed a small wick of narrow gauze—about two or three inches long—is placed, one end in the mastoid antrum and the other in the lower angle of the wound. This is removed on the fifth day and no other drainage is inserted. The outer dressing is changed every second or third day thereafter. Two great benefits derived from this method of treatment are: first, shortening of the period of convalescence, the average period of healing being three weeks, as compared with six weeks according to the older method; second, the small amount of depression in the mastoid region.

**Radical Mastoid Operation Under Local Anesthesia.**—Harold Hays (*Annals of Otolaryngology, and Laryngology*, December, 1917) noted, in operating in a case of tuberculous mastoiditis, that the radical mastoid operation could be done under local anesthesia without pain. The superficial scalp tissues and periosteum are sensitive, but bone has absolutely no sensation, as evidenced by the use of the chisel and the constant pounding in uncapping the mastoid cavity. It was further observed that the mucosa of the middle ear was extremely sensitive and must be separately cocaineized, and that any irritation or destruction of the facial nerve was immediately noticeable by the patient. Under local anesthesia the making of the skin flap was facilitated by the lack of bleeding due to blocking off the vessels by the cocaine solution. Doctor Hays found that the end result of the operation was as good as under general anesthesia.

**Some Clinical Observations on the Lingual Tonsil.**—Greenfield Sluder (*American Journal of the Medical Sciences*, August, 1918) says that the treatment of lingual tonsillitis in the acute follicular stage is like that for the faucial tonsils under like conditions. For the subacute or chronic state, with or without enlargement, nothing has been so satisfactory as applications of a small amount of silver nitrate saturated in fifty per cent. glycerin. Salicylic acid saturated in ninety-five per cent. alcohol is helpful and does not taste so unpleasant. These may be made daily or as seldom as ten days. For the enlargement, galvanocautery destruction has seemed best. Myles's lingual tonsil guillotine also serves well. Hemorrhage following surgery of the lingual tonsil is more difficult to manage than any in the upper air passages. It is fortunately rare.

# Miscellany from Home and Foreign Journals

**Aviator's Heart.**—Etienne and Lamy (*Bulletin de l'Académie de médecine*, August 6, 1918) found a moderate degree of cardiac hypertrophy in all aviators examined. The condition was already distinct after five months of aviation, and was still present in a subject who had ceased flying for eight months. The hypertrophy was much more marked in aviators customarily flying at altitudes exceeding 5,000 metres than among those whose duties required altitudes of only 1,000 to 3,000 metres. The enlargement of the heart occurred in two stages, taking place rapidly during the first few months, then more slowly, until the apex beat reached the nipple line. The hypertrophy affected in particular the left ventricle, the right ventricle being only rarely involved and late. For a long time the hypertrophy causes no functional disturbance or peculiar subjective sensation. The condition is plainly the result of adaptation of the heart to the varying atmospheric conditions encountered during aviation. Above 2,500 metres there is a rise in the systolic blood pressure, which is maintained throughout the flight at high altitudes. During and following descent there occurs also a rise of five to ten millimetres of mercury in the diastolic pressure. Again, during flight there is a stage of lowered diastolic pressure, and after descent a diminution of as much as twenty millimetres in the systolic pressure, which may persist an hour. The cardiac hypertrophy may logically result from the stages of elevation of the systolic and diastolic pressures, but lowered pressure might also be a cause, repeated artificial hypotension in rabbits having been observed to induce marked cardiac enlargement.

**End Results of Ovarian Conservation.**—J. O. Polak (*American Journal of Obstetrics*, August, 1918) states that in a series of 132 hysterectomies with retention of one or both ovaries, the influence of the ovarian secretion on the nervous mplanina of the operative menopause was found to depend on the general health of the patient and on whether the uterus was removed for fibroid or inflammatory disease. The symptoms are less after extirpation for pelvic inflammation than for fibromyomata. They are more marked if the patient is operated upon in comparatively good health, with a high pre-operative blood pressure, than when the blood picture shows anemia or toxemia. A conserved ovary, if unhealthy, will leave the patient in a worse state mentally, nervously, and physically, than if total extirpation had been done. Case records of over 300 patients followed for five years show that the average life of the ovarian function after the uterus has been removed is not over two years, and that within that time flushes, dizziness, and premenstrual pain occur in the large majority of cases. Ovulation without menstruation has little psychical value. In inflammatory conditions requiring radical pelvic surgery the contiguous inflammation results in a cicatricial thickening of the tunica albuginea, which promotes the formation of retention cysts, increased weight of the ovary, and pro-

lapse. In fibroid tumors circulatory stasis is a constant concomitant, and likewise leads to thickening of the tunica albuginea. Furthermore, removal of the uterus itself causes disturbance of ovarian circulation and innervation. Pathological studies after reoperations in seventy-three cases in which one or both ovaries had been conserved showed the following ovarian lesions: multiple cystic changes; cirrhosis; cystic formation; infection, and thin walled cyst with dense adhesions. Routine conservation of ovaries without due consideration of the ovarian and contiguous pathological conditions in the individual case is not good teaching. Regeneration of the conserved ovary depends largely on the type and duration of the existing infection and the condition of the tunica of the individual ovary. Even when the most delicate technic is observed the ovarian circulation is impaired. The retained ovary without the uterus is always a focus for possible trouble.

**Streptococcic Infection in Wounds.**—Plisson, L. Ramond, and J. Pernst (*Presse médicale*, August 1, 1918) assert that streptococcic infection may be suspected in all wounds that are not progressing favorably. Bacteriological examination, however, is alone decisive. Examination of a smear is insufficient, for the organisms are but rarely disposed in chains in the wound secretions. A liquid culture is therefore necessary—preferably a mixture of four parts of ordinary bouillon with one part of Saquépée's soda albumin. In this elective medium the streptococcus shows chains within three hours in eighty per cent. of cases and within six hours in ninety per cent. of cases. Inoculations should also always be made on an agar slant, in the water of condensation, and in Veillon agar, in order to ascertain the associated aerobic and anaerobic flora as well as to confirm the presence of the streptococcus. Occasionally the wound discharges fail to show streptococci. Here the organisms are present only within the tissues themselves. Negative reports are thus not conclusive, and must not be relied on as absolutely excluding streptococcic infection unless repeatedly obtained. In the treatment, the authors dissent from the view of Gross and Tissier that, after primary suture of a wound, discovery of streptococci in it indicates immediate section of the sutures. In a number of such cases they allowed most of the sutures to remain in spite of the intensity of the inflammatory reaction, and no untoward results followed. In most instances the tissues kept in apposition till the tenth or twelfth day united by first intention. In wounds left widely open, the object during the first few weeks should be to favor elimination of dead tissues and combat the streptococcus as well as secondary infections. All antiseptics, however, including Dakin's solution, are powerless to overcome the streptococcus. Repair by granulation is obtainable, with silver nitrate cauterization of exuberant granulations, occasional dressing with ointments, and heliotherapy. The period of recovery can be short-



ened, however, by a secondary surgical intervention. In one large wound Thiersch grafts were successfully used. In eight cases, secondary suture of wounds still infected with streptococci was attempted, with complete success in six instances. Before suture in these cases, forty per cent. formaldehyde solution was freely applied and a slice of tissue extending two to three millimetres beyond the wound margins removed, the base of the wound being, however, spared. These secondary operations were always performed after the third week. Preventive and curative antistreptococcal serotherapy being as yet unavailable, early and careful removal of crushed tissue remains the best guarantee against streptococcal wound infection.

**Sarcoma of the Heart.**—I. Perlstein (*American Journal of the Medical Sciences*, August, 1918) describes a case of this nature with a summary of other cases reported. Only thirty cases of sarcoma of the heart were found after a careful search of the literature. To these is added a case in which the tumor originated apparently in the subepicardial areola tissue. There is no characteristic clinical picture for the condition. The symptoms are mostly those of seriously disturbed cardiac activity. Excessive and repeated hemothorax was the most striking clinical feature of the case reported. Sarcomas of the heart occur at all ages, but are most common in the vigorous years of life. Histologically all types of sarcoma have been reported. The spindle cell variety is the one most often found. They occur more often in the auricles than in the ventricles, and more frequently on the right than on the left side. Among the postmortem findings, pericardial and pleural effusions and edema are common.

**Blood Pressure Measurements.**—Eugene S. Kilgore (*Lancet*, August 24, 1918) reviews some of the points with reference to the values and limitations of blood pressure measurements and points out many respects in which our knowledge is too meagre to give any real value to such measurements. In the first place the method of taking the measurements should be the simplest which will give concordant results, since the question of the absolute accuracy of the readings is still unsettled and of academic interest only. The most satisfactory and probably the most trustworthy determination of the systolic pressure is by the palpatory method, while for the diastolic pressure either the change of sound or the disappearance of all sound should be taken as the criterion, depending upon the accuracy of the determination in each individual case. The point selected should be recorded and always used in the future work with the same case. The range of normal variation of the systolic pressure should be given more latitude than that stated in textbooks, and specially is the lower limit stated too high. The range by the palpatory method should extend from ninety to about 140 mm. of mercury. The systolic pressure is unquestionably of much more value than the diastolic and, contrary to general opinions, the relative range of variation in the normal subject is wider in the diastolic than the systolic. The pulse pressure determination is subject to still greater variations than either systolic or diastolic pressure determinations;

and several factors beside the volume of blood ejected from the heart influence this pressure, such as vasoconstriction and dilatation, either generalized or local. The pulse pressure and various quotients and formulas based upon it or upon the relations of systolic, diastolic, and pulse pressures seem of very questionable value and such formulas should be regarded with considerable skepticism. Blood pressure responses to work should also be regarded as very questionable indices of the functional capacity of the heart, and it is doubtful if their results will even compare favorably in value with a careful history and physical examination together with a consideration of the patient's own sensations after exercise. The systolic pressure is of unquestionable practical clinical value in connection with arterial and renal diseases, cerebral pressure, the toxemias of pregnancy, Addison's disease, and to a less extent with the diagnosis of aortic insufficiency. A very valuable use to which the sphygmomanometer can be put is the early discovery of pulsus alternans, which can often be brought out by careful adjustment of the cuff pressure so as to cut out every alternate feeble beat, even where the alteration is not otherwise appreciable by the finger.

**Detection and Estimation of Arsenic in the Urine.**—Paul Duret (*Presse médicale*, August 1, 1918), for qualitative detection of arsenic, first destroys the organic matter in the urine, then treats the latter with nascent hydrogen in a flask over the mouth of which rests a piece of filter paper previously impregnated with a one in ten alcoholic solution of mercury bichloride and allowed to dry. The arseniuretted hydrogen gas set free in the flask produces on the paper a yellow or brown discoloration, revealing the presence of arsenic. For quantitative estimation, the urine, after destruction of organic matter, is placed in a Marsh apparatus. The arseniuretted hydrogen produced is passed into a Liebig tube containing an acid solution of silver nitrate standardized with reference to a known quantity of arsenic. The amount of silver nitrate reduced, estimated by the cyanargentimetric method, shows the proportion of arsenic contained in the original urine.

**Pulse after a Marathon Race.**—Paul D. White (*Journal A. M. A.*, September 28, 1918) studied the pulses of twenty men just after they had run the twenty-five miles of a marathon race. He made polygraphic tracing in all within five minutes of the time that each completed the race. In one man who collapsed during the race and was brought in in an automobile the pulse was found to be thready and eighty a minute. In the others the pulse rate after the race averaged ninety-one with the extremes of seventy-two to 107 beats a minute. In no instance was there any evidence of an alternating pulse; marked sinus arrhythmia was found in two; and the only abnormal arrhythmia was a single premature ventricular contraction in the tracing of one man. In many of the runners the pulse was slower after than before the race. These studies show that even the most violent physical strain upon the healthy heart does not sufficiently exhaust that organ to produce pulsus alternans.

**Distribution of Leucocytes in the Circulatory System.**—J. Jolly (*Presse médicale*, August 1, 1918) finds that the leucocytes are not equally distributed in different parts of the circulatory system. They are always more numerous where there is stagnation of blood. Accumulation of leucocytes in the capillaries and veins where blood circulation is poor temporarily deprives the general circulation of a portion of its leucocytes. When there is depression and stasis, the leucocytes accumulate in the poorly irrigated districts. When, on the other hand, the circulation becomes accelerated again, the blood sweeps the vessels clear and causes leucocytes to return into the general circulation.

**Blood Pressure in War Traumatism.**—Edgar F. Cyriax (*British Medical Journal*, August 10, 1918) calls attention to the fact that in a certain proportion of cases with unilateral injuries the blood pressures taken at the same time in the two arms will be found to differ in level by as much as even eighteen to twenty mm. of mercury. The readings of one day may also be quite reversed a day or two later. The differences involve both the systolic and diastolic pressures, but not necessarily in the same direction even at the same reading. In most cases showing these differences in blood pressures the phenomenon diminishes with improvement and usually disappears some time prior to complete recovery.

**Endocarditis in Scarlet Fever.**—P. Nobécourt (*Bulletin de l'Académie de médecine*, August 13, 1918) deems true scarlatinal endocarditis, simple and nonulcerative, more frequent than endocarditis due to secondary infection, generally streptococci. True scarlatinal endocarditis was met with in children aged six, twelve, and fourteen years, respectively, as well as in seven out of 278 cases of scarlet fever among soldiers. The cardiac complication at times appears early, from the third to the seventh day of scarlet fever, in other instances late, during the third or the fourth week. Rather frequently it appears in the presence of a mild or distinct scarlatinal rheumatism, either two or three or else ten to fifteen days after the onset of the latter. When the endocarditis sets in during the febrile period of scarlatina, the temperature curve shows little or no change; if it occurs later there is often a temporary febrile movement, rarely high and persistent fever. No subjective or appreciable functional disturbances supervene, auscultation alone revealing the endocarditis. All the author's cases presented mitral involvement, to which, in a few instances, aortic endocarditis became superadded. The first sign is a muffling of the valvular sound. This may gradually disappear after a few days; or there may appear, often on the second or third day, a light systolic murmur at the mitral orifice, or diastolic at the aortic orifice. At times a presystolic roll or murmur is superadded. Generally the patient has recovered from the endocarditis and the signs have disappeared upon discharge from the hospital. In two out of seven soldiers and in two out of three children, however, the endocarditis became chronic. Dry or serofibrinous pericarditis, cardiac dilatation, and late tachycardia were met with in some instances.

**Postdiphtheritic Paralysis.**—F. M. R. Walshe (*Lancet*, August 24, 1918) contends that one form of postdiphtheritic paralysis—the localized variety—is due to the spread of the toxin directly along the lymphatics of the nerves in the region in which the diphtheritic infection is situated. Thus it is commonest and most frequent in the palate muscles due to the proximity of the infection to the hypoglossal, vagus, and spinal accessory nerves and their nuclei. It is also frequently encountered in the regional nerves in cases of diphtheritic lesions of the skin on the extremities. This form of diphtheritic paralysis is strictly analogous to tetanus in its development and mode of spread. The second form of paralysis may be regarded as of hematogenous origin and is more specific in the selection of nerves involved, affecting those of the ocular muscles and also causing a more or less generalized polyneuritis. These statements and contentions seem to be substantiated by the observations made by the author in experimental animals and in a series of cases of cutaneous diphtheria, and are quite in harmony with the facts brought out for the spread of the tetanus toxin by Orr and Rows and by Meyer and Ramsom.

**So Called Spanish Influenza in Switzerland.**—Jules Renault (*Bulletin de l'Académie de médecine*, August 6, 1918) comments on the particularly widespread prevalence of the epidemic disease in Switzerland. The disorder has been characterized there by a sudden onset with fever, headache, diffuse pains, and irritation of the upper respiratory passages, throat, and trachea. The disease runs its course in three or four days, and is followed by marked asthenia. At times there occurs a scarlatinoid rash, purpuric spots, or nasal or uterine hemorrhage. Pulmonary complications are not rare, appearing after three or four days, especially in the debilitated or improperly cared for. Bronchial or lobular pneumonia often results fatally on the fourth day, rather from intense toxemia and cardiac collapse than from the extent of the pulmonary lesions. Bacteriological examination of the bronchial secretions in uncomplicated cases showed the Pfeiffer bacillus in a few instances. In the pulmonary complications it was never found, but instead either the pneumococcus or a diplococcus often disposed in chains. These organisms were also obtained from blood cultures. The risk of acquiring the disease is lessened by hygiene of the nasal cavities and throat, and especially, by avoiding visits to those affected and large aggregations of people.

**Parameningococcic Meningitis and Septicemia.**—Brulé (*Presse médicale*, June 13, 1918) calls attention to the secondary septicemias sometimes observed in parameningococcic infections. In any case of meningococcic or parameningococcic cerebrospinal meningitis in which the blood culture is positive or in which a purpuric eruption indicates septicemia, large doses of the corresponding serum should at once be subcutaneously administered. Practised in conjunction with the intraspinal serum treatment, the subcutaneous treatment complements the action of the former in antagonizing the general infection that is often aggravating the meningitis.



# Proceedings of National and Local Societies

## NEW YORK NEUROLOGICAL SOCIETY

*Three Hundred and Sixty-sixth Regular Meeting  
Held at the Academy of Medicine  
Tuesday, October 1, 1918.*

The President, Dr. FREDERICK TILNEY, in the Chair.

### **Exhibition of Pathological Specimens.**—Dr.

IRVING J. SANDS, of New York, exhibited the brain of a man whose case had been diagnosed as paresis, as he showed all the clinical evidence of the disease and had been sent to the Manhattan State Hospital as incurable, previously having received one intraventricular injection of arsenphenolamin. The pathological evidence presented at autopsy spoke eloquently against this form of therapy, for the amount of inflammatory reaction, characteristic of paresis, was far in excess of the normal quantity. In the opinion of the speaker, the results of intraventricular injection of salvarsan did not warrant treatment in this manner and he believed the patient would have had a fairer chance of improvement through intravenous injection of the drug.

Dr. FREDERICK TILNEY recalled the fact that at one of the meetings of this society last spring a number of cases of paresis were presented by Dr. Norman Sharpe, they then being under treatment by intraventricular injection of arsenphenolamin, and several opinions were expressed concerning their improvement, or alleged improvement. There was no pathological criterion in these cases by which one could be guided. As far as the speaker was aware, this brain shown by Doctor Sands was the first that had been exhibited after this form of therapy had been employed, and it would be of interest in the light of such pathological evidence to hear the subject discussed further.

Dr. B. SACHS, of New York, did not wish to discuss the treatment of paresis by intraventricular injection of salvarsan, but there was a question in his mind regarding this brain and that was, could it be regarded as typical of general paresis or had the patient really suffered from meningoencephalitis specifica. This excess of exudate did not seem typical of true paresis, but it was just this type of case which gave rise to paretic symptoms. As the speaker understood Doctor Sands, the symptoms appeared fairly early after the initial infection. If this was so, the case was a very interesting one on that account.

Doctor SANDS replied that there was every reason to believe the case one of general paresis, from the clinical evidence the man presented. At autopsy they found a lymphoid and plasma cell infiltration about the vessels and within the pia; also there was cortical disorganization, and the granulation of the ventricle was quite noticeable. This case was not of the meningoencephalitis specifica type. Regarding Doctor Sachs's statement about the milky exudate, one of the observations frequently made at the Manhattan State Hospital was the milky exudate usually found in the anterior two thirds of the brain. It might not be a continuous process, it might be only in patches, but it was always found.

Doctor TILNEY said that doubtless many remembered when the Act of Mental Deficiency was up before the House of Commons in 1913, how it met with a good deal of opposition and required a good deal of defense. The most telling argument made in its behalf was a statement that a new charter of liberty was being secured for a group of persons heretofore deprived of their rights. This country was very much behind England in that respect and yet a movement in this direction was growing every year. New York was perhaps the leader in it and particularly of late, in consequence of the appointment of a special commission in this State to deal with the problems of the feeble-minded, and to which Dr. Walter B. James had been called as chairman. This was a long step in advance, and Doctor Tilney felt the society was very fortunate in having him there to explain how the neurologists could be of assistance in furthering this important movement.

**The State's Problem of the Care of the Feeble-minded.**—Dr. WALTER B. JAMES, of New York, delivered this address which is published in full in this issue of the NEW YORK MEDICAL JOURNAL.

Dr. CHARLES L. DANA expressed his great confidence in the work which Doctor James, as chairman of the new State Commission, was going to do and hoped that the society would give him every support. Naturally, the neurologists and other medical men were very strongly in favor of the view that the study and care of the feeble-minded was fundamentally a medical consideration to which every possible allied science and art should contribute help. Statistics showed that in clinics for the feeble-minded there was a very marked percentage of physical disease as well as actual mental disease. A survey of the history of the present activities on behalf of the feeble-minded showed that there had been two somewhat antagonistic schools, one which rather gave emphasis to the pedagogical and psychological aspects, the other emphasizing the importance of the medical side. Both schools had among them strong and able advocates and both had helped a great deal in the progress of the movement, and it was encouraging to note that there was a tendency now manifest for all workers in this field to act in harmony toward a common goal. It was a distinct achievement that the head of the State Commission for the Feeble-minded was a medical man.

Dr. L. PIERCE CLARK said that as he understood it the main purpose of the discussion was to make clearer the application of social psychiatry to the problem of feeble-mindedness. In the first instance, the isolated and aloof position of the State institutions for the feeble-minded as such must be abandoned. In the new order, the State institution could well be made the centre of a division of the State in which it could cooperate with agencies such as the poor authorities, schools, prisons, and courts having to do with the various aspects of the feeble-minded. The institutions should be the central bureau for educating these agencies in diagnosing feeble-

mindfulness and advanced systems of humane care and improving the condition of the feeble-minded. Thus the medical staff of the State asylums and farm colonies would have quite as many and perhaps more important extramural activities to engross their attention than merely training the resident inmates consigned to asylum care. The medical staffs should hold regular children's mental clinics in the various localities of their districts; these clinics should not be dissimilar in character to those planned and projected for the hospitals for the insane. Indeed, a cooperative alliance between the clinics in both fields of work should be encouraged so that the whole field of psychopathies might thereby be covered.

Inasmuch as it was doubtful whether sufficient State provision for the feeble-minded would ever be provided, proper supervision and education of these persons in their own home localities should be undertaken. The excellent beginning the State had made in providing ungraded classes everywhere throughout the schools showed that the educational authorities were fully aware of their share in the problem. State asylums and colonies should heartily cooperate in this work, and place the experience of their teaching staff at the disposal of these ungraded classes and thus aid in the proper founding of these schools. Further, the speaker believed not only that more adequate medical and teaching equipment of the State institutions for the feeble-minded should be provided, but in order that this force might be thoroughly keen to solve its various problems, a department of research into the nature and treatment of feeble-mindedness should be established in every such asylum or farm colony. Wise and well considered plans of pathological and social research were real and indispensable functions of the modern up to date State government. The enormous number of feeble-minded, epileptic and various types of mental inferiors brought to light in this present war showed that nothing less than the most thoroughgoing and comprehensive plan of research would enable the rooting out of these sapping social defects in American life. New York State should be congratulated upon its well officered venture in taking up this great work.

The speaker wished to add his plea that the neurologists do not allow this whole province of feeble-mindedness to pass from the field of social neurology and psychiatry, into the hands of pedagogues and psychologists, by their attitude of indifference to these issues. Simply because many of the types of examination tests smacked of a scholastic and educational approach, simply because certain aspects of the feeble-minded concerned reactions of a psychological nature, these facts should not be sufficient for neurologists to allow mental defects to be the sole concern of others. They, and not the public, should take the first step. They should show themselves to be able, capable, and willing to handle these defective disorders in spite of their hopeless ultimate prognosis. Who knew but that trained neurological science might in time even remove the stigma that all feeble-mindedness was solely a hereditary and irremediable disorder.

Dr. B. SACHS said that the problem of the feeble-

minded had been interesting every neurologist and psychiatrist rather intensively; they had been face to face with it for all the years they had been in practice. He was glad that New York State had been so fortunate as to secure Doctor James for the head of a commission from which considerable progress could be expected. Many people realized that great strides had been made in this city in the last ten years about which time the Board of Education, under the guidance of Miss Farrell, began its special work, and a great deal had been done for children of varying degrees of mental deficiency. The problem was both a social and a medical one. It would certainly be simpler if it could be stated that feeble-mindedness was a matter of heredity only, but it was not merely a matter of heredity. In many of the cases it was acquired, and to prove this one need only refer to that large group due to disease in the first two or three years of life. In patients who had a distinct heredity the matter was not a simple one. Could anything be suggested to diminish the number of cases of mental defect? That could be done only if there was some way to eliminate from the social system everything that caused it. There was a prospect of diminishing the influence of alcohol, a potent factor in the development of epilepsy, and mental defectives had epileptic ancestors. With the elimination of alcoholic poison from the social body there would be a diminution in cases of mental defect. If there was any commission that could influence any legislature, there was one law that should be passed with reference to mental defect, and that was a law forbidding absolutely the marriage of close relatives. The speaker had watched that matter with regard to mental defectives and delinquents brought to him in private practice and he had been so thoroughly impressed with it that he had never failed to express his opinion when relatives whom he knew had intermarried. It was true that Darwin had ridiculed this belief expressed by observers of his time, but Darwin himself was the offspring of a consanguineous marriage. There had been advances in knowledge since Darwin's time, however, and those who had studied the records could not fail to agree as to the importance of this factor. If the stock was absolutely pure on both sides there might be no danger, but wherever there was the slightest taint there was no doubt that it became intensified by intermarriage.

The question of feeble-mindedness had been driven home to the public in many ways, and any way in which success could be attained was legitimate. There had been one claim brought forward, however, which seemed unjustifiable and that was that the feeble-minded child was more or less a potential criminal. Taking the entire number of defects by and large, the number of criminals among them was remarkably small, if one eliminated the class, not defective but insane.

In many cases mental deficiency could be prevented. The question was, could anything be done for the relief of the already feeble-minded, and the answer was that much could be done through education and vocational methods. Those were so important that another question arose from them and



that was whether enough was being done in creating the graded classes in the public schools; whether there should not be for children of this class State institutions which would take the child from the age of three or four years and educate it all the way up. There was a probable objection to that in that the parents, who were willing to send their children to ungraded classes, would not consent to send them to ungraded schools, but that was a sentimental objection that should be overcome, for these children should be taken care of properly from their earliest years. That brought up again the question of teachers for this class of pupils. The education of such teachers was as pressing a need as any. Any number of people had attempted the teaching of defective children, but the average teacher who had not been specially trained for this work was unfit to carry it out.

### MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held February 18, 1918.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn, in the Chair.

*(Continued from page 707.)*

**Syphilitic Joints.**—Dr. PERCY WILLARD ROBERTS, of New York, said that modern pathologists recognized that granulomatous masses were merely tissue reactions which might be set up by any one of several organisms, notably the *Bacillus tuberculosis*, the *treponema pallidum*, and the *Bacillus lepra*, that a differential diagnosis was at times impossible until the invading microbe had been isolated. The trend of events indicated the wisdom of correcting the widely disseminated impression that every chronic articular disability characterized by gradual onset, the presence of spasm, atrophy, limitation of motion, limp, or alteration of attitude was due to tuberculosis, for probably forty or fifty per cent., or perhaps more, were suffering from syphilitic infection. In this study of nearly two hundred cases it had been revealed that the symptoms and radiological characteristics of joint lesions due to inherited syphilis were so nearly identical with those of tuberculosis that upon these factors alone differentiation of the two conditions was impossible. The problem of differentiation was reduced to the question of either confirming or eliminating the presence of inherited syphilis. While the Wassermann reaction was of considerable assistance, it was helpful only when the test was done with sensitized antigens and where full recognition was accorded the significance of weak positive reactions. It was upon the dental stigmata of syphilis that special emphasis should be laid, for in every case thus far collected in this research a clue to the diagnosis was obtained by examination of the dental structures. The therapeutic test was more important than the Wassermann for three reasons: first, a negative Wassermann did not exclude syphilis; second, a child might have inherited syphilis and consequently have a positive Wassermann and yet his joint lesion might be due to a superimposed tuberculosis; third, the judgment of those able clinicians of earlier times whose

powers of observation were sharpened by the absence of present day laboratory refinements, could not be ignored. The results of the therapeutic test was striking, but it should not be assumed that every patient enjoyed a prompt and rapid recovery. Results varied according to the type of tissue invaded, the virulence of the organism and the cooperation of the patient. Where there was no bone involvement, joint symptoms of long standing usually disappeared in a few weeks and sometimes with astonishing rapidity. Bone lesions, on the other hand, cleared up slowly, even when the accompanying acute symptoms subsided quickly and where regeneration of bone did take place, approximately a year of continuous treatment was necessary.

Dr. VIRGIL P. GIBNEY, of New York, said that a long association with cripples and with the fine class of men studying their interests had shown a great deal of progress in the relief of their sufferings and much hope for the future. A great deal had been accomplished in the amelioration of scrofulous and tuberculous conditions. During the past year or two very careful work had been done at the Hospital for Ruptured and Crippled in the way of examining and recording the dental conditions described by Doctor Roberts. The moment these were found, the patients were put under appropriate treatment, and the results had been more than satisfactory. The duration of treatment had been markedly shortened, and many cases had cleared up which had long resisted all the usual methods of treatment, rest in bed, braces, climatic change, etc. The discovery of this dental clue was a fresh inspiration for courage in the treatment of these trying and puzzling conditions.

Dr. HENRY LING TAYLOR, of New York, said that the main point that emerged from these studies and others that were being made was that the diagnosis of tuberculous joint disease instead of being rather simple, as was thought some years ago, was in fact extremely difficult. The only way to make it positive was to recover the tubercle bacilli. Doctor Roberts had pointed out that the routine diagnosis of tuberculosis was not sufficient, since those in clinical practice seldom had the opportunity of recovering the organism, and the pathological diagnosis remained uncertain in many cases; therefore examination should also be made for other diseases. For instance, syphilis of the lungs might be mistaken for pulmonary tuberculosis. It was observed two or three years ago that children suspected of syphilis, but giving a negative Wassermann, often had mothers with positive Wassermans. In the last year or so, a great deal of light had been thrown on the frequency of unrecognized syphilis in children and adults. The evidence was now very strong that children, apparently bright and healthy, might have a latent syphilis and sometimes give a positive Wassermann, or might show characteristic teeth. Besides the congenital type, children often had the acquired form communicated by contact with mother, nurse, or in other ways. A great advance in this direction had been made by Doctor Roberts and he had contributed very materially to the understanding of this subject, but there was a demand for much more work along this line. The conclu-

sions, however, were not entirely new. Years ago, various men claimed that syphilitic bone and joint disease was extremely common in children, but they did not furnish the proof and did not convince many. Another observation had interested him a great deal. He had recently gone over the annual reports from the Hospital for Ruptured and Crippled from the year 1893 to the present time and tabulated the number of cases of chronic joint disease, usually put down under the title of osteitis, which might be syphilis, or tuberculosis, or some other infection, as it simply represented the type of the disease, computing the number of cases in each five year period and compared with the total attendance of new patients in the corresponding periods. There were more patients each year, yet the percentage of osteitis cases decreased to about one fourth of the number in the first two periods. The decrease was not steady, as shown by the annual reports, but began about 1911 and after that fell rapidly. It might have been in part due to the general decrease of tuberculous cases in the community, and in part to better methods of diagnosis adopted about that time which ruled out a certain number of cases previously included.

Dr. GEORGE BARRIE, of New York, said that in many instances a given bone lesion might both clinically and röntgenographically give a picture impossible to differentiate from a tuberculous or a syphilitic process. The dental diagnostic points Doctor Roberts had brought forward, furnished a valuable aid in reaching a correct diagnosis.

Dr. CYRUS W. FIELD said that, as first understood, a positive Wassermann reaction meant syphilis, a negative reaction meant absence of syphilis. It was now recognized that this was not true; that a positive reaction meant syphilis in nearly 100 per cent, but there were occasional cases which showed a positive reaction in which neither history nor pathological conditions pointed to the presence of the disease. On the other hand, a negative Wassermann did not rule out the presence of the disease and these negative reactions were especially frequent in the hereditary form of the disease. Doctor Roberts was to be congratulated on having carried on the study of malformation of the teeth beyond the point at which Hutchinson had left it. It too often happened that medical men, well knowing that the disease occurred in the third and fourth generation, looked for syphilis only as an acquired disease, seldom remembering the fact that the patient had a large number of ancestors. It seemed that using both the complement fixation test for tuberculosis and the Wassermann reaction a more correct idea could be obtained as to the etiological factor in these cases of bone and joint lesions.

Dr. G. W. VANDEGRIFT asked if Doctor Roberts in studying the condition of the teeth had often observed rhagades. In his own work he had often observed the peg shaped teeth; they were very common in congenital lues. He also asked if Doctor Roberts had tried salvarsan in these cases. The association of interstitial keratitis was also apropos, for it was often met with in congenital syphilis, and was also found associated with cases of hip joint disease. He then cited two interesting cases observed at Cornell, in sisters, twins, eighteen years

of age. One presented all the marks of congenital syphilis, with a four plus Wassermann, Hutchinson's teeth, interstitial keratitis, etc. Her twin sister was absolutely free from the disease, according to every test that could be applied, a perfectly healthy girl. A younger brother, aged six, had been treated for years for tuberculosis of the hip. He was put upon antisyphilitic treatment and improved very much.

Dr. W. B. CORNELL, of New York, asked if Doctor Roberts had published reports of the cases examined at Randall's Island. He had been deeply interested, especially in that part of the paper referring to these cases, since at Randall's Island in a large percentage of the cases the patients showed evidence of dental deformity and abnormality presumably due to syphilis. This work seemed extremely valuable and stimulating. He also asked what line of treatment Doctor Roberts found to be most successful.

Doctor Roberts replied that as to rhagades, he had seen them only a few times and had wondered that they were not more frequently present, but after all this was only another instance of the absence of those points popularly supposed to indicate congenital syphilis, and partly explained why this condition was so often overlooked. As for salvarsan, he had not yet had an opportunity for trying it in these cases, but hoped to be able to do so. Theoretically, it ought to be beneficial in the joint cases without bone lesions, and there were a number in that category. As for treatment, he had relied mainly on the old fashioned mixed method. He had not made a definite record of the cases examined at Randall's Island. While he appreciated the privilege at the time, he regretted now that he had made this examination so early, for if it had been made with a fuller knowledge of dental stigmata he would have gleaned more valuable information from it. He had not made any tabulation of the cases, but had seen about sixty without joint symptoms but with positive Wassermanns, and 700 or 800 others who were simply defective children.

#### *Stated Meeting, Held March 18, 1918.*

The President, Dr. EDWARD E. CORNWALL, Brooklyn, in the Chair.

#### SYMPOSIUM: PREVENTION OF DISEASE IN THE ARMY.

**The Control of Some of the More Important Camp Diseases.**—Dr. WILLIAM H. PARK, director of the Bureau of Laboratories, Health Department, New York city, delivered this address in which he reviewed the results of treatment of such epidemic and endemic forms of the important infectious diseases as had occurred in the army during the war.

**Cerebrospinal Meningitis.**—There had been considerable interest manifested in the situation as regards cerebrospinal meningitis. The disease had been prevalent during the cool months in the camps of all the fighting nations. A very significant fact in this connection was that wherever cases of the disease had developed and bacterial examinations had been properly made, carriers of virulent types of meningococci had been discovered. The carrier rate had been carefully studied by the English in



the civil and military population in both the endemic and epidemic forms. Two to five per cent. were found infected where the disease was endemic, in one garrison the carrier rate increasing as winter approached until it reached an extraordinary height in December, accompanying a somewhat proportional increase in the number of cases. A rapid succession of cases tended to increase the virulence of the meningococci. The greatest number of carriers were found during the winter and early spring months. The means for checking the spread of the disease divided themselves into three lines. 1. The individual soldiers were protected as far as possible from infection by suitable ventilation and floor space, the elimination of carriers detected by cultures, and cleanliness both in the individuals and their surroundings. 2. Prophylactic injection of meningococci killed by a low heat or suitable antiseptic had been used experimentally both in animals and man with apparently favorable results. Only a serum known to be polyvalent should be used for treatment. 3. Disinfection of carriers had been attempted on a very large scale with considerable success. The best results had been obtained where the carriers entered rooms filled with a very fine spray. Zinc sulphate in one per cent. solution and chloramine-T in a one or two per cent. solution had given the best results. Anterior and posterior nasal sprays had also been used with some success. Meningitis was one of the most important of the camp infections.

**Pneumonia.**—Lobar and bronchopneumonia due to exposure or as complication of measles and other infections were common both in the camps abroad and in the fighting area. In many cases in France the temperature fell shortly after the use of serum. In two large camps all the men had been vaccinated. In one camp, the cases became milder and less frequent about ten days after the second inoculation. In the other camp, the course of the epidemic was unchanged. The train of pneumococci used came from a case in the first camp and it is possible that the type of pneumococci in the second camp was different. The results in South Africa were very encouraging.

**Typhoid Fever.**—The greatest accomplishment in the prevention of disease during the present war had unquestionably been the limitation of typhoid and paratyphoid fevers through vaccination. The military and civil authorities in all countries were in accord as to this. The results in the French Army were most striking. At the beginning of the war less than half of the troops had been vaccinated against typhoid fever and none against paratyphoid fever. During the fall of 1914 and the early winter of 1915, many cases developed, but with improved conditions and the general use of typhoid vaccines, the incidence gradually improved. With the hot weather the number of cases increased somewhat, but bacterial examinations revealed that they were mostly paratyphoid fever. During the winter and spring of 1915 typhoid vaccination was pushed, but it was only in the fall that the use of paratyphoid vaccines was undertaken. Before summer in 1916, the troops had all been vaccinated against both the typhoid and paratyphoid

A and B bacilli. The sanitary conditions were also better. The combined result of the vaccination and the better care was that at the worst periods less than one per cent. of the cases developed as compared to 1914, and less than 10 per cent. of the summer of 1915. In 1917 results were even better. The English from the start vaccinated all their troops against typhoid fever, and after the first year against the paratyphoid fevers. The sanitation had always been good. The combined effect had been to make typhoid and paratyphoid fever cases very infrequent.

**Tetanus.**—During the early part of the war there were twenty-four cases in each 1,000 of English wounded and still more among the French. Injections of antitetanus serums were first made compulsory in all cases with infected wounds and then in all the wounded. Less than one in 1,000 now developed tetanus in the English and French armies, and these rare cases were usually those who received no antitoxin. The serum in the developed cases in France was mostly given subcutaneously or intravenously; the British advocated the intraspinal method.

**Trench Fever.**—This was a form of relapsing fever occurring especially among the English troops in Flanders. The fever was accompanied by headache and pains in the lower limbs. The blood contained infectious organisms which did not pass the stone filter. Microscopical examination revealed no microorganisms. It was probably conveyed by insects.

**Dysentery.**—The bacillary and amebic types of dysentery had been moderately prevalent in both the French and English armies. The amebic form occurred during all seasons of the year, while the bacillary form occurred only in hot weather. At some portion of the front the Shiga infection was most important, at others those due to the other strains. A number of persons suffered simultaneously from both infections. There was no specific treatment to prevent infection in dysentery. The ordinary precautions used against intestinal infections were employed as thoroughly as possible. The vaccines so far prepared from the various strains of dysentery bacilli had been too toxic to be much used. The use of specific serum and bacillus mixtures, sensitized vaccine, was still in the experimental stage. There had been no vaccine developed which was effective in producing immunity against infections due to the ameba. In the treatment of severe cases, the polyvalent serum from horses which had been injected with the various types of bacilli, was administered simultaneously. The earlier it was given the better. When one type of bacilli was found to be the sole cause of the local epidemic, a serum especially potent for this type was employed if it was possible to obtain it. The usual treatment of carriers with emetine hydrochloride was found in more than half of the cases to fail to rid them of the infection. Lately, emetine bismuth iodide had been substituted by the English with better results. In order to prevent diarrhea and vomiting the emetine could be given in coated pills.

**Venereal Diseases.**—Major SIGMUND HOLLITZER, M. R. C., of the Surgeon General's Advisory Board for Skin and Venereal Diseases, read this paper. He deplored the belief that venereal disease was of minor importance. The effective strength of an army was reduced by every man in the hospital, and from this point of view it made no difference whether the man was ineffective on account of pneumonia, meningitis, typhoid, or on account of orchitis, prostatitis, or gonorrheal arthritis. This elementary fact, taken in conjunction with the enormous preponderance of venereal diseases over all other communicable diseases, made it evident that the former were by no means less important than the latter. The medical authorities of the army were thoroughly alive to the importance of the venereal peril. Their campaign against venereal diseases included efforts directed toward the soldiers personally and toward the reduction of the temptations to which they might be exposed. The soldier was taught by pamphlets, lectures, moving pictures, and other exhibitions that the venereal diseases were really serious, oftentimes leading to permanent disability and death; that sexual relations not only were not a necessity but that the most perfect physical condition, as in the training for an athletic contest, demanded complete sexual continence. Every case of acute venereal disease was hospitalized and a day's pay for every day in the hospital was forfeited. If he failed to avoid venereal infection, he was required to make prompt use of the prophylactic means provided, both at his regimental infirmary and in the nearby city in which he was exposed to infection. If he was found with a fresh infection and could not show a record of prophylactic treatment he was courtmartialled and punished as for a violation of a regulation. To help him maintain his morale, all sorts of measures were employed which experience had shown to be of use: athletic sports, entertainments of many kinds, etc. No unchaperoned women were permitted in the cantonments, and in a five mile zone around each cantonment absolute police authority was vested in the Public Health Service. In addition, the civic authorities throughout the country were urged to cooperate in these efforts to control vice in the various communities, and many cities had been cleaned up as never before in their history. The effect of all these measures, so far as could be determined, had been excellent. The army today was far more free from venereal disease than the communities from which the men came. There were many old cases that came in with the draft men that were gradually being discovered and treated, but the fresh infections were an insignificant proportion of the whole number. It might safely be stated that the U. S. Army today was made up of the cleanest lot of young men that were ever gathered together. In conclusion, the speaker emphasized the fact that venereal diseases did not arise spontaneously; that every case in the army meant a carrier in the civil community; and that there was urgent need for more thorough methods of treatment and the active support on the part of medical men of all intelligent measures tending to diminish the venereal peril.

(To be continued.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Headaches and Eye Disorders of Nasal Origin.* By GREENFIELD SLUDER, M. D., Clinical Professor and Director of the Department of Laryngology and Rhinology, Washington University Medical School, St. Louis. With One Hundred and Fifteen Illustrations. St. Louis: C. V. Mosby Company, 1918. Pp. 272.

Among the valuable acquisitions of modern medicine there are few of greater importance than the recognition of the intimate anatomical and physiological relations between the orbit with its contents, on the one hand, and the surrounding cavities in the bones of the face, on the other. The mutual interaction of the pathological processes in these regions has engaged the attention for the last twenty-five or thirty years of some of the best eye, ear, nose, and throat men both in Europe and in this country, and thanks to their unremitting labors we are in a fair way of establishing a definite pathology and treatment of many hitherto unintelligible sinus and eye conditions. The ophthalmologist is frequently placed in a position where he can detect an early sinus affection by the aid of distinct eye symptoms, and in fact some authors (Snydekers) go so far as to claim that seven to ten per cent. of the patients who consult the ophthalmologist for what is presumably ocular headache suffer from diseased sinuses. On the other hand many affections of the eye that are obstinate to any kind of treatment can finally be traced to disease of a neighboring sinus or sinuses, with the proper treatment of which the eye condition will rapidly subside.

Among the pioneers in this line of work in the United States is Dr. Greenfield Sluder whose book, embodying as it does the results of painstaking investigations and studies extending over a period of almost a quarter of a century, forms a distinct and valuable contribution to the subject of the interrelation between the eye and the adjacent sinuses. The work presents a mass of accumulated clinical experience conducted with scientific accuracy and mental acumen by one who has complete control of the ground covered. It is unusually rich in anatomic data, which practically form its ground work and which enhance its value so much the more. It is introduced by a preface from the pen of the well known medical scholar, Dr. Jonathan Wright, who discusses certain points in the minute pathological anatomy of the process, and is divided in three large parts, followed by a series of clinical cases that serve to elucidate the text in the body of the book. The first chapter treats of vacuum frontal (as well as ethmoid and antrum) headaches with eye symptoms only, and in the symptomatology we find particular stress laid on Ewing's sign—tenderness of the upper inner angle of the orbit at the point of attachment of the pulley of the superior orbit and internal and posterior to it. That this sign is uniformly present not all the authors agree (Brawley), and in view of the fact that the headache is usually unilateral it is recommended that pressure be made on corresponding points in both orbits, when greater tenderness



will be elicited on the affected side. The exposition of this class of cases is gone into with the author's usual thoroughness anatomically and pathologically, and diagnosis and treatment are given. Chapter II is taken up with the syndrome of Nasal (Sphenopalatine—Meckel's) Ganglion Neurosis, showing that clinical manifestations must of necessity arise as a result of intimate anatomical relations between the nasal ganglion and the surrounding and neighboring tissues. The treatment of the subject is carried out in accordance with anatomical and physiological findings, into the discussion of which we cannot possibly enter here: we will, however, say that it may well repay reading, or shall we emphasize studying this chapter very thoroughly, for it contains valuable information for every rhinologist and eye man. The third chapter is devoted to the subject of hyperplastic sphenoiditis in which the author has done a great deal of original work, as can be judged by his numerous investigations of the anatomical interrelations between the sphenoid, the immediate nerves, the cavernous sinus, the Eustachian tube, as well as the adjacent foramina and canals. The clinical manifestations of sphenoidal disease are traced directly to anatomical causes. The diagnosis, prognosis, and treatment of the condition are gone into with the author's characteristic minuteness, especially the treatment, which the reader will surely peruse with interest and profit. The closing portion of the volume is given over to case histories, the remarkable feature of which is the extensive variety of ocular affections that can be traced to sinus disease. They embrace such conditions as intractable blepharospasm with great lacrimation, ophthalmic migraine, iritis, choroiditis, and acute blindness. A useful reference list is appended. The book presents an attractive appearance and will form a valuable addition to the specialist's library.

## Births, Marriages, and Deaths.

### Died.

- BAKER.—In Philadelphia, Pa., on Wednesday, October 23d, Dr. Jane R. Baker, aged fifty-one years.  
 BEDELL.—In New York, N. Y., on Thursday, October 24th, Dr. William J. Bedell, aged forty-eight years.  
 BEER.—At Fort Slocum, N. Y., on Tuesday, October 8th, Dr. Alfred William Beer, aged thirty years.  
 BOGUE.—In Montclair, N. J., on Saturday, October 26th, Dr. Frederick Lovell Bogue, aged forty-eight years.  
 BUFFUM.—In Liverpool, England, on Sunday, October 15th, Dr. William Henry Buffum, of Providence, R. I., aged forty-two years.  
 BURKARTMAIER.—In Avondale, Pa., on Wednesday, October 16th, Dr. John H. Burkartmaier, aged thirty-five years.  
 BURNHAM.—In Essex, Mass., on Thursday, October 10th, Dr. E. Bennett Burnham, aged forty-four years.  
 BUTLER.—In Fall River, Mass., on Friday, October 11th, Dr. William H. Butler, aged fifty-one years.  
 COLLINS.—In Albany, N. Y., on Monday, October 14th, Dr. Charles E. Collins.  
 COUILLARD.—In Manchaug, Mass., on Friday, October 11th, Dr. Pierre L. Couillard, aged sixty-eight years.  
 COWLES.—In West Brookfield, Mass., on Wednesday, October 16th, Dr. Frederick Waterman Cowles, aged sixty-two years.  
 DAY.—In Newburyport, Mass., on Friday, October 18th, Dr. Clarence C. Day, aged fifty-three years.  
 DEEMS.—In Flushing, N. Y., on Sunday, October 27th, Dr. Francis M. Deems, aged seventy-two years.

- DI MATTEO.—In Newark, N. J., on Monday, October 14th, Dr. Francis Robert Di Matteo, aged forty-one years.  
 DOUGLAS.—In Newark, N. J., on Wednesday, October 16th, Dr. William J. Douglas, aged thirty-four years.  
 GARDINER.—At Atlantic City, N. J., on Friday, October 18th, Dr. William G. Gardiner, aged fifty years.  
 GREGORY.—In Dansville, N. Y., on Saturday, October 26th, Dr. Walter E. Gregory.  
 HAMMOND.—At Camp Lee, Va., on Thursday, October 10th, Dr. Ralph L. Hammond, of Ridgewood, N. J., aged twenty-six years.  
 KELLOGG.—In Seneca Falls, N. Y., on Wednesday, October 9th, Dr. Frank G. Kellogg.  
 KEMP.—In New York, N. Y., on Wednesday, October 23d, Dr. Robert Coleman Kemp, aged fifty-three years.  
 KOCH.—In Paterson, N. J., on Saturday, October 19th, Dr. George J. Koch, aged thirty-five years.  
 LA MONTE.—In Carmel, N. Y., on Wednesday, October 9th, Dr. Austin La Monte, aged eighty-one years.  
 LEAVITT.—In Brooklyn, N. Y., on Thursday, October 24th, Dr. Emanuel J. Leavitt.  
 LINCOLN.—In Dodgeville, Wis., on Sunday, October 13th, Dr. Walter Stephen Lincoln, aged fifty-four years.  
 LOCKWOOD.—In Craig, Ohio, on Thursday, October 10th, Dr. Francis William Lockwood, aged forty years.  
 LUBIN.—In New York, N. Y., on Sunday, October 27th, Dr. Edward Kenneth Lubin, aged twenty-three years.  
 MERLE.—In Batavia, N. Y., on Friday, October 11th, Dr. C. W. Merle, aged twenty-seven years.  
 MILLER.—In Bound Brook, N. J., on Thursday, October 3d, Dr. John L. Miller, aged sixty-nine years.  
 MORRIS.—In Fall River, Mass., on Friday, October 11th, Lieutenant William S. Morris, Medical Corps, U. S. A., aged twenty-eight years.  
 O'DONNELL.—In Los Angeles, Cal., on Friday, October 18th, Dr. John J. O'Donnell, of Boston, Mass., aged thirty-three years.  
 OSGOOD.—In Boston, Mass., on Friday, October 18th, Dr. Gardner H. Osgood, aged forty years.  
 OUELLET.—In Orwell, Vt., on Saturday, October 12th, Dr. L. F. A. Ouellet, aged forty-eight years.  
 PERHAM.—In Concord, N. H., on Saturday, October 10th, Dr. Harry L. Perham, aged thirty-four years.  
 PETERSEN.—In New York, N. Y., on Monday, October 21st, Dr. Leo S. Petersen, aged thirty-one years.  
 PILON.—In Vergennes, Vt., on Monday, October 14th, Dr. Edward Pilon, aged fifty-five years.  
 PLAGEMAN.—In Brooklyn, N. Y., on Thursday, October 17th, Dr. Rudolph B. Plageman, aged sixty-seven years.  
 PORTER.—In Caribou, Me., on Sunday, October 20th, Dr. Joseph W. H. Porter, aged forty years.  
 PRESTON.—In Dansville, N. Y., on Wednesday, October 16th, Dr. Ella Preston.  
 REYNOLDS.—In Clinton, Conn., on Wednesday, October 9th, Dr. Herbert H. Reynolds, aged fifty-eight years.  
 ROSENTHAL.—At Markleton, Pa., on Tuesday, October 22d, Lieutenant Joseph B. Rosenthal, Medical Corps, U. S. Army, aged twenty-seven years.  
 SCHALL.—In Rochester, N. Y., on Wednesday, October 9th, Dr. Harry Mayer Schall, aged fifty-five years.  
 SIMONTON.—In Centreville, Md., on Friday, October 11th, Dr. Lawrence J. Simonton, aged thirty-eight years.  
 SMITH.—In Orange, Mass., on Thursday, October 10th, Dr. Hiram F. M. Smith, aged fifty-nine years.  
 STOLL.—In Pottsville, Pa., on Tuesday, October 22d, Dr. Joseph Stoll, of New York city, aged thirty years.  
 THERRIEN.—In Marlboro, Mass., on Monday, October 14th, Dr. Edward J. Therrien, aged sixty-two years.  
 TURNER.—At Camp Benjamin Harrison, Ind., on Friday, October 11th, Captain William G. Turner, aged thirty-nine years.  
 VON SEUTTER.—In Jackson, Miss., on Friday, October 11th, Dr. Edward R. Von Seutter.  
 WALSH.—In Portland, Conn., on Sunday, October 20th, Dr. Joseph W. Walsh, aged thirty-three years.  
 WANKELL.—In Boston, Mass., on Tuesday, October 15th, Dr. George Channing Wankell, aged thirty-six years.  
 WESTBROOK.—In Vancouver, B. C., on Sunday, October 20th, Dr. Frank Fairchild Westbrook, aged fifty years.  
 YOUNG.—In Fort Plain, N. Y., on Tuesday, October 15th, Dr. William H. Young, aged thirty-six years.

# New York Medical Journal

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## Original Communications

### DESTRUCTION OF THE PHYSIOLOGICAL FUNCTION AFTER OPERATIONS ON THE NOSE AND THROAT\*

By WOLFF FREUDENTHAL, M. D.,  
New York.

It is not the aim of this paper to present a description of the untoward results of operations, similar to one given several years ago by John Mackenzie on the massacre of the tonsil. Its purpose, rather, is to induce the rhinolaryngologist to consider the physiology of the upper air tract more thoroughly than has been done during the last twenty years of successful nasal and pharyngeal work, and to keep in mind the untoward results following procedures that are considered nowadays both legitimate and necessary.

#### PHYSIOLOGY OF THE NOSE

A great deal has been written on this subject, but no universal agreement has yet been reached on some of the most important questions to be considered here. The writer is pleased to note that some of the fundamental principles laid down by him are being gradually recognized. In order to understand the complaints of patients—in other words, the pathology—one must turn to the physiological functions of the nose and investigate the requirements of normal respiration through that organ. The old theory that the nose has to filter, warm, and moisten the air is still recognized today. To accomplish this process nature has provided many devices. The interior of the nose does not represent a straight tunnel, but a complicated structure preventing the air from passing in a straight line to the pharynx. A variety of bones and cartilages covered with an important mucous membrane has been set up in order that the air should strike them, thus enabling the air to become physically adapted for its work in the lower portions of the air passages. Just as the food is prepared or rendered digestible by the act of chewing, salivation, etc., in the upper digestive tract, so the air is prepared in the nose, in order to be assimilated, as I have called the process.

*Process of filtering.*—The process of filtering the

inspired air is probably the most important function. In this respect the epithelial cells of the mucous membrane are probably a primary and essential factor of resistance against disease. Owen Paget (1) even believes that the epithelial cells of the turbinates and nasal sinuses have a special capacity to form antibodies against tuberculosis. An intact mucosa will therefore mean a great deal for the filtering function of the nose.

*Warming the air.*—The second requirement, that of warming the air, is so easily understood that it need not be discussed at length. As Aschenbrandt and R. Kayser have proven long ago, the air is heated to 30° C. in the nose, regardless of what the outer temperature may be. So here again it must be repeated that the mucosa, and especially an intact one, is essential for the work to be done.

*Moistening the inspired air.*—Much more difficult is the third task—moistening the inspired air. The value of this question, to which the writer has given much thought and study for many years, is, it seems, not universally appreciated by physicians. The idea still exists in some quarters that this is rather an unimportant factor, that it can be accomplished by the mucous membrane under almost any circumstances and in nearly every kind of environment.

As early as 1895 I tried to establish the following facts: that, 1, a dry mucosa and, even more so, an atrophic one, is never able to moisten the inhaled air satisfactorily; and 2, that the air, to be breathed in, must contain a certain percentage of humidity in order to be easily "assimilated." In proof of these theories many points were brought out that year and since that time. Suffice it so say that, as disclosed by many investigations, the fact was established that the dwellings inhabited by us and in which we often spend the entire day, do not contain nearly enough humidity for physiological respiration. When the air in our rooms is nearly dry, as it frequently is, it desiccates the mucosa, thus causing pathological changes, to be discussed later on.

The normal mucosa of the nose is capable of overcoming the lack of moisture in the air to a certain degree only; beyond that it dries out and can no longer be a factor in assimilating the inhaled air. Thus a rhinitis sicca is produced with or without a corresponding condition in the pharynx and nasopharynx. A number of these cases finally re-

\*Read at the Thirteenth Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, held at Denver, Colo., August 5 and 6, 1918, and before the New York Physicians Association, September 24, 1918.



sult in atrophy.<sup>2</sup> This process of desiccation that has been observed in other parts of the organism as well, has been named xerasia by the writer, while Sticker, who independently came to similar conclusions, called it xerosis.

In distinct contradiction to these findings of mine were certain studies of the effect of various atmospheric conditions upon the upper respiratory tract, a work to which the prize was awarded by a national society (3). The author's conclusions, as just mentioned, differ greatly from mine. By analyzing his paper, however, so much will be found that is based on erroneous experiments and deductions that his work cannot be considered conclusive or final. Firstly, the exposure of any person, for a short period of time, to the atmosphere of a room followed by a change to another room with different atmospheric conditions will give rise to only acute symptoms, but never will it produce a rhinitis sicca, which is brought about by many months, or probably years, of living in a vitiated atmosphere, i. e., vitiated as to the lack of humidity. Some of those examined by the author of these experiments showed an enlarged turbinal, others showed redness or the reverse, again others, increased moisture, etc. But what does all this prove? Absolutely nothing. These symptoms may or may not change when the condition becomes chronic. Besides the individual susceptibility to drafts, exposures, etc., had not been tested beforehand, so that a good deal of the value of these experiments is lost for this reason alone. Furthermore, there is a great difference of findings in different seasons of the year, as pointed out by the writer and M. Behr (4). During the month of February, for example, there are many more cases of rhinitis sicca than in August. Such variations ought to have some effect on experiments. Then the assertion that some cases showed increased or decreased moisture brings up the question: How was the moisture measured; by the Glatzel method? Certainly few physicists would consider that conclusive. But the strongest point against my deductions was made by this author on the statement that laundry workers, who spent most of their time in a moist atmosphere, "showed by far the largest percentage of cases of atrophic rhinitis of any of the groups." This puzzled me only until I found an explanation for the mistake made in the article referred to above. On page 166 one finds the following: "Investigation of the laundry plants shows that the steam comes directly up into the faces of the workers standing near the mangles, washing machines, and other appliances much of the time. In fact we feel certain that these steam laundry workers are far more exposed to high degrees of humidity than the figures indicate." It appears as if the last sentence was written in support of the author's theory, or supposed theory, that a great amount of moisture in the air is rather conducive to atrophic rhinitis, for among thirty-three laundry workers examined he found twenty-one

suffering from that disease, or sixty-three per cent. But if one examines these statements more closely one finds that "the steam comes directly up into the faces of the workers . . ." and naturally up into the nose. And what happens when steam at a high temperature is brought in close contact with such a delicate organ as the nasal mucosa will be easily understood. It simply destroys the membrane or burns it. The skin of the face may or may not withstand the insults of the hot steam—the author does not mention anything about that point—but the nasal mucosa gradually undergoes atrophy. Place those laundry workers wherever you please, in absolutely dry or absolutely moist air, the result will always be the same—atrophy.

In the second table under this heading the author shows the average atmospheric conditions in a large number of boiler and engine rooms. Surprising to say, according to his findings, the average relative humidity was only 26.5 per cent. In other words it was only one half of what he himself had designated as normal (fifty per cent.). We, therefore, have here a deficiency of humidity in the air and not a surplus of it. How the author could give this as a proof of his theory, it is difficult to understand. On the other hand, this is exactly what I tried to prove long ago, viz., that the lack of sufficient moisture in the air is exactly what produces a rhinitis sicca and finally a rhinitis atrophicans.

It is not a pleasant task to scrupulously analyze somebody else's work. I hope, however, it will be understood that this is not a personal matter, but one of greatest importance, not only in regard to heating and ventilation, but more so as to the prevention of a number of nasal affections with all their sequelæ. It is my claim that during the winter months people suffer from lack of indoor humidity, and it is not a matter of indifference if that is denied by others.

This question has commenced to attract the attention of the medical and lay public. But even in the minds of such a distinguished body of men as the editorial writers of the *Journal of the American Medical Association* there seems to be confusion. In that journal (5) we find: "The question as to whether the atmosphere can ever become too dry for comfort or physiologic wellbeing has not yet been satisfactorily answered." It seems to me that I answered that question long ago in the same journal (6). But in spite of the above sentence the editorial continues: "In cold weather the moisture may be largely precipitated from the air so that it becomes extremely dry when it enters houses. This led to the desire and the practice to moisten such air." What a contrast between these two sentences.

Frederic S. Lee (7) has written an article along the same lines, in which occurs the following: "The harmfulness of living in confined air is found in certain physical rather than chemical features—the air is too warm, too moist and too still; and if it has not these physical features it is not harmful." "Too warm" may be true, "too still" may also be correct, but "too moist" is a grave mistake. I should like to see any ordinary living or office room, when the outside temperature is below the freezing point, that shows by actual measurement the pres-

<sup>2</sup>Regarding the development of atrophic rhinitis in the climate of Colorado, the opinions of two prominent rhinologists seem to differ. While Doctor Gallaher believes that this is rarely the case, Dr. Robert Levy expresses a contrary view (2). But do these gentlemen mean the same condition in speaking of atrophic rhinitis as I do? And do they agree with each other about that disease?

ence of too much moisture in the air. I wonder how many dwellings Lee has examined to that effect. In all my investigations the humidity was reduced to such a low degree that its absence showed distinct pathological effects on the mucosa of the upper air tract.

It should be mentioned here that, in 1916, Dr. S. Josephine Baker (8) made investigations in cooperation with the New York State Commission on Ventilation as to the value of certain kinds of ventilation, etc. As these studies have a bearing on our theme, the conclusions arrived at by Doctor Baker may be mentioned here:

"Children in classrooms with closed windows and ventilated by mechanical methods were more subject to respiratory diseases, severe enough to keep them from school attendance, than were children who were in classrooms kept at the same or lower temperature and ventilated wholly by open windows." And then again:

"Children in classrooms with closed windows and ventilated by mechanical methods were more subject to respiratory diseases not sufficiently severe to keep them from school attendance than were children who were in classrooms kept at the same or lower temperature and ventilated wholly by open windows. The relative humidity of classrooms, whether ventilated by natural or mechanical means, was not a causative factor in the occurrence of respiratory illness among school children."

It is especially the last sentence that deserves our attention. Such a broad statement as this has to be proven, but we looked in vain for any proof. Later on the same author says: "It seems impossible to show any relation between the percentage of absence and the relative humidity and saturation deficit." Of course not; such a thing could not be demonstrated at once. One cannot say, that on account of a saturation deficit fifty or one hundred pupils are absent today or will be absent tomorrow. Such influences work slowly, as mentioned above, and they may not be noticed until many months have elapsed. Further on we find: "Where the relative humidity was low, one class with twenty-one had an absence percentage of 6.8 while another with a relative humidity of twenty-eight had an absence percentage of 31.0." We hope the author does not consider twenty-eight a high relative humidity; the lowest normal is forty per cent., and it is only above forty that human beings feel comfortable (of course up to a certain point only). But from these quotations it can be seen that no conclusions should be drawn from such findings. Experiments have to be carried on differently when the question of moisture is involved.

To overcome this deficiency of moisture many a device has been recommended. P. W. Goldsbury realized the importance of the problem of constructing buildings in such a way as to keep the interior up to a fair degree of humidity. But he thinks that so far engineers have made little practical progress toward its solution. Their ingenuity has been taxed to improve the moisture in large public buildings. The devices for this have so far proved too expensive for private dwellings, hotels, offices, or school houses (9). Bryce, of Ottawa,

who very likely had a similar experience, says that seventy-five gallons of water must be evaporated daily in an ordinary sized house to maintain reasonable humidity "under the conditions of our northern winter." It seems plausible that this statement holds good for New York as well. But of the many devices recommended for such a purpose, we can not recommend any. Even the four radiator devices as tested by E. P. Lyon at the University of Michigan are "practically worthless."

#### CLIMATIC CONDITIONS SIMULATING OPERATIVE INTERFERENCE.

The question of humidity has been discussed here at considerable length and you may justly ask, for what reason? The reason is that our indoor life, especially in winter, and the lack of sufficient indoor humidity bring about certain symptoms that frequently seem to be a strict indication for operative intervention, but in reality are not. Let us illustrate this by a few examples:

CASE I.—A. P. came into my clinic complaining that his nose was stopped up. On examination the right side was found to be wide, almost atrophic, and very dry. The left side was clogged by the septum being deviated toward the left, to such a degree that there was only a narrow opening. The mucous membrane here was in quite a good condition. When the patient was asked through which side he could breathe the better, he promptly answered: "The left one," i. e., the narrow side. The patient was operated on and his septum straightened out with excellent immediate results. Soon afterwards he returned however, complaining bitterly that while formerly he could breathe at least through the left side, now that side was gone too. Crusts were found there and the mucosa did not show the same healthy appearance as before the operation.

CASE II.—J. D. feels a dryness in the throat, especially in winter. He has been operated on many times (and as a result?) has lost his sense of smell. "Since my first operation I feel no air. Plenty of room." This man's nose is characteristic by the absence of both inferior and middle turbinated bodies. The septum has been straightened, and he asked, "What else is there to operate upon?" The nasal air passages were large and the mucosa dry.

In Case I there was a tendency toward atrophy that was evident on the right side. No sooner had we operated on the other side, than the same process set in there, destroying the physiological function of the mucosa on that side as well. In the second case the nasal passages were made so wide that the air reached the pharynx in a direct line. There was no possibility of assimilating the air to the needs of the organism, and the patient felt a real hunger for air. A similar experience was reported by Dr. A. T. Weil, of New Orleans:

CASE III.—A colleague in his city had suffered from nose trouble since childhood. Tonsils and adenoids were removed in childhood. He became a physician, but still suffered, and some turbinates were taken out by a specialist. Not feeling relieved, he consulted another laryngologist, who said: "Your turbinates were removed? Why, they are immense." Again they were operated upon, and a year later a third time. Thereafter he became hoarse easily, and again was examined by three other laryngologists, each one declaring, independently of the others, that the patient had a sigmoid shaped septum and that his voice could never improve without the septum being straightened. That was done, and now he is worse than ever before. His mucosa "swells" at the slightest provocation, so that he is unable to breathe. He suffers from hoarseness and, in short, feels miserable.



While writing this another colleague consulted me, regarding a similar case.

These cases, and many others observed later on, made me pause to consider in how far we are justified in performing certain operations. It was clear to my mind that we had gone too far in these operations, and that the patient's complaints were due to climatic conditions and not to an easily perceptible, faulty formation of the septum or the turbinals. If simpler methods had been used the patients would have experienced relief very soon, which is impossible if a real, cartilaginous, bony obstruction is the cause of the trouble. Besides, the tendency toward atrophy should always be kept in mind, especially where the initial stage is already present.

We are now confronted with the following question: Is an absolutely straight septum normal? There was an era in rhinology when it was thought that at least the aborigines had straight septa. In 1904 the writer (10) examined more than 800 crania of aborigines and was surprised to find that more than one third showed abnormal conditions of the septum. Other observers reached the same result, and it was pointed out that asymmetry of the organs is probably the most normal condition. Consequently many rhinologists have learned the important lesson, that there are non-obstructive deviations which do not necessitate an operation.

In this connection an article by H. M. Goddard, of Philadelphia (11), is very interesting and instructive. While he admits the many beneficial results obtained by a submucous resection, he lays great stress on the importance of an intact nasal mucosa. "By destroying the mucosa we are very apt to substitute a perverted respiratory function for an obstructed one." Goddard then describes a series of conditions that often sets in afterwards, produced by the lack of epithelium, etc.—symptoms which I ascribed to the impossibility of assimilation of the inspired air. It is not my intention to mention the absolute indications for submucous resection—an operation that the writer has to perform quite frequently, but it may be opportune to warn colleagues, as the result of my experience, that not every deviated septum spells operation.

#### AGE OF THE PATIENT

Another point of importance that has to be taken into consideration is the age of the patient. In older or middle aged persons, i. e., beyond the age of forty-five or fifty, the organism has adjusted itself to a certain amount of pathological changes, to such a degree that it does not require any operative interference. Such people with a deviated septum or a large spur often feel perfectly comfortable, as they do not need as much air for breathing purposes as in their younger and more active days. They have unconsciously regulated their habits and their daily work to fit into this altered condition, and a change is not required for their wellbeing. Let us illustrate this by an example taken from another field of our work. As is well known, the glottis in bilateral paralysis of the abductor muscles is narrowed down to a very narrow slit. A minute amount of air can pass through this, especially since

at each inhalation the glottis paradoxically closes up more. Yet such patients may live for years in relative comfort, if they learn how to get along with little respiratory pabulum. I distinctly recollect one patient, who was under my observation at the Montefiore Hospital for more than eight years, who had that condition of the abductor muscles due to tabes; besides, his lower extremities were paralyzed and he was totally blind. He had to be rolled around in his chair and had very little occasion to exert himself. He did not need much air for his daily requirements. That was in the same proportion as the intake of his food, which was much less than in the days of his activity. Parenthetically, it may be mentioned, that another patient with the same condition in his larynx, but without any affection of his lower extremities and eyes, who had been walking around, became intoxicated one day and was found dead on the street. In making routine examinations on several hundred patients a number of cases were found (12) that were similar to the one just narrated. Others have observed the same conditions in patients of which they obtained no history, as for example those reported by W. S. Chamberlin, of Cleveland.

Similar obstructions, though not so exaggerated, may prevail in the nose for many years with impunity. I have seen such people reach an old age, experiencing not more discomfort than others who had been operated upon. And these discomforts were easier to bear than an atrophic rhinitis or a rhinitis sicca.

#### THE TURBINALS IN SINGERS.

What has been said in general about the septum narium holds good for the turbinals to a still greater degree, that is among ordinary mortals; but how about singers? Since nothing has been found in the literature touching that subject, it may be timely to give my experience with two well known singers.

CASE IV.—Mr. X. complained of some difficulty in breathing. Both inferior turbinals were removed by a rhinologist of standing, whereupon the patient was unable to sing for one and a half years.

CASE V.—Mr. N. N. sang one night in one of the European capitals with remarkable success. The next day the turbinals were removed, and from that moment on he was lost vocally; he could not produce any high notes, and never again appeared on the stage.

These cases reported are known to me personally. Are they exceptions or have others observed similar effects? On the other hand, some singers may and do gradually learn how to place their voices and accommodate them to the altered anatomical relations. But, before operating, one should never lose sight of the fact that the nose has a double connection with the voice: as an air passage and as a space for resonance. The air on passing by the numerous projections, based on the principle of an increased surface, is adapted for the requirements of the system. The proper execution of these hygienic functions of the nose is of special importance for the voice producing apparatus, the larynx. The importance of the nose as regards resonance depends upon the pneumatic cavities and upon the conchae with their intact mucosa. It is wise to keep that in mind before removing any of the important tissues.

## THE ACCESSORY SINUSES.

As far as the ethmoids are concerned, the theory of Holmes—that in all probability the cellular structure of the ethmoid labyrinth had for one of its functions the protection from cold—should be mentioned. This has been the writer's experience in a few cases of ethmoid operation, but more so after radical operation on the antrum.

As to these radical procedures on the accessory sinuses, Dr. E. B. Gleason (13) says: "I cannot help feeling that the status of radical operations on the nasal accessory sinuses is worse than that of the radical mastoid operation, which is, of course, sometimes necessary to save life, but which, in its final results, sometimes leaves a less satisfactory condition than if no operation had been done and sometimes requires much aftertreatment, from time to time, to prevent recurrent suppuration. In other words, one pathological condition has been substituted for another."

In presenting the data of other observers as well as my own experience, it is not the aim to discourage entirely operations on the nasal sinuses, some of which are directly life saving, while many others have afforded great relief to suffering patients. It is done rather with the idea of suggesting that not too much confidence be placed in these operations, thereby neglecting other means of relief. A normal mucosa is apt to overcome many difficulties, probably even an infection of the sinuses. To keep it normal or bring it back to the normal, the deficiency of indoor moisture will have to be combated first. Parenthetically it may be added that one of the effective therapeutic measures in chronic empyema of these sinuses is the use of negative pressure (vacuum pump), as advocated by Haskin, Coffin, Harmen Smith, W. A. Wells, MacWhinnie, and lately by Gleason. It acts merely by producing Beer's hyperemia, and hyperemia of the mucosa means nothing more than increased influx of serous exudation, or, in other words, increased humidity.

## OPERATIONS ON THE THROAT.

While in certain affections of the nose the pathological process may be overcome by putting the patient under normal hygienic conditions, as outlined above, it is somewhat different in the mouth and throat. I have proven elsewhere (14) that the lips, the teeth, and tongue are affected by the lack of indoor humidity, but so far I have not been able to prove to my own satisfaction that diseased tonsils and adenoids are the result of such conditions also. Yet we have to operate on them and do so frequently.

From the removal of adenoid vegetations no untoward results are known to me, unless they were due to faulty technic. But how about the tonsils? Is it true that indications for the removal of tonsils are not as simple as they appear to be? Does the general practitioner or even the laryngologist always know when to operate and when not? Somebody has remarked, that it was easier to remove a tonsil than to know whether or not it should be done. What has happened since John N. MacKenzie (15) wrote his article on the *Massacre of*

*the Tonsil*, in 1912, in which he speaks of "reckless, ruthless, and unnecessary" enucleation of the tonsils in children? This article, on account of its forcible language and the prominence of its author, made an impression all over the country. Formerly school children in the poorer districts of New York city were driven by the hundreds to the clinics, whether the parents gave permission or not, and many of these children were operated on with or without good reason. The nurses employed by the New York Board of Health seemed to find satisfaction in taking as many to the clinics as possible. On some afternoons I was confronted with twenty to thirty of such children and on many of them I refused to operate, to the apparent disgust of the nurse. That practice has markedly diminished.

Some people, however, still persist that since tonsils have no functions to perform, it is best to remove them, and to do it radically. I hope not many thinking physicians will be found to subscribe to such theories. For, firstly, it is absurd to advise removing an organ from the human body because the extent of its physiological function is as yet unknown; secondly, the tonsils have special functions to perform. They have to lubricate the food that is taken in, thus performing the first and, perhaps, a very important step in the digestion of food. Besides they have to lubricate the throat during the acts of speaking and singing and are of special importance in this connection to speakers and singers. Furthermore, the mechanical significance of the tonsil has to be considered (Kenyon). This point will be taken up shortly. Finally, the tonsils have the same task as the nasal mucosa, only to a greater degree: they, like all the other lymphatic structures in the pharynx and elsewhere have to ward off dangers by inhalation, infection, and especially here, by contaminated fluids of the mouth and pharynx. They do most important filtering work for the organism, and with their phagocytes take up the primary battle against the tubercle bacillus. "Remember," says Henry L. Swain (16), in an exceedingly interesting article that just came to my notice, "it is only when the phagocytes in the tonsils fail in their work that the germ gets into the second line trench, the lymph nodes of the neck. Many times therefore they kill the tuberculous germs off, and it is lucky for us that they do."

For these reasons there is a strong opinion against the indiscriminate removal of tonsils, as will be seen in the articles by C. W. Richardson (17) and by Otto T. Freer (18), who speaks against the "focal infectionists." On the other hand some are emphatic—and the writer is one of them—against radicalism in every case where an operation is strictly indicated. When I read part of this paper before the New York Medical Union on May 28th, a practitioner of wide experience remarked, in the discussion following, that a good deal of cod liver oil and more of fresh air (taking the pupil out of school) had saved many a little patient of his from an operation. A pediatricist said he had used the guillotine for more than twenty-five years and has had no reason to regret it. I believe that both these gentlemen are correct, but want to add that the second one sooke from his standpoint as pediatricist.



According to my opinion there are indications for partial removal of the tonsil and radical tonsillectomy, both of which I have practised for years, and it is my experience that whatever is left of a tonsil, if it is normal tissue, serves as a protection to the organism. To prove this I may cite the following fact: After operations in the nose occasionally an infection of the throat follows that may spread to the cervical glands. Now it has been my experience that this cervical adenitis is more frequent after a perfect enucleation than in those cases in which part or, naturally, the whole of the tonsil had been left. This is also the experience of Dr. Edgar M. Holmes, as expressed in a conversation with the writer. On the other hand, one should remember that a cervical adenitis is sometimes kept up by a purulent process in a part or the entire tonsil. In such a case every particle of the tonsil has to be removed. I do not speak against tonsillectomy nor tonsillectomy; each has its place in medical practice; but I am strongly against over-operations on the tonsils, which are unnecessary and not without danger. Yesterday I read in the newspapers that someone cures insanity by removing tonsils and teeth. That is insanity.

Physicians and laymen have begun to recognize that neither tonsils nor, for that matter, teeth are at the bottom of all evils in children, and that some tonsils may be left where nature placed them. On the other hand the removal of tonsils in grown persons has always been considered from a different viewpoint. It seems that after tonsillectomy the impaired throat of the adult has less capacity of readjustment than that of the child. Yet tonsils that suppurate at certain intervals will have to be removed *in toto*, so long as better methods of getting rid of the focus of suppuration are not known. Likewise, the tonsils will have to be dealt with in rheumatism, when there is positive evidence that they are the etiological factors in the individual case. There are other indications for tonsillectomy which may coincide with those in children, but may well be omitted here.

However, a tonsillitis, or a recurrent tonsillitis, in the majority of instances is not a local affection, but a manifestation of a systemic condition. To remove the tonsils in such cases is like removing one of the defenses nature has set up for protection. It will be best to illustrate this by one of many examples that have come under my observation.

CASE VI.—F. C., aged thirty-five, consulted me last winter on account of an acute tonsillitis. His fever rose to 102.5° F., but after about ten days he was well again. A few months later he was operated on by somebody else, the tonsils being removed radically. This winter his troubles began very early and it was almost impossible to free him of his sore throat. Tonsillectomy had been done *lege artis*, but the cicatricial tissue that formed afterwards was so abundant that a good deal of the mucous membrane was destroyed. He suffered now from a stubborn pharyngitis that bothered him until warmer weather set in.

The power of resistance had been weakened in this instance, and with the fall of the tonsils there was lost one of the strongest fortifications—or as Hudson-Makuen put it:—"To remove the tonsil in such a case is like killing the goose that lays the golden egg." However that may be, tonsillectomy leaves other dangers in its trail, as pointed out by

Hudson-Makuen, French, Kenyon and Kradwell, Conner, Joyes, and many others. These dangers are noticed mostly in alterations of the speaking and singing voice.

The appearance of tonsillectomized throats has attracted my attention for years past. Over and again have patients consulted me showing such masses of cicatricial tissue, adhesions, loss of muscular tissue, to such an extent that one is astonished at the destruction brought about by the operations now in vogue, and performed, not by hospital internes, but by leading men in our specialty. Scars, where mucous membrane is needed, work havoc, as shown above as well as by many other examples that everyone may see who is inclined to do so. As to other defects following tonsillectomy the articles by Kenyon and Kradwell (19) and lately by Kenyon (20) alone are so convincing that they are bound to change our mode of operation in the future. The work these authors have done "has failed to quiet any feeling of unrest with respect to the operation on either the speaking or the singing voice." The physiological importance of the palatopharyngeus and the palatoglossus muscles, the mechanical significance of the tonsil, including its elaborate capsule, the question of the intrapharyngeal aponeurosis and the capsule, and many other factors have been explained so clearly by Kenyon that the damage done to the voice by injuring these parts can be easily understood. His article is based on the examination of 161 tonsillectomized throats, and on a study of thirty cases of vocal or other disturbances resulting from tonsillectomy—indeed, an appalling number.

In analyzing my own records I am convinced that the number of such disturbances seen by me is still greater. This is also in accord with Makuen's experience that deformities of serious significance occurred in the hands of the most skillful operators. Consequently one is not surprised at the remark of Kenyon and Kradwell: "It seems conservative to say, that following tonsillectomy, the palatoglossus and palatopharyngeus muscles are *never*<sup>2</sup> wholly normal in their action." "Never" is a dreadful indictment against our present mode of operation. In a similar way W. E. Conner (21) expresses his opinion that the voices of singers have been practically destroyed in some instances, while the functions of the tonsils, be they ever so few, have been denied these patients forever.

However, it is the belief of some men that tonsillectomy serves to destroy, not merely a possible function of the tonsil, but also to either disturb or destroy an important physiomechanic function. On the other hand, there are men who have expressed different opinions. Among the latter is I. W. Voorhees (22) who went to the trouble of sending out questionnaires to five hundred laryngologists and five hundred singing teachers. While Voorhees' paper deserves appreciation, its statistics, like other statistics, have to be taken with a certain amount of reserve. Nothing, to my mind, is so misleading as statistics, no matter how truthful the authors may be. From his statistics Voorhees draws the conclusion that in singers—that was the

<sup>2</sup>The italics are mine.

question he was interested in—there need be no special fear of disastrous results after tonsillectomy, when done by skilled operators. Yet an analysis of some of his points does not quite seem to justify his optimism, as, for example, the answer to question No. 2: "Out of 341 cases only forty-six showed cicatricial contractions, which is truly an excellent operative record." This means that about twelve per cent. had unsatisfactory results, which does not impress me as an "excellent record" for professional singers. Cicatricial tissue in the absence of the lubricating function of the tonsil is a defect that can be overcome by few singers only. In reply to questions No. 5 and No. 6, ninety-five men reported no ill effects, while thirty-eight men had noted untoward sequelae in 172 cases. When one considers that these effects remain permanent in a goodly number of cases, one is struck by the rather large number of men (thirty-eight out of 133—about one quarter) who experienced unsatisfactory results. This is a surprisingly large percentage against tonsillectomy. It is after studying such reports that one recognizes the physiological necessity of the tonsil and realizes that every effort should be made to preserve at least a portion of this organ.

After a great deal of study and hard work in this field for the past decades the question of tonsillectomy and tonsillectomy will have to be taken up once more, and investigated again from every point of view. Not only will this question have to be taken up, but many other operations on the upper air tract will have to be scrutinized with the idea of determining whether more conservative means will not serve the purpose of preserving, as much as possible, the physiological functions of the different structures.

In conclusion permit me to say that it is time we clean up our ranks as the gynecologists did some fifteen or twenty years ago. They succeeded in preventing the removal of almost every ovary that came under observation. It is my hope that in the near future similar results will also be achieved in our field of work.

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59 EAST SEVENTY-FIFTH STREET.

## DIAGNOSTIC VALUE OF EYE GROUND APPEARANCES IN NEPHRITICS.\*

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The ophthalmoscopic picture of the fundi of the eyes of nephritics, when changes are present, represents the results of alterations in the walls of the retinal bloodvessels or of the toxins circulating in the blood stream. One or other may be the predominant factor in producing clinical manifestations in the fundi and often no definite division can be made between them.

The so called retinitis albuminurica associated with chronic nephritis presents the following characteristic appearance in the eye grounds: Cloudiness of the fundus details, most marked in the region of the papilla where it masks its margins and the details on its surface; lustrous white patches with ill defined margins arranged around the papilla and about a disc's width from its borders; these patches sometimes coalesce and form large, lustrous masses producing the so called snow bank appearance; hemorrhagic spots of various shapes and sizes occur in the same zone; there is a stellate arrangement of white spots in the region of the macula; the veins are dark, distended, and tortuous, and the arteries are not materially altered in size. The only subjective symptom is blurred vision, which occurs late in the disease, and both eyes are always affected. The ophthalmologist is frequently consulted for this and often is the first to discover by ophthalmoscopic examination the fundus signs of an existing Bright's disease, the patient up to then being unaware of any serious organic malady.

The recorded proportion of retinitis in renal disease varies from nine to thirty-three per cent., and it would be considerably higher if there were included the minor lesions and blurrings of the disc and retinal details, the result of slight alterations in the walls of the retinal vessels and the reaction to cytotoxic bodies in the circulating blood. Indeed the so called typical renal retinitis is not so frequently encountered as the less elaborately produced lesions of this affection. Renal retinitis occurs usually between the ages of thirty and sixty years, and especially from forty-five to fifty-five years, and is found twice as often in men as in women.

The renal affection most frequently complicated with retinitis albuminurica is the contracted kidney in Bright's disease, although all forms of nephritis may be thus complicated. Changes in the fundus in cases associated with the chronic contracted kidney are generally due to vascular sclerosis and the prognosis as to life in those cases is usually bad, the patient dying within two years of the onset of the ocular symptoms.

Albuminuric retinitis occurs rarely in acute nephritis associated with specific fevers and sometimes is associated with the albuminuria of pregnancy. In these instances the changes are largely due to toxic circulating elements rather than to vascular sclerosis

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and the prognosis is not so serious, provided a chronic nephritis does not develop. A wide spread neurorinitis with exudations and hemorrhages characterizes the albuminuric retinitis of pregnancy. It occurs usually in primipara and in the second half of gestation. When retinitis is observed the prognosis as to life and vision depends upon the duration of gestation. Induction of premature labor is recommended at times, in the first six months of pregnancy, as a therapeutic measure if sight is to be saved. In few eclamptic cases are there signs of retinitis.

At the time when classical symptoms of uremia are present, there is a visual disturbance, frequently amounting to blindness (uremic amaurosis). Ophthalmoscopic examination at this time reveals no abnormal changes in the fundi and this distinguishes it from albuminuric retinitis. In uremic amaurosis the loss of vision is sudden and complete while in retinitis albuminurica the sight is gradually reduced but seldom lost entirely. Normal vision is restored when the patient recovers from the uremic attack but the reduction of vision due to albuminuric retinitis is usually permanent. The nature and extent of changes observed in the fundi of albuminuric retinitis are no indication of the condition of the diseased kidneys. At times, gross retinal changes accompany minor kidney affections, and again minor eye ground changes may be associated with gross kidney disease.

Syphilis, sepsis, anemia, arteriosclerosis, poisoning from phosphorus and quinine, diseases of the liver, carcinoma of the stomach, hydrocephalus internus, tumor of the brain, diabetes, and intracranial disease, may excite changes in the fundus in some subjects like those associated with chronic nephritis (albuminuric retinitis). Albuminuria, on the other hand, produces some extraordinary fundus appearances. A patient once consulted me on account of intolerable headaches. The ophthalmoscopic examination of the fundi revealed choked discs of six diopters elevation in both eyes that were pink and juicy and without eschar or other discoverable changes. The retina was unaffected and the vision was normal. All necessary examinations were ordered to be made to determine the underlying cause, with the result of a report of only one defect, medium amount of albuminuria with a few granular casts. The patient was ordered to bed and free catharsis, intensive sweating, and proper dieting administered. The headaches disappeared and the swollen discs were reduced to nearly normal with no loss of vision.

Neurorinitis from intracranial pressure may simulate the early changes observed in renal retinitis, and often only by a careful study of the urine and general symptoms can the diagnosis be established. Dr. Harvey Cushing believes that some of the cases of albuminuric retinitis are due to increased intracranial pressure and advocates cranial decompressions as a remedy, but the results obtained have not been considered entirely satisfactory.

The course of typical renal retinitis has been divided into three stages, as follows: hyperemia of the papilla, opacity of the retina, and hemorrhages, the first stage; the second stage, fatty degeneration; and

the final stage, atrophy. The earliest fundus changes to be noted in chronic nephritis are kinking and increased tortuosity of the smaller vessels accompanied by a slight retinal haze, which forecast the usual picture of the degenerative process. Kinking and increased tortuosity of the smaller vessels of the retina are the earliest observable signs of arteriosclerosis anywhere in the body. Cloudiness of the disc details and its margins, without arterial changes, usually forecasts the toxemic retinitis which is generally of the inflammatory type. An ophthalmoscopic examination with a complete record is an important adjunct to the data in cases of nephritis, and more particularly when it is possible to view the fundi in the early stages.

Except in the fundus of the eye there is no other part of the normal body in which an exposed artery, vein, and nerve can be seen. The retinal tissue they supply with nourishment and sensation can also be studiously observed. On account of the highly organized and easily destructible protoplasm composing retinal elements they react readily to toxic substances in the circulating blood and degenerate as readily when nourishment is withdrawn as in arteriosclerosis. Hence the importance of an ophthalmoscopic examination of the eye grounds in all general diseases in which toxemias or degenerations are a factor, and records of the findings from time to time should be included in all carefully studied constitutional diseases.

127 WEST FIFTY-EIGHTH STREET.

## ACUTE ECZEMA DUE TO FAULTY METABOLISM OF FOOD ELEMENTS.

### *Notes on the Dietetic Treatment.*

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The etiology of this disease is a mooted point. While dermatologists maintain that extraneous sources, such as local infections with pathogenic bacteria and external irritations, are the chief causes of this disease, other views, equally as strong, seem to point to internal, physical, and toxic conditions—especially intestinal intoxication, as the cause of this disease. This latter viewpoint I shall discuss as based on my clinical experience.

That there is an association between gastric and gastrointestinal derangements seems well borne out when it is found that acute eczema follows overfeeding of high fats or of excessive carbohydrates.

Eczematous manifestations are more frequently noted in bottle or hand fed infants. One could therefore assume that cows' milk *per se* is an etiological factor. This, however, is not a fact. Every pediatricist knows that infants, reared on the human breast, suffer with eczema of the most distressing character when systemic conditions in the mother introduce toxins through her milk. I have records of many cases of eczema brought about by imprudent diet on the part of the mother, which improved as soon as her diet was changed. So for example, excessive eating of shellfish, cereals, alcoholic beverages, and excessive quantities of sugar

add noxious substances to the milk which prove to be an irritant to the infant.

Intestinal derangement, such as chronic constipation or coprostasis and the passage of hard, dry, scybalous stools are usually forerunners of eczematous manifestations. But I have also seen cases of eczema in infants having mucous or jellylike foul stools. If this is so—and I have seen many of these cases—then it shows that intestinal decomposition and intestinal intoxication must be considered in their etiological relationship. Foul decomposed stools, with marked indicanuria must load the blood with toxins which exude and irritate the skin, giving rise to eczema. Eczema in the infant nursing at the breast is a transmitted form of eczema—transmitted by the mother through her milk to the infant.

The greatest ambition of a young mother is to see her infant gain in weight. To accomplish this she will frequently follow book and magazine advice, and, without having her infant's digestion supervised, will feed cream mixtures or top milk formula until a stomach breakdown occurs. This stomach breakdown is due to the feeding of too much fat, and when the peptic glands, the pancreas, the liver, and the intestines do not properly functionate, then intestinal indigestion and intestinal fermentation result. This usually induces either vomiting or diarrheal conditions, such as fat diarrhea. As the infant cannot assimilate the high fat mixtures such formulae have an irritating effect and give rise to a phenomenon akin to anaphylaxis.

Stagnant, undigested particles of food when not properly assimilated give rise to fatty acids, and these when absorbed cause intoxication which the kidneys do not always eliminate. These toxic products give rise to skin irritation and result in excoriation and eczematous manifestations. Cream and top milk feeding give rise to fat indigestion in the weakened or marasmic infant unable to digest and assimilate the fat and heavy mixtures, resulting in eczema. The overfeeding of sugar, whether sucrose or lactose, is another common form of food element which gives rise to eczema. Sugar excess is more often the cause of eczema than any other food ingredient, and one of the first signs of improvement in the itching, redness, and restlessness will be seen when sugar has been withdrawn from the diet.

Of the carbohydrates, cereals—oatmeal being one of the most potent agents in developing eczema—are factors in the etiology of eczema. Many patent foods especially rich in sugar frequently give rise to eczema. The absence of a live factor in food caused by boiling or continued sterilization produces a deadness in milk. Such devitalized food when fed for some time is usually associated with, or followed by, eczema. Condensed milk although rich in sugar, low in fat and protein, if continued for a length of time, frequently induces eczema. The absence of vitamins from food is a factor which may influence the development of eczema, as we frequently find that when the vitamins have been destroyed there is a scorbutic tendency; but this is also an element which determines the absence or presence of eczema.

The following cases will serve as illustrations:

CASE I.—Frank C., nine months old, a well nourished

and plump infant, had been breast fed since birth, about four and one half months, when a severe form of squamous eczema appeared. His appetite was good. The stools contained mucus and undigested particles, was of a greenish yellow color, and had a foul odor. The eczema was most marked on the face, neck, back, and chest. The skin felt hot. There was no rise in temperature. The infant was extremely restless during the day, and had insomnia, and was given large doses of sedatives to induce rest. He was weaned from the breast, as the attending physician believed the mother's milk caused the eczema. The child was given cows' milk and rusk, but the eczema grew steadily worse and spread over a larger surface. As the infant cried continuously it was believed he was hungry, so the physician ordered rice, farina, Zwieback, and buttered toast. Under this new diet the eczema grew steadily worse. Normal metabolism was disturbed. There were symptoms of intestinal intoxication, and undigested stools.

When seen by me he had been under the care of several physicians for four months. The following treatment was ordered: Discontinue all carbohydrates. All sugar to be excluded. Give milk from which all cream has been skimmed. This treatment was continued for two weeks. A slight improvement was noted. The skin was not so hot nor red on palpation. The stools were improved but the itching, while not so intense, was still present. I discontinued all milk and ordered eight ounces of buttermilk every four hours. When it was possible milk fermented with Bulgarian bacillus was given, and when this was impractical, buttermilk or fermented milk procured in the dairy was substituted. Within one week after this treatment was installed a decided change for the better took place. The diet was then amplified with vegetables, fruit juices, and later junket. After one month of this treatment hardly any trace of the eczema could be seen.

Local treatment alone was unavailing. When I ordered an ointment of two per cent. tar with zinc salve, the mother stated that she had already used this salve without effect. When, however, the casein lactate feeding was given in conjunction with the tar locally, a marked and rapid improvement took place.

CASE II.—Mary B., an infant, was seen when four months old. She was a breast fed child. The mother states the infant has had eczema since birth; that she is dissatisfied after nursing and puts her fingers in her mouth; that the child was constipated at times, at other times had greenish and mucous stools three or four times a day. The mother has had three children, all suffering with eczema.

As this infant was not gaining in weight, and had had eczema since birth, I ordered twelve ounces of skimmed milk, eighteen ounces of water, and one half grain of saccharine, steamed five minutes and divided into three bottles. These feedings were alternated with the breast for a few days. Owing to the fat deficiency the infant was constipated, and as no improvement was noted I discontinued breast feeding and gave twenty-one ounces of fermented milk, twenty-four ounces of water, and four tablespoonfuls of granum. The granum and water were boiled ten minutes and mixed with the milk, which was steamed two minutes and the curd strained out. This was divided into seven bottles, and boiled water was added to make six and a half ounces in each. Two ounces of spinach water was given once daily between feedings, also two ounces of orange juice each day. This feeding was continued two weeks.



Slight improvement was noted both in the eczema and in the weight. The formula was changed to twenty-seven ounces of fermented milk, thirty ounces of water, and five teaspoonfuls of grannum; no sugar was added. A decided improvement was noted. The eczema gradually disappeared. The spinach was given for its antiscorbutic effect, and the orange juice for its vitaminic content.

CASE III.—Charlotte S., aged fifteen months, has had eczema since she was three months old. Judging by the stool and the stationary weight, there is a faulty metabolism of food elements. She is a poorly nourished, backward infant with irregular dentition, and constipated bowels. The child is troubled with insomnia. The eczema is very distressing. The infant scratches continuously, and is excoriated and bleeding. The skin is inflamed, red, scaly, and hot. Small furuncles are constantly appearing, due to the infection of finger nails. The diet is totally unsuited to the infant's needs. She has been feeding with the adults at the table, and has been receiving too much starchy food and solid food at irregular intervals. The hygiene also is faulty. The infant is not properly cared for and is kept up too late at night. Water is seldom given.

It was necessary to impress the mother with the danger of the disease, also with the structural weakness existing, due to rickets. A strict diet was ordered, which consisted of the following: Eight ounces of buttermilk, warmed to feeding temperature, every four hours; when the child suffered hunger a saucer of chopped string beans, peas, or spinach with every other feeding. Fruit juices were given, also large quantities of water. A saline purge—one half teaspoon of epsom salts—was given twice a day.

Under the above diet, with which we persisted, the eczema gradually improved, and in two months had practically disappeared. Sugar, candy, and all sweets were prohibited. Calamine and zinc ointment was applied locally.

The above three cases will serve to illustrate the persistent types of infantile eczema usually encountered.

In acute and subacute eczemas I have found that the internal administration of the lactic acid bacillus, or the Bulgarian bacillus in pure culture, could be given after each milk feeding. When, however, Bulgarian milk or buttermilk was given, the improvement noted was more rapid and steady. Meat, the protein of fish, and albumen in the form of white of egg have a peculiar tendency to irritate. Milk serves as a special article of diet, but it is not equal to the beneficial effects noted after the use of sour milk. By using the Bulgarian bacillus the casein is transformed into casein lactate, and it is to this agent that the excellent effects noted in eczema are due.

Vegetables in the form of spinach, peas, string beans, sprouts, and even cabbage are well borne and have a laxative effect. These green vegetables aid in removing putrefactive bacteria, and their earthy salts have a decided nutritive value. They do not heat the body as do the carbohydrate foods, and can be fed several times a day. These vegetables may be combined with milk either sweet or sour, and may also be given with junket. Water should be given frequently. To eliminate toxic products through the kidneys thorough flushing with water is indicated.

Many infants do not take kindly to the Bulgarian milk, owing to the absence of sugar and to the very acid taste; however, by persisting we gradually succeeded. The first improvement noticed was a diminution in the redness and especially in the itching. The infants rested better, and the skin seemed cooler to the touch; the stools became less offensive and the food was better digested. The starvation, incident to the refusal of the sour milk, while it will deplete the body temporarily, will aid in relieving the intense itching which is so distressing to the infant.

To accomplish good results in obstinate cases of eczema, the strict supervision of a nurse must be insisted upon, who must be instructed that she will have great difficulty during the first few days in overcoming the objection to the taste of the food.

When beginning this feeding it is important to tell the mother that the infant will not gain, but may lose in weight for several weeks, until the eczema is controlled. The diet can gradually be increased by the addition of finely chopped or strained vegetables, and by fruit juices. An older child may be given junket, and still later custard.

When eczema causes insomnia, two grains of chloral hydrate given in conjunction with five grains of sodium bromide, repeating the dose every three hours if necessary, will soothe the infant and promote rest. The urine can be procured from older children very readily and from younger infants with little difficulty. On examination indicanuria will usually be found. Acetone, and occasionally diacetic acid, will be present. In many of these cases of eczema an acidosis, or a tendency to acidosis, was noted. That eczema may be a skin manifestation of acidosis, or a forerunner of this condition, seems evident in a few cases seen by me. It is important to make a thorough examination of the urine in all cases. Glycosuria is occasionally noted. Albumin was not present in the cases under discussion.

From a study of a large series of cases of eczema I find that intestinal derangements due to faulty diet or excessive feeding cause eczema. The treatment consists in removing the cause—namely, in eliminating from the diet rich foods which overtaxed digestion. When excessive fat, bacon, pork, butter, and carbohydrate foods cause eczema, discontinuing the same will modify the eczema. In some instances I found that while the quality of food was normal, an excessive quantity or too frequent intervals of feeding resulted in overfeeding, this latter inducing faulty metabolism resulting in acute attacks of acidosis, indicanuria, and usually eczema.

Aside from the reduction of both quality and quantity of food, as previously stated, the itching and excoriation are modified by feeding large quantities of bicarbonate of soda in water; thus one half teaspoonful of bicarbonate of soda may be given every hour by mouth. The infant of course is not to be disturbed during sleep. Active catharsis, by giving fifteen to thirty grains of phosphate of soda in water several times a day, is well borne and of marked benefit. To effect a cure in these cases, I insisted upon continuing the diet for at least six months to one year.

## NERVOUS AND MENTAL DISTURBANCES OF INFLUENZA.

By SMITH ELY JELLIFFE, M. D.,  
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Polioencephalitis superior, as a syndrome, is usually evidenced by the sudden appearance of a localized convulsion or, in young persons, by a series of generalized convulsions. The patients then may develop a mild delirium often with a pseudohysterical coloring, possibly with laughing or witticisms (frontal softening) or they develop coma, indicating deeper involvements of the cerebral structures of the midbrain (polioencephalitis inferior of Wernicke). These symptoms occur usually within the first week of the influenza, in the patients personally seen. The third day, usually marked by intense febrile states, 103° to 106° F., has been the chief day of invasion. There are almost invariably meningeal signs as well, *tache cerebrale* is frequent, goosefleshing and other severe pilomotor reactions, Sergeant's white line. Kernig's sign is occasionally elicitable in the comatose state. Lumbar puncture or blood culture may reveal the influenza bacillus.

As has been stated the residual symptoms, should the patient clear up from his coma, will depend entirely upon the area or areas involved in the encephalic process which pathogenically is a greater or less functional disturbance consequent upon an edematous or hemorrhagic effusion. In a few patients who have been seen in consultation a mild euphoric silliness has been present. This has been combined with slight memory defects, tendency to punning, and mild anxiety states, difficulty in controlling the bladder and increased bowel activity. These have been mistaken at times for "hysteria," but they had none of the psychogenic conversion features which are essential for this diagnosis. The symptoms were not mental conversion symbols. They were direct results of a focalized lesion in the first or second frontal lobes, chiefly the left side—enlarged pupil, usually, and pilomotor and vasomotor anomalies of the same side—and their usually favorable prognosis is in no manner to be regarded as indicating a so called hysteria. Thus Grasset's and Raugier's reported case has been cited in literature as hysterical or hysteroid. The essential symbolic features of this purely psychogenic psychoneurosis were absent. It is better considered to be a multifocal meningoencephalitis with flexed contracted limbs, involuntary urination, hemianesthesia, analgesia, etc. A certain emphasis is laid upon this point because there is such a prevalent trend among the laity as well as among physicians to name a peculiar, bizarre and noisily inconsistent set of symptoms, especially when occurring in women, as hysteria. This a great mistake. A great many of the lethargic encephalitis patients which were also frequent in the epidemic of 1890 and called "Nona" or living death patients, have been called hysterical coma and have been foolishly converted into pincushions by over zealous and under informed investigators. To stick pins in an individual and when he says he does not feel it, or gives

no evidence of feeling it, and then say—hysteria—is bumble puppy and not diagnosis.

Certain cataleptic encephalic states are occasionally observable in hospital practice. In very severe frontal involvement permanent impairment may result. These show as various dementing states, occurring in individuals between 60-70; losses of memory and other indicia of the sudden onset of a syndrome clinically indistinguishable from senile dementing types.

When the lesion involves the Rolandic areas various forms of monoplegia or hemiplegia result. These may be temporary or permanent. The general prognosis in influenzal monoplegias and hemiplegias is fair. Involvement of Broca's convolution of the left side produces a motor aphasia and implications of other speech zones may induce other aphasia types. I have seen several instances of these aphasias in the past ten years. Not only have the arteriosclerotics suffered but in a number of the patients with aphasias, which have been deemed influenzal, there has been no evident arteriosclerosis as registered by eye ground, palpable arteries, kidney lesion or high blood pressure. This latter group has had an invariably better prognosis than the former.

I have seen no hemianopsias or instances of cortical blindness from occipital lobe encephalitis. They are known however. Harris has reported a patient with complete blindness of cortical origin which cleared up in two weeks.

The numerous complicated midbrain and medullary encephalitis giving rise to the nuclear palsies of the cranial nerves have already been discussed. From a topographical point of view the central types belong in this section.

*Mental involvements.* There is probably no other acute infectious disease which gives rise to, or results in so many diversified types of mental disturbance, ranging from the simplest fatigue states of a transitory nature to some of the severest defect mental conditions which may wipe away at a blow the entire mental life. Fortunately the tendency is towards the mildest and milder involvements, but the gamut of possibilities is indeed kaleidoscopic. This great diversity in syndrome is worthy of the closest scrutiny for it affords a very important research background bearing upon the complex dynamic interdependence of the health of the bodily organs and interference with the energy receptors, transformers and effectors. As has already been observed, there is a special affinity for the grip toxins whatever they may be chemically, for nervous structures. The special nervous structures which apparently handle the poisons with the greatest difficulty seem to be the sympathetic division of the vegetative neurons. As is well known functional balance of the metabolism is chiefly if not exclusively maintained by the vegetative nervous system. The functional metabolism of nervous structures themselves is likewise affected and fatigue is a preliminary warning in consciousness of threatened faulty adjustment. The fatigue threshold is dangerously near consciousness because of the most universal of all affective goals, indolence. Indolence is ever ready to camouflage its real desires and



by means of a conversion mechanism fatigue states arise from our conflict with indolence, which varies with every individual. Hence in those, and perhaps they are the majority, a slightly added weight by means at times of a minimal amount of metabolic imbalance from intoxication which throws up the danger semaphore (instinctive sense of wellbeing) the sense of fatigue is doubled or redoubled. Flight now is the psychological alternative as a protection mechanism. The robust and healthy stand up and fight and the victory is won. This robustness applies to mental rather than to physical robustness. Many of the muscularly most robust of mankind are worshippers at the shrine of Narcissus. They are strong for self aggrandizement. Hence they are mentally not healthy for mental health means the direction of one's aims towards socially valuable rather than individual goals. Right here one may see a partial answer to the problem which has disturbed the medical mind why so many of the apparently healthiest are so readily laid low by the influenza organism. Parenthetically, also some light may here be directed towards the valuable psychological attitude of the value of a universal muscular training for the preservation of one's nation, rather than the advantages to be gained by individual athletic gymnasium work for the limited, hence more Narcissistic and infantile glory of this school or that university or other exhibitionistic aim.

Those less healthy minded then unconsciously run away and the flight into a protective psychoneurosis or to a psychosis ensues. Right here may be seen I believe in its proper setting the whole vexed question which has been stated in so many different ways as to the influence of heredity, of neuropathic character, of the background, in short, of the individual.

Everybody—bar none—is by necessity, as a bit of living matter, constantly engaged in struggle. Speaking mentally what we call neurotic, neuropathic psychopathic or what not, is only a vague way of attempting to embody the externally observable behavioristic features of that struggle by some diagnostic label. Because of the great diversity and complexity of the observable phenomena there results a great range in attempt to restrict these phenomena by static definition. Those whose conduct varies more from the average than others, to the good or bad, it may be mentioned it seems the differentiation is rarely made by the usual observer, are stigmatized as neurotic, neuropathic, etc. A stigmatization it might be observed which has much of the Pharisee attitude of self laudation about it. Neurotics, neuropathics, even some psychotics are capable and alone are the capable it may be added, to add to the store of the world's most precious possessions. The creative artists of the world are among those usually stigmatized neurotics, etc., but they are the ones who have successfully struggled with universal indolence and made something new. Other neurotics have laid down on the job and become the hoboes, the prostitutes, male and female, and the failures.

A static definition of neurotic means nothing; a dynamic definition of neurotic means increased or diminished capacity for new adaptations—which it is going to be, plus or minus, is always a question

of fact for the individual and for the moment and for the particular situation.

So to return to our muttons—the manner in which each individual is going to react to the grip virus is going to be determined by his dose and the way in which he has handled, or is handling, his conflicts. As these are two, or more, independent variables, the results, speaking mentally, are legion.

The most frequent of these are the various neurasthenic forms which may show as simple fatigue, involving attention, or myasthenic states, or a host of neurotic or fatigue medleys in the viscera. These influenzal neurasthenias occur with either severe or with mild systemic signs of infection. There is for most patients an extraordinary myasthenia with great depression of spirits. In the majority of instances this clears up in from one to two weeks—in some after two or three days. But in a still strikingly large number of patients the residual neurasthenic fatigue is severe.

By neurasthenia is here meant the pure fatigue syndrome due solely to the toxemia alone or toxemia plus the emotional conflicts to which attention has already been directed.

Some mention has already been made of headaches. The persisting localized ones may be the results of serous meningitides as has been said. They may also be protective devices of the unconscious to prevent further disturbance to the individual forcing him to pay attention to his state of well being. The somatic instinctive sense of well being—in the healthy minded of our previous definition—is an excellent guide for conduct, and here the protracted headaches say "stop, look and listen." Such individuals are advised to rest and feed.

Of the other neurasthenic syndromes much may be said. There are many in which the fatigue is not the only symptom but in which various visceral neurotic disturbances persist. Thus in the skin localized or more or less generalized areas may persistently gooseflesh, or formication may come and go with every grinding noise, or sudden jar, or unaccustomed sight. A hair trigger localized vegetative unrest of the skin structures causes such minor accompaniments of the fatigue state. Or a similar mechanism in the blood vessels will bring about great chilliness, or marked cyanotic blueness—at times almost passing over into a Raynaud's syndrome, thus lending a certain support to the hypothesis that the vegetative nuclei in the cord may have been involved. Again there may be mild persistent edemas, or reddish mottlings of the skin, irregular erythemas, etc. Other visceral signs may be present such as digestive upsets, diarrheal attacks, polyurias, icterides, etc. One might box the compass of the various viscera of the body and find one or two or a host of such mild disturbances of function in the influenzal aftermaths. The precise pathology of these we hope to touch upon before closing this review.

*Psychoses.* By almost insensible gradations, mild or profound depressed states develop on a basis of the neurasthenic toxic condition plus a greater individual unconscious conflict. The flight into the psychosis may become an overcompensatory one in those, by no means rare cases, in which suicide is

effected or attempted. Less severe depressions are the rule and are very frequent. It has seemed not only my own experience but apparently from the many reports of others, quoted in part in the bibliography to have seen depressed states very frequently, so that they may be termed the most frequent of the grip psychotic conditions. At times the depression may be accompanied by delusional ideas. These are not specific. They have no relation to the influenza per se but are the symbolized products of the individual's own conditioned reflexes, or complexes, using a physiological (Bechterew, Pavlov), or a psychoanalytic term (Freud, Jung). They tell of the patient's conflicts which existed long before the influenza came along, but which by reason of what for lack of a better concept we call the "reduction in resistance" or "lowering of the psychological level" because of the toxemia and the attending worries, financial or in the love life, permits the conflict to break through under various camouflaged forms.

Thus one of my patients who had come to a fairly satisfactory compromise with her difficulties by means of a compulsion neurosis in which religious and social cleansing symbols—much praying with beads and much hand washings—are the chief hampering activities, has had two or three rather sharp influenzal attacks during the years I have known her. She came for treatment comparatively late in life and gets along with a minimum of compulsions now that their function is somewhat understood. Following each of these attacks she has been much depressed and has heard hallucinatory voices which have referred very plainly to her anal erotic complexes. Intense constipation which has required frequent enemas or mucous diarrheas have been also present. From a psychoanalytic view point it is apparent what important function the prayers and the hand cleansing serve. These protective devices, however, break down as substitute carriers for the unconscious affective conflicts under the added stress of the grip situation, when these affects are now handled partly by means of the direct satisfaction (unconscious) of the anal areas, constipation or diarrhea, and partly by a projection of the unconscious preoccupation through the hallucinatory voices which invariably deal with anal and erotic images. (K—m—A—s) (S—t) are the most frequently heard expressions. Usually they are male voices, often heard from passersby in the street, or occasionally the belief comes to consciousness that a group of men standing on a street corner are talking about the patient and are discussing the question of giving her an enema. In such a patient the nature of the conflict is readily recognized because of the intense work already done with the analysis of the compulsion neurosis. It is worthy perhaps of more than passing comment to note that an earlier attack of grip with a similar depression and similar voice projections was also reacted to by suicidal ideas and a nearly successful suicidal attempt because of the ideas of great sinfulness re—the character of the nasty voices. A severe increase in the neurosis took up the period of recovery from the grip. Fifteen years later, however, with marked lessening of the compulsion the

hallucinatory attack almost gave the finish to the neurosis for the patient now saw for the first time that the hallucinatory voices were her own unconscious preoccupations projected upon an outside source in order to be the more readily camouflaged. She not only did not pass into a depressed state but made a distinct step towards freedom from her unconscious sadistic difficulties.

A great variety of acute hallucinatory and confusional syndromes may be described. The content of the hallucinations is always of value in casting light on the conflicts of the individual and thus later may be of great service, should the opportunity arise, in showing the patient what has determined their "neuropathic" make up, not in terms of their grandmother or other equally elusive ancestral shade, but for themselves and right now. It may be very fascinating to know what Mendelian laws are being verified in the light of heredity in traits mental and otherwise, but that is all passed and been rendered static, it is of no service in the actual alleviation of the patient and really casts not the slightest scintilla of light upon the present difficulty in the working of the individual machine. It is perfectly true that a two armed juggler can probably toss more balls than a one armed one, but the actual problem is, no matter how many arms the patient has been fortunate enough to get from his ancestors, what is he doing with those he has. He is what he is. How he is going to handle the situation is the practical problem. A careful study of the content of the psychosis is then of inestimable value in further helping the patient to a more healthy adjustment of his internal difficulties when he recovers from his psychosis, which latter is the rule.

At times extremely severe post influenzal psychotic states are observed, Ruju's case of a catatonic syndrome being a case in point. These are rare but a careful study of similar cases, and they do occur, is well worth while as throwing some light on the extremely important problem of dementia precox, that most widespread and devastating of all the psychoses. Acute infectious deliria, sometimes fatal, have been described. To epitomize the entire literature of the psychotic possibilities let loose as it were by the influenza toxemia would need a volume.

*Some General Observations.* In closing a few general reflections are tempting. Bacteriologically the influenza bacillus is probably a specific entity, so far as species in bacteria go. Like other plants the products of their metabolism yields complex substances chiefly protein in their character, which may or may not be prejudicial to other organisms. There are some products of the Pfeiffer bacillus which have a definite action upon certain parts of the nervous structure.

Indeed, from the very beginning, earlier students of the disease have been struck by the high incidence of nervous symptoms, and from the eighth century to the present, there have been those who have accentuated this aspect of the situation. Some have gone so far as to claim that the influenza is essentially one in which nervous structures are pri-



marily involved. That there are certain valid reasons for this generalization, we shall point out; or rather phrasing it slightly differently, we shall say that influenza is a disease of microbic origin, the poisonous products of which have a specific action upon the vegetative nervous system. The part of the vegetative nervous system bearing the brunt of the toxemia is the sympathetic. This leads to a host of physical upsets, chiefly mediated through impaired balance of the vagus sympathetic adjustment with pronounced vagotonic predominance, causing vessel paresis, and the exudative phenomena which form so essential a feature of the disease. Vowart of Bordeaux called it a pneumogastric neurosis in 1881 and many others have reached for a conception of the neurological features which were so prominent. These exudative phenomena, depending upon their location cause the various symptoms, localized vagotonias. If cephalic, they give rise to the cephalalgia, which is universal and in a small number of cases when severe, and when infection is added, as not infrequently occurs, gives rise to a serous or non-purulent meningitis with either a maniacal coloring (rarer) or mild stuporous states, or milder, neurasthenic or hypochondriacal conditions. Epilepsy and chronic serous meningitis are among the rare results which have been discussed.

When the exudations caused by the failure of control of sympathetic tonus and hence, overaction of autonomic impulses involve the cranial nerves they result in disturbances of smell, optic neuritis, ocular palsies, trigeminal neuralgias, facial palsies, deafness, vertigo, modifications of taste, pharyngeal and laryngeal palsies. When the peripheral spinal vegetative arcs are involved, various neuralgias and neuritides result. These result chiefly from the exudation phenomena taking place in the nervi vasorum of the nerve sheaths, brachial, intercostal, and particularly sciatic. Herpes zoster is an indication of direct implication of the vegetative ganglia themselves more often an exudate rather than an infection, since the influenzal zosteris, in my limited experience, have been benign. Its incidence runs high in certain epidemics. The most striking cervical sympathetic involvement is that of the pneumogastric and sympathetic adjustment. The vagus itself, which is autonomic, sometimes shows its overcompensations by bradycardia, but as a rule the sympathetic paresis or paralysis permits an overaction of the autonomic and causes the edematous flooding which characterizes the pure grip pneumonitis. This peculiar exudative character of the lung manifestation has been noted for many centuries although its fundamental pathology is still to be more adequately elucidated. The pneumonia is not to be spoken of as a complication, but as a primary disturbance of the vegetative nervous system control of pulmonary vessels, with edema and bloody infiltration resembling in its fundamental characters, the exudative phenomena of asthma or spasmodic croup, angioneurotic edema, acute edematous arthritis, hay fever, horse serums, protein poisoning, anaphylaxis, or exudative phenomena of various origins in which there may be a generalized or localized vagotonia. Implication of the thoracic and lumbar sympathetic arcs is responsible for many

of the gastrointestinal vagotonic symptoms; here the exudative phenomena are as striking as they are in the pulmonic areas, gastric diarrhea, etc.

The spleen, liver and kidney disturbances also show a somewhat similar pathology which has not been thoroughly elucidated. Joint exudations are early and frequent. They occur suddenly and the character of the disturbance is directly indicative of the disturbed vegetative balance. The joint and muscle pains are likewise corroborative of this same general viewpoint. The various eruptive phenomena on the skin and mucous membranes speak in the same general way. Erythematous, petechial, urticarial types all permit their alignment with similar eruptive phenomena known to occur in the vegetative nerve disturbances which accompany the vagotonic trends. In many respects the striking analogies to anaphylactic reactions afford a clue to the inner vegetative mechanisms. Smith has elucidated these in a striking manner, following Roncoroni's classic exposition.

It would make a most alluring hypothesis to attempt to show that a more or less widespread and constant though unperceived involvement of the thyroid might serve as a starting point for this disturbance of sympathetic balance, the thyroid hormone containing type constituting the chief reservoirs for sympathetic upkeep, which is not confined solely to the thyroid, and therefore when involved itself adding its own disturbance to further unsettle the physicochemical balances of the body fluids. The observations thus far recorded, however, are still too scanty or too scattered to permit this generalization. At the same time attention may be called to the more or less universal adenopathy, the frequent occurrence of an acute, mild or severe thyroiditis, and the frequent overcompensatory character of the adrenal system activity, the acute sthenic fight put up followed by the great myasthenia and other signs clearly indicative of adrenal exhaustion, Sergeant white line, etc., already noted here.

We cannot carry these suggestions further in this place. There are abundant sources with pathological protocols to show the probable pathogenic affinities, say to such sympathetic paralysants, or autonomic stimulants, such as nicotine, pilocarpine, physostigmine, or muscarine. And the time is almost ripe for a true dynamic pathology of visceral disease to be written in terms of the reciprocal activities of the autonomic and the sympathetic regulatory mechanisms.

Every single organ of the body is under the balanced control of these two sets of opposing mechanisms. Inhibition is a problem of a resultant of positive forces—there are no negative ones in a transmitter—for the human body is a mechanism for the capture, transformation and release of energy. The physicochemical work for metabolism is regulated by the vegetative nervous system chiefly, and any disturbance in one branch of that system is bound to cause overactivity in the other. Whether the influenza toxins not only paralyze the sympathetics but stimulate the autonomics as well, thus causing an excessive autonomic swing with the unusual vagotonic predominance is a matter of fact to be

determined only when the poisonous substances are isolated, their internal structural composition analyzed, and pharmacodynamically proved out. Until such time arrives more attention should be focussed upon the neurological problems of influenza, for herein may lie a key to the control of its many complicated symptoms from a cold in the nose to cold toes.

Bibliography will be found in the author's reports.

64 WEST FIFTY-SIXTH STREET.

## TEMPERAMENT A SYNONYM FOR NERVOUSNESS IN SINGERS.

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Inasmuch as the musical season is about to open, I think it opportune to write on temperament as pertaining to singers, as, strange as it may seem, it falls practically upon the laryngologist to cope with the nervous condition of the latter. It is a very important study for the physician and seems to be one that the profession has almost entirely overlooked.

Singers, as a rule, who have any physical complaint whether of the stomach, throat, or arm, usually visit the nose and throat specialist for advice. Therefore the latter should study his patient very carefully, paying special attention to his nervous status.

It is safe to say that singers never contract tuberculosis. This fact is probably due to their proper method of breathing, thereby taking in plenty of oxygen—an important and indispensable factor in good health. However, it is unsafe to say that they do not get sick; in fact, the chief neurotics who come to the specialist's office for treatment are singers. It is difficult to account for this condition. It is my opinion that this neurotic condition, present in almost every singer, is mainly due to extreme sensitiveness on his part. Nervousness plays a salient rôle in their lives.

Music is very instrumental in producing such a condition. It causes a marked effect on the nervous system through its varied vibrations. It has been repeatedly proved by experimentation that it will cause stimulation, depression, make the weak strong, cowards brave, and aid many maladies of the nervous system.

Temperament in a singer is but a tributary to nervousness. Temperament will cause an increased reaction, both mental and physical, to external impressions. An overstimulation of the above will cause an exhausted or debilitated condition of the nervous system, which condition is met very frequently in many singers. Most singers possess an abundance of temperament characterized by mental force and high strung sensibilities, manifesting tenseness and vigor as an expression of style. In other words, temperament is a preponderance of the activity of the mental over that of the physical qualities.

Temperament is affected by different conditions—elevation, temperature, change of climate and altitude, and environment. If singers can control this temperament, or nervousness, their singing will be clear; but should they lack power of adaptation, sudden nervousness may result, thereby causing straining, clouding, muffling of the voice, and improper breathing.

The treatment of this neurosis requires the greatest care on the physician's part. The singer's food, sleep, exercises, and work should be systematically regulated. Personal hygiene is very important in such subjects. Their intellectual work especially should be judiciously limited and should alternate frequently with periods of repose. Excitement of all kinds should be avoided, and such patients will do well to be abstemious in the use of tobacco, coffee, tea, and especially alcohol, which primarily produces a stimulating effect and then rapidly causes a depression.

The habit of taking a prolonged holiday, away from the ordinary environment, such as a trip to the woods, mountains, or at the seashore, at least twice a year, should be urgently insisted upon. Cold baths, before going to bed and in the morning, help to harden the nervous system. Exercises in the gymnasium, tennis, rowing, sailing, are of value in maintaining the general nutrition and help the nervous system a great deal. Drugs should be avoided as much as possible, especially habit forming ones. If the patient is anemic, general tonics may be helpful.

Their exercises during the day should be systematized, and by observing the proper hygiene of health, singers will find that in a short time the neurosis will begin to disappear, their singing will improve, and confidence in themselves—a great and very essential requisite—will thereby be acquired.

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## CONFLUENT SUFFOCATIVE BRONCHOPNEUMONIA IN THE WAKE OF THE PRESENT INFLUENZA EPIDEMIC.

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However much opinion, as to the causative agent in the prevailing epidemic of influenza may be divided, the fact remains that the pneumonia that accompanies, or rather, follows it is dramatic and tragic.

It is to the bronchial tree what cholera is to the digestive tract, what confluent smallpox is to the skin.

In the present epidemic the mortality is high and rapid. It is needless to discuss the laboratory phase of the question; it has been sifted from every angle. In nearly all of the patients which we are seeing in Memphis, the waxy pallor, together with the cyanosis, are the insignia of rapid blood changes and destruction and pulmonary suffocation ending in death, in most instances in twenty-four to forty-eight hours' time. The patient literally drowns in bronchopulmonic secretions. It is a veritable



kaleidoscopic bronchopneumonia. There is an active pulmonic edema rather than passive. Clinically speaking confluent suffocative bronchopneumonia covers the symptoms and physical findings. Surely vasomotor paralysis plays an important rôle. Vaccines and polypharmacy have been futile.

Much has been said about the patient's physical state at the time of the attack. The author has found that the robust have fallen victims just as readily and rapidly as the devitalized.

Thus far every pregnant woman who has been attacked has miscarried and died.

## INTERESTING ORTHOPEDIC CASES IN THE FIRST SURGICAL DIVISION, FORDHAM HOSPITAL

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Quite often an interesting case is treated in private or hospital practice and is carefully studied and watched to see if the prognosis was accurate. The doctor decides to have a report published but usually waits either to get a similar case or to study the literature more extensively; but often the second patient never comes; the literature is never looked up, and so valuable reports are lost. Of course, many do review the literature and add one or two cases, but this is of rare occurrence. Cullen (1) justly says: "We should publish our rare cases at once, otherwise they are soon forgotten among the multiplicity of other duties. The digest of groups of cases requires sometimes months or years before they can be analyzed so that the results may be of real value to the public."

This statement by so prominent a man has prompted me to look up in my history file rare cases which I had ready for publication. Some of them were as yet incomplete, lacking additional information, or else I had been waiting for additional cases. I have now decided to have reports published from time to time, merely as interesting ones, from the orthopedic service in one or another hospital. When I am fortunate enough to get other similar cases there will be no difficulty in recording the entire group in detail.

### BILATERAL PATHOLOGICAL DISLOCATION OF THE HIP JOINT.<sup>1</sup>

That an acute infection at any focus may cause arthritis at a distant place is already an established fact. You are probably acquainted with the recent studies by Billings (2) and are surely on the alert to seek at once for the place of infection. No doubt you have vivid recollections of septic arthritis following an acute exanthematous disease. This case is not exhibited simply to demonstrate arthritis or to impress you with the necessity of examining all the tracts before removing the teeth as the sure culpable focus. Such facts have been sufficiently

pointed out by Rosenow (3), Billings (4), Mayo (5), Barker (6), and others, and, in my opinion, the teeth have rather too frequently been considered the foremost cause of infection without proper scientific basis, no other focus being sought—a plan certainly detrimental to the patient.

The following is a quotation from one of my previous papers read before this society, which may recall to you many facts concerning the focus of infection and will probably help to throw light upon this case:

"*Specific cause.*—By far the majority of investigators are now of opinion that chronic progressive polyarthritis is infectious in nature. The term 'infectious' is used here in a general sense, i. e., aside from the cases in which the infection is found in the joint directly, it includes cases where there are minute foci of infection distant from the joint. In these latter cases there is in the joints a continuous bacteremia of low grade. Under the term 'infectious' are also justly included cases which appear to be complications or sequelæ of other infectious diseases, such as arthritis following influenza or scarlet fever.

"First, consider the secondary infectious cases, i. e., where the causal organism is supposed to be in a distant focus. Among the culpable distant foci are placed: Chronic inflammation of paranasal sinuses (including the antrum of Highmore), chronic abscesses, chronic bronchitis, cholecystitis, chronic pyelitis, chronic cystitis, chronic urethritis, prostatitis, chronic salpingitis, and chronic endometritis. Thus we see that the blame of arthritis has been put on every organ of the body and the organisms causing the diseases of those organs are supposed to be the factors of the arthritis (7).

"Can we say positively which case of arthritis is due to pyorrhea alveolaris only? From the symptoms of arthritis, no; in other words, when a diagnosis of infectious arthritis is made, we know there is an infection in some distant focus, but cannot tell whether the source of infection is in teeth, tonsils, or gastrointestinal tract. So, to call a certain case 'pyorrhea alveolaris arthritis,' as one dentist has lately done in the literature, shows insufficient reading and observation. A patient may have pyorrhea alveolaris and still have an arthritis due to cholecystitis. I am sure many of you might have been misled by his misstatements and have thought that one can designate specifically a case of pyorrhea alveolaris arthritis. How can we tell even the cause of pyorrhea alveolaris? In eighty-two patients with bad teeth I was not able to definitely diagnose any single one pyorrhea. Often the teeth were attended to by good dentists and still the disease progressed. On reexamining the patient, the real etiological factor was discovered and when that was removed, the disease stopped progressing" (8).

The following case, however, is one of the rarest and worst deformities that may follow infection and the most interesting fact in the case is that the deformity is preventable. Only about eighty or ninety cases have been reported.

CASE I.—G. C., age six, male, born in United States. Family history: Parents in good health. Previous history has no bearing on this attack. This child has always had fair health. On February 12, 1917, he became ill with scarlet

<sup>1</sup>Presented before Bronx County Medical Society, October 17, 1917.

fever and was taken, in a serious condition, to a hospital. On March 21st he showed symptoms of double mastoids. Being too sick, an operation was not deemed advisable. At the same time he had double pneumonia, followed by empyema, which, on tapping, revealed a considerable amount of pus. April 15th the left hip became swollen and painful. This was followed in a few days by swelling and



Fig. 1.

Fig. 2.

Fig. 1.—Case 1, on August 25, 1917, before beginning of treatment. Note prominence of hip, anguished look of child, and his support.

Fig. 2.—Case 1, posterior view, prominence of hip clearly shown and necessity of support.

pain in the right hip and knee. The pain in these joints was very severe and the patient held the knees flexed on the thighs and hips flexed on the abdomen, or, as the mother expressed it, "doubled up." The mother does not know whether the hip joints were held in internal or external rotation. The child was so sick during his stay in the hospital that the physicians devoted their entire time to treating his general condition and apparently paid no attention to the position of the joints. He was taken home May 30, 1917, with swollen and painful hip and knee joints, which he was unable to use. Mother gave the child daily hot water baths and slight massage to the knees and hips. The joints improved gradually, pain subsided, and the knees could be brought to a straight position. The mother noticed, however, that the knee and hip joints were almost straight, but the child could not put any weight on the right limb. She even noticed a marked deformity at both hips. The child had not been under a physician's care since he left the hospital. She brought the boy to my clinic at Fordham Hospital, August 15, 1917.

**Physical examination.**—Child was of fair stature but somewhat anemic and with a languid expression. Teeth were in good condition. Throat, examined by a laryngologist, showed enlarged tonsils with distinct evidences of pus and enlarged adenoids. Nasal cavity—enlarged turbinates. The condition of the throat showed still active lesions, and removal of these sources was imperative. Ear examination, negative. Heart and lungs showed no abnormality. Lymphatic glands: cervical, cuboid, and inguinal enlarged. Muscular system showed general atrophy, more marked on lower extremities. Skin and nails good. Wassermann, negative. Urine showed no abnormality. Upper extremities normal. Lower extremities: right hip markedly dislocated upward and limb kept in a position of internal rotation and adduction. Head of femur was felt

above the acetabulum. Marked limitation of motion to abduction, outward rotation and extension. Flexion was less limited (he raised the pelvis and simply dislocated the head more posteriorly). Left hip showed limitation to abduction and rotation outward, and also dislocated upward. Patient had marked lordosis to compensate for the dislocated hips and put no weight on the right limb. He had to support himself even while standing, and could not make a single step (Figs. 1-2).

Measurements<sup>2</sup>:

R. A. 21 $\frac{3}{4}$ ", R. U. 22 $\frac{1}{2}$ ", R. T. 9 $\frac{1}{4}$ ", R. K. 9", R. C. 7"  
L. A. 21 $\frac{3}{4}$ ", L. U. 23 $\frac{3}{4}$ ", L. T. 9 $\frac{1}{4}$ ", L. K. 9 $\frac{1}{2}$ ", L. C. 7 $\frac{1}{4}$ "

There was a shortening of three quarters of an inch on the right side and atrophy.

The x ray findings are shown in Fig. 3.

**Remarks.**—We have here a boy of six years with badly deformed hips due to septic arthritis. (It is not necessary to discuss now whether caused by scarlet fever or throat and ear condition. It is hard to determine which was the real causative factor though we are inclined to blame the laryngeal tract.) The joints are in poor condition and the motion in them not free. The more serious sequel is that the hips are dislocated at the heads and rub against the ilium and cause more and more destruction and give very lax and unstable joints; more so on the right side. Perhaps if the lesion is still active there will be ankylosis due to proliferation but the feet are not on the same level and thus even if ankylosis is established it will interfere with proper locomotion. At present I am not trying to summarize the proper treatments of septic arthritis at the time of the acute attack but I do wish to emphasize the need of protection or prevention of such marked deformities. The capsules in this case were markedly distended with fluid and thus it naturally had to cause flexion and inward rotation of the hips. This is the natural position that the limb assumes in order to permit more extension of the capsule (9) and therefore it was the most favorable position to cause a dislocation. It would have been a simple matter to have prevented that deformity by keeping the hips in extended and abducted position during the acute attack. That could have been done by a double spica plaster or a Bradford frame with the lower part split to allow abduction of the feet. Even the old style Buck's extension might have done the work.

**Treatment.**—The right hip seeming the worst we decided to give more attention to that one for a while. As permitting the child to walk would have increased the dislocation, he was at once put to bed and a traction placed on the right foot till a brace could be provided for him. His general condition was attended to. The tonsils and adenoids were removed. Then a Bradford (10) adduction traction splint brace was applied which prevented putting weight on the right limb, allowed traction which might help pull the limb down, and the brace had also provisions to abduct the limbs, thus correcting the adduction deformity (Fig. 4).

The treatments will be kept up for a few months. Then if the head of the femur is not in, it can be treated as a regular congenital dislocation of the

<sup>2</sup>These abbreviations are used by orthopedists to designate certain definite points from which measurements are taken: R. A., distance from right anterior superior spinous process of ilium to internal malleolus; L. A., left anterior superior spinous process; R. U., umbilicus to right internal malleolus; R. T., circumference of the right thigh, in this case taken at four inches above lower border of patella; R. K., circumference of right knee; R. C., circumference of right calf.



hip and be replaced by the Lorenz bloodless method. Of course, it is doubtful whether we will get a good result. Ankylosis will probably result in either case but the limbs will be of equal length.

December 15, 1917.—The treatments were kept up regularly. Patient was not allowed to remove



FIG. 3.—X ray of Case 1, August 20, 1917. Head of right femur dislocated up on ilium and also adducted; head of left femur is at upper angle of acetabular cavity, which is considerably enlarged; marked destruction of both heads and acetabula, with marked bone atrophy.

the brace even while in bed. He walks at present without support. The general appearance has improved markedly. Has no pain at all. Motion in the hips is better. The x ray findings are shown in Fig. 7.

#### Measurements:

R. A.  $21\frac{3}{4}$ ", R. U.  $23\frac{3}{4}$ ", R. T.  $9\frac{1}{2}$ ", R. K. 9", R. C.  $6\frac{3}{4}$ "  
L. A. 22", L. U.  $24\frac{1}{2}$ ", L. T.  $9\frac{1}{2}$ ", L. K. 9", L. C.  $7\frac{3}{4}$ "

Figures 5 and 6 show the right hip almost on the same level as the left one, with improvement in the lordosis and also general improvement. Seeing the improvement in the right leg, we tried similar treatments for the left. As we could not be sure that infection had subsided, we deferred an open operation—open reduction with orthoplasty—to a future date.

#### REMOVAL OF TRANSVERSE PROCESS OF THE FIFTH LUMBAR VERTEBRÆ FOR RELIEF OF PAINFUL BACK.<sup>3</sup>

That "painful back" is a stumbling block to many diagnosticians and a discouraging feature to the general practitioner and to the different specialists can be seen from the numerous special articles and monographs written on the subject. The painful back is viewed from the neurological, gynecological, urological, medical, and orthopedic standpoints. Patients are seen by all these specialists and some operations are performed, and occasionally relief is obtained when a proper diagnosis has been made. Frequently many diverse operations have to be performed. Reading the interesting symposium of all these specialties delivered at the meeting of the American Orthopedic Association in May, 1917 (11), we see how far we are from a definite understanding of the problem. The latest studies of

Goldthwaite (12, 13, and 14) and Böhm (15) showing the abnormalities of the sacrum and lumbar vertebræ have added greatly to our knowledge of this phenomenon. The late Professor Dwight (16) once said: "Anomalies of the fifth lumbar vertebræ are so common that we hardly know what the normal should be." Adams (17) reports that of fifty consecutive cases in which careful röntgenoscopy has been made, forty-four subjects showed bony defects in the sacrum or two lowest lumbar vertebræ (two cases show one large transverse process of the fifth lumbar, Böhm type). He advises removal of the asymmetric overgrowth of the processes.

On account of the difficulty in diagnosing back affections (gynecological causes being absent or eliminated) the reporting of every case on the subject is extremely beneficial, advisable, and necessary, particularly when the diagnosis is afterward verified, even if permanent cure has not been obtained. Of course where cure has been obtained the report is even more important.

This case and the one following present a type of low lumbar backache due to enlarged transverse process of last lumbar vertebræ. "An impingement of such an enlarged transverse process of the fifth lumbar vertebræ upon the posterior wing of the ilium produces pain, numbness, and paralysis of the side and leg, so severe as to cause a patient to become bedridden, is very often seen, but only a few persons think of such diagnosis" Adams (17). "Radiographs showing the fifth lumbar transverse process overlapping the wing of the ilium are frequently seen without any accompanying painful symptoms for the reason that in the normal skeleton the process lies considerably anterior to the posterior wing of the ilium. It is only when some anomaly of construction exists and changes occur in the relation of the last lumbar vertebræ, the sacrum, and the ilium, that a painful impingement is likely to be produced." Blanchard (18), Adams (19), and Fosset (20) have shown that the enlarged transverse process can be removed and a cure obtained.

CASE II.—E. R., female, age eighteen, single, sustained an injury on her back, June, 1915, by falling several steps and landing on her back. She was compelled to stay in bed for a few weeks. At that time she had marked swelling of the entire left lower extremity. On beginning to walk, she complained of severe pain in that limb. Strapping the sacroiliac, i. e., applying adhesive plaster straps across the back at the region of the sacrum extending from one anterior superior spine to the other, somewhat relieved the symptoms, but they recurred. About two months after the injury patient came under my observation. Examination led me to suspect a fracture of the transverse process of the fifth lumbar vertebræ on the left side, for distinct crepitus was present with marked tenderness. The radiograph failed to reveal any fracture, though several views were taken. A sacroiliac compressor attached to her corset was ordered, and this gave apparent relief. In eight months she returned, complaining again of severe pain. She had marked tenderness on the left side and beginning of tilting of the spine to the right. Again some anomaly in the transverse process seemed to be present, and several radiographs, stereoscopic and different views were ordered. Only then did we discover a distinct fracture on the transverse process, but on the side opposite to the tender one, i. e., the right side. As the pain was in the left side, I suspected that it was due to an impinging of the transverse process of the vertebræ on the crest of that side of the ilium. This impinging was believed to be due to the improper position of the fragment of the fractured

<sup>3</sup>Presented before the Orthopedic Section of Academy of Medicine, New York, January 18, 1918.

transverse process of the opposite side. Patient was admitted to the first surgical division of Fordham Hospital, and on April 29, 1916, was operated on by Dr. A. S. Taylor and myself. The left side, that is, where the tenderness was, and not where the fracture was, was the side chosen. We considered that this side should be attacked first, and in case no improvement resulted, the right side could be similarly attended to. It was in accord with Blanchard's (18) opinion that the tender side should be attacked first.

*Operation technic.*—An incision was made midway between the spinous process of the last lumbar vertebrae and posterior superior spine through the skin, fascia, and erector spinae. The muscle was separated and the enlarged transverse process could be felt. This was removed entirely with a rongeur. The muscles and skin were sutured in the ordinary way. Keeping in mind Goldthwaite's discouraging statement, "The removal of a transverse process, especially if the enlargement be at all marked, is an exceedingly difficult procedure and may result in damage to the nerve trunk coming out above or below the process," I was rather surprised at the ease with which it was removed. I believe that it was due to the excellent neurological surgical experience of Dr. Taylor. The patient was allowed to stay in bed without any plaster.

The wound healed by first intention and the patient was able to leave her bed in three weeks. She returned to work two or three weeks later and has not suffered since. She had no limitation of motion and could walk without pain or limp when she was discharged. She did not even have to wear the sacral compressor under her corset and up to the present, her symptoms have not recurred. Thus we can conclude that the removal of the transverse process has cured her completely.

This case demonstrates clearly that if careful technic is observed the resection of the transverse process of the fifth lumbar vertebrae where an impingement of the posterior wing of the ilium is present, may well be advised. Of course mechanical treatment should be tried first.

CASE III.—S. G., male, age thirty-five, butcher by occupation, referred to me by Doctor Greenstein. Previous history has no bearing on the case except that the patient has always been in poor general health and has been coughing for a year or so, but cough was not believed to be due to tuberculosis. Present illness dated to fourteen weeks before consulting me, beginning with constant severe pain in the back. Many diagnoses were made and treatments given, but with no relief. Physical examination showed spine quite flexible in the dorsal and upper lumbar region but limited in the lower lumbar. Tenderness at the crest of the ilium but not severe. The sacrum was prominent posteriorly and normal lordosis was absent, but Goldthwaite's sign (flexion of the extended leg on the abdomen producing pain at the sacroiliac joints) was absent. The x ray showed enlargement of both transverse processes of the last lumbar vertebrae. The left was more prominent than the right. The sacrum was sagged down between the wings of the ilia.

An operation was decided on to remove both processes and was performed on May 15th, by Doctor Taylor and myself. The same technic was followed as in the preceding case but the radiogram after the operation showed that only the right one was removed completely. The patient was relieved entirely of pain for four weeks, when it recurred at the left side where the process was not entirely removed. Another operation could not be undertaken, for he was too weak and had to be sent to the country. We considered at that time that the improvement on the left side, which was only temporary, proved that unless the entire transverse process is removed no cure can be obtained.

The patient was seen by me again in the Mon-

tefiore Home and Hospital, December, 1917 (seven months after operation) and I found that the pain in the lumbosacral region was somewhat relieved during this interval but he was suffering then from pain in the sacrum and upper dorsal region. During this interval he lost considerable weight and gave the appearance of cachexia due to some general disease, as tuberculosis or malignant growth. Though many x rays were taken and he was examined by different specialists, no definite diagnosis could be made. It was proved, however, that the operation had not cured him. The radiograms showed that the removed transverse processes have not been regenerated.

This case demonstrates a few important points: 1, There may be enlarged transverse processes on the last lumbar vertebrae and these still may not be the cause of pain in the back. 2, Where an enlarged process is present it should be removed entirely to alleviate pain. 3, The stumps of the removed transverse processes do not produce regeneration of the removed processes.

#### CHONDROMA FOLLOWING TRAUMA.\*

Though Virchow's theory that tumors are caused by external trauma has not been held to be correct by many keen observers, still, many cases are

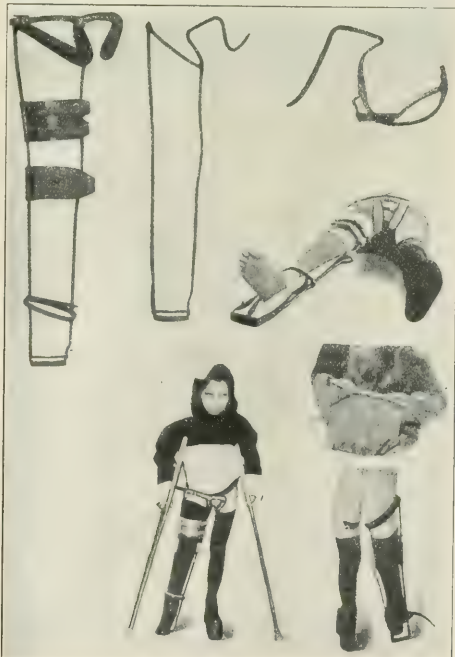


FIG. 4. Bradford adduction and traction splint used in tuberculosis of the hip.

record where a tumor followed trauma, and every case added to the literature may help the pathologist. This case is therefore put on record.

\*Presented before the Orthopedic Section of the New York Academy of Medicine, April 20, 1916.



CASE IV.—I. G., male, age twenty-three, received an injury to the dorsal surface of the right foot by pressure of a rocking chair. The foot became swollen, but subsided within a few days. For three and a half years the patient was suffering from pain in the foot. In the beginning the pain was felt only when walking, and later on only when the dorsal surface of the foot was pressed. X ray was



Fig. 5.

Fig. 6.

Fig. 5.—Case 1, on December 15, 1917, after three and one-half months' treatment. Right hip less prominent and considerably abducted; patient can put some weight on the limb, though slight support on chair is necessary. Note change in appearance.

Fig. 6.—Posterior view of Case 1, taken December 15, 1917.

negative. Different diagnoses as tuberculosis of the tarsal bones, traumatic arthritis, flat feet, and fracture of a cuneiform were made and treated accordingly, but no relief followed. On December, 1915, while examining the patient, a distinct swelling the size of a hazel nut was felt over the external cuneiform. It had a doughy feeling and was tender to the touch, giving the patient a sickening feeling. I put in a needle, but no fluid could be obtained. A temporary diagnosis of neurofibroma was made and an operation advised, which was performed by Doctor Taylor and myself on April 4, 1916. At the operation the nerve filament was found to be normal, but the mass consisted of a small bony prominence containing a cheesy, hard substance. The pathological examination was chondroma. Patient made a perfect recovery and has never suffered since.

#### FIBROSARCOMA OF SOFT TISSUES.<sup>5</sup>

There are many conditions outside of a joint which give symptoms simulating arthritis. When these conditions are to be differentiated one usually thinks of the common affections and neglects the rarer ones. This is exactly what happened in the following case:

CASE V.—P. F., age thirty-five, born in United States, male, musician, admitted to Fordham Hospital, April 20, 1917, on the service of Dr. A. Harrigan. I am under obligation to Doctor Harrigan for permission to include this case. Previous history: Patient had an attack of gonorrhea at the age of eighteen; chancroid at the same time. No secondary symptoms were noticed. Present illness dates back to February 23, 1917, when patient complained of severe pain in the right leg (he thought that for some time previous to that he had some vague pains in

that region). The pain, beginning at the right buttock, radiated down to the ankle and was of a gripping, cramp-like nature. Pain was increasing, preventing the patient from sleeping. About three weeks previous to admission to hospital, hip became swollen. The swelling extended down to the ankle. Finally patient was unable to walk and had to be confined to bed. I was asked by Doctor Harrigan to make a diagnosis. Physical examination: Patient is extremely anemic and has a cachectic look. Heart and lungs are negative. Upper extremities are normal. Right lower extremity is considerably swollen, especially at the iliac region. Some tenderness throughout the leg and some redness over the buttocks. The redness was of a dark hue. Motions of the hip: rotation outward and extension, free, flexion seemed to be limited by some physical or mechanical limitation but not by muscular spasm. Abduction was slightly limited. Adduction and internal rotation were markedly limited. Inguinal glands were enlarged. Urine was normal and Wassermann was negative. Temperature running between 100 and 102 degrees. Blood count: white blood cells, 14,200; polymorphonuclear neutrophils, seventy-nine per cent.; large lymphocytes, nineteen per cent.; small lymphocytes, three per cent.; eosinophils, five per cent.; transitionals, one per cent. X ray showed no lesion in the hip or upper part of the femur. Swelling seemed to be mainly in the subcutaneous tissues. In view of the fact that the hip was free and the limitation of motion was due to some external trouble, I made a diagnosis of a tumor of soft tissues, though the nature of the new growth could not be determined. An operation was therefore decided upon.

This is the description of the operation as given by Doctor Harrigan: "A longitudinal incision was made over the most prominent part of the swelling. A large tumor was attached to the periosteum of the ilium but there was no evidence that it had any definite or firm adherence to the bone. The periosteum of the ilium was not gouged out. Considerable bleeding was encountered and it was necessary to leave a clamp on the gluteal artery. The fossa of the ilium was curetted and most of the musculature which was adherent to the tumor mass was removed."

The pathological report by Doctor Heitzman says: "Gross specimen consisted of a tumor mass about the size of a large grape fruit and weighing about one and a half pounds. It was round, with a somewhat irregular smooth surface. On section it had the appearance of 'voluntary muscle fibres' which had undergone myxomatous changes. Microscopically, the tumor is found to consist of partly dense, partly loose fibrous connective tissue with a small amount of muscle tissue. Imbedded in the connective and muscle tissues are round and oval nucleated cells, partly irregularly scattered, partly in alveoli; the latter are small and are more or less completely filled with the cells. The corpuscles are all small and the nuclei of many show different degrees and varieties of degeneration, so much so that in some cells only fragments of nuclei are left. The degree of infiltration of the connective and muscle tissues varies greatly; in some places the cells are closely packed together, while in other places they are irregularly scattered and less abundant, though their general character is everywhere the same. Mucoid degeneration is present everywhere, and hyaline degeneration is also seen in different places. The vascular supply is moderate, most of the blood vessels being small and thin walled. The diagnosis is round celled and alveolar fibrosarcoma with mucoid and hyaline degeneration."

Patient was discharged June 30, 1917, consider-

<sup>5</sup>Presented before Orthopedic Section, Academy of Medicine, New York, April 20, 1917.

ably improved. His physician, however, reported to me that the patient is not doing well.

#### SARCOMA OF THE HIP.<sup>6</sup>

The work of Barrie (21, 22) has stimulated the orthopedists to consider hemorrhagic osteomyelitis as a diagnosis when the patient gives a history of a trauma followed by symptoms of osteomyelitis, but not of an acute infectious type and without fever. The x ray shows a marked rarefied area in the end of the long bones which progresses rather rapidly. These cases used to be diagnosed as sarcoma of the bones and amputation of the limb was usually urged. Still, many cases come under the orthopedic observation where it is hard to differentiate between hemorrhagic osteomyelitis and real sarcoma and, of course, where an opportunity is offered to operate on the case and get the pathological findings it should be reported.

CASE VI.—M. M., age thirty-six, Russian, male, married, waiter by occupation. Came under my observation November 16, 1917. Previous history negative; has three healthy children. Present illness dates back to October 3, 1917, six weeks previous to consulting me, when patient fell, landing on the right hip. Since that time complained of pain in the hip. The pain was worse at night and condition was aggravated on walking. Thus patient could not walk more than two blocks. In a week or two he began to limp. He was treated for the usual condition of rheumatism with electricity, etc., but no relief was obtained; was growing progressively worse all the time. Physical examination on November 16th showed marked limp to the right, slight limitation to flexion and adduction and abduction, marked limitation to inward rotation, some limitation to outward rotation. Marked tenderness over the great trochanter. Some fullness over Scarpa's triangle.

#### Measurements:

R. A. 32½", R. U. 36¾", R. T. 14¾", R. K. 13¾", R. C. 12½"  
L. A. 32¾", L. U. 36¾", L. T. 15½", L. K. 13½", L. C. 12½"

An x ray taken at that time showed marked bone atrophy involving the entire greater trochanter, with definite evidence of cavity formation. My temporary diagnosis was hemorrhagic osteomyelitis,



FIG. 7.—X ray of Case 1, taken December 15, 1917, showing better position of bone.

and I took him down to the orthopedic section of the Academy of Medicine, November 16, 1917, to hear the opinion of the section in reference to the diagnosis. Some were inclined to agree with me

while others diagnosed a sarcoma. All advised to cut down on it and remove a specimen for examination.

Patient was admitted to Fordham Hospital where a second x ray was taken, six days after the first. Definite evidence of rapid progress was shown. Pain was increasing all the time. Wassermann was negative and the temperature was normal. He was operated on May 22d by Doctor Nicoli and myself. The outer layer of the bone was found very thin and brittle, almost ready to burst. The cavity was filled with a mass of grayish or white color of thick consistency and no bony structures. The walls of the cavity were of irregular outline and some bone bridges traversed the corners of the cavity. There was considerable oozing of blood. The contents were removed and the cavity well curetted. A drain was put in and a plaster cast applied.

Doctor Heitzman submitted a microscopical report and the diagnosis based on this was hemorrhagic osteomyelitis with osteitis and periostitis.

Doctor Barrie, on examining the slide, thought that it was not the picture of hemorrhagic osteomyelitis. His clinical diagnosis was sarcoma. The pain stopped two or three days after the operation and the patient was permitted to walk on the cast two weeks later.

An x ray taken December 31st, showed that the involved region had evidences of bone condensation, probably regeneration. Examination January 14th, showed that patient had no pain. He walked with a slight limp and there was no limitation of motion in any direction and no shortening.

In April the patient began to fail rapidly. The x ray showed a distinct sarcoma of the bone. At present there is metastasis in the humerus and lungs. The final diagnosis is sarcoma of the bone.

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<sup>6</sup>Presented before Orthopedic Section, Academy of Medicine, New York, January 18, 1918.



# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.

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### TREATMENT OF WOUNDS IN WARFARE.

It is the intention of the writer to call attention to the treatment, by means of plaster dressings, of wounds of warfare which have a tendency to slow cicatrization, because, although the method cannot be said to be novel, it has at all events, given very satisfactory results in a number of serious cases. It has been largely employed in the service of Professor Villard, of Lyons, and the following is a description of the method he employs:

The use of diachylon plaster is indicated in all cases of superficial wounds of warfare which have, to a certain extent, offered the usual characters of atonic wounds or when the evolution of the wound slows down or ceases and shows no inclination to repair. In these circumstances the indications for diachylon treatment are realized and its efficacy constant.

If this treatment fails it is because the contraindications for its use have been disregarded. These are generally manifest at the period of evolution of the process of repair at the time the treatment is applied, that is to say, when the lesion is still infected and giving rise to a dirty secretion. The principal contraindication, I repeat, is when the wound is still suppurating and therefore, the second phase of its evolution must be awaited, when supuration has ceased, the wound secretions diminished, and the infection disappeared to all intents and purposes, because, be it understood, a perfect

asepsis, in the strict sense of the word, is not sought for. The method cannot be resorted to if there is the least sign of infection in the form of lymphangitis or suspicious redness and tumefaction around the wound — conditions which hardly need be referred to.

Another condition for this treatment is that the wound must be superficial, because otherwise, the imperfect application of the plaster strips would result

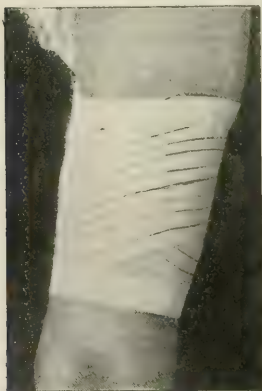


FIG. 1.—Diachylon plaster dressing.

in a sort of closed pocket under the dressing. Therefore, in order to obtain the wound conditions requisite for the use of diachylon a line of treatment must be followed out to obtain this end. Usually all that is required is the application of

moist dressings to clean up the wound surface and its edges, and, if the granulations are exuberant, the use of silver nitrate is indicated. By these simple everyday means the wound finally offers the desired characters. Its edges sink, while its surface becomes sufficiently flat and regular for the proper application of the plaster bands.

The French surgeons use the old *sparadrap de diachylon*, which is a waxy, agglutinative mass, having the following rather complex composition:

Simple plaster mass, <sup>1</sup>	1,500 grams;
Yellow wax,	250 grams;
Purified elemi,	80 grams;
Purified galbanum,	25 grams;
Purified gum ammoniac,	25 grams;
Olive oil,	50 grams;
Burgundy pitch,	100 grams;
Oleoresin of turpentine,	150 grams.

Old as this formula is, I know from many years of personal experience that it has a number of advantages over many of our more modern and elegant plaster formulae. The quantity of turpentine should vary in order to make the mass of proper consistency.

Bands of thin linen, about one yard long and from four to five inches wide, are covered on one side with the plaster mass, but it has the bad quality of not adhering enough at a low temperature and when kept too long it dries and chips. Therefore, at the time of applying the plaster bands they should be slightly warmed, according to the season of the year.

In order to obtain a perfect application of the plaster over the wound and its future removal painless, the surrounding area should be shaved. This done, the wound and its surroundings are cleansed with ether and alcohol, carefully removing all secretion and cell debris. The length of the band depends upon the circumference of the limb, but it should always be at least one and one half times the length of the circumference.

Each band is taken separately at each end, and after warming, is applied directly on the wound surface, while an assistant brings the edges together. Then both ends, having been stuck to the circumference of the limb, are crossed over each other on the

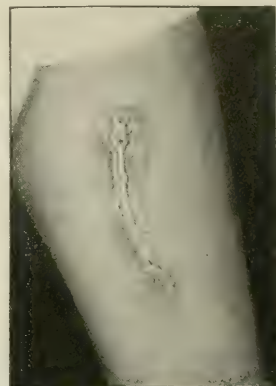


FIG. 2.—Result of three weeks' treatment.

<sup>1</sup>The *emplâtre simple* of the French Codex is composed as follows:  
 ℞ Pulv. litharge, )  
 Adeps, ) ..... aa 1000 grams;  
 Ol. olive, )  
 Aquæ ..... 2000 grams.

opposite side from that of the wound. The direction of the band is slightly oblique in relation to the axis of the limb.

The next band is applied in an oblique direction opposite to the first, so that the wound is exactly covered by an occlusive, adherent dressing. The dressing is completed by two broad circular bands placed above and below (see Fig. 1). Over the plastic dressing a layer of absorbent cotton and a roller bandage are applied, in order to protect the diachylon. The diachylon bands must be well overlapped with care, so that they will adhere to the wound surface and the wound edges throughout their entire extent, and to accomplish this requires attention to details.

In Doctor Villard's service the rule is to leave the plaster dressing on for a week, but sometimes it is changed in six days, in other instances, in ten days. A plaster cast was applied over the diachylon dressing of one patient who frequently meddled with it. The lapse of a week or even more before changing the diachylon is perfectly justified if the indications for its uses, as outlined above, are strictly followed and the contraindications observed.

Usually the dressing is removed at the end of a week, when it is rarely soaked through, but a little serous fluid often filters through and is absorbed by the cotton. The diachylon must be removed with care over the wound surface and the edges where the epidermis is proliferating. No attention need be given to the pus found under the plaster. It should simply be removed by irrigation, when the wound surface will be found a good rose color, granulating and healthy.

At each change of dressing the epidermic proliferation will be found extending to the centre, and finally covering the wound. Epidermization sometimes goes on so quickly that the fibrous tissue of the cicatrix has hardly time to become organized. A drawing (Fig. 2) is here appended of one case of extensive injury to the thigh treated by diachylon plaster. The wound was completely healed after three weeks' treatment, four changes of the diachylon having been made during this time.

#### WOUND OF THE INFERIOR VENA CAVA.

This was an interesting case of injury to the inferior vena cava in a penetrating abdominal wound. The patient was under the care of Dr. D. C. Taylor. He had been wounded by an exploding torpedo. The entrance aperture through which the omentum protruded was slightly to the right above the umbilicus. Laparotomy was done four hours after receipt of the injury through the rectus muscle. There was a great quantity of blood in the abdomen. The missile had perforated the gastrocolic omentum and two omental veins were ligated. Next a rent in the mesentery was found and one in the jejunum, which were closed. There was also a perforation of the posterior peritoneum. When the intestinal mass had been pushed out of the way a flood of blood issued forth through a wound in the anterior wall of the vena cava below the anastomosis of the right renal vein. The wound in the cava was about one inch long in the longitudinal direction. The wound was successfully closed by placing seven hemostats along it, and although the

lumen of the cava was diminished, it remained sufficiently patent.

On the fourth day following a hot chloroform and ether mixture was given and the hemostats were removed one by one. Only a slight oozing occurred after the removal of the last hemostat, which was easily controlled by packing. Ten days later the patient was transferred to a base hospital and is now perfectly recovered.

#### CIRCULAR AMPUTATION.

Most fortunately Dr. G. A. Wright, of Manchester, has objected to the general use of circular sausage amputation. Like a number of other French and English surgeons, he believes that the operation is only indicated in gas gangrene. Other than in this particular septic process, amputations done for septic processes in general should be carried out according to the well known methods of operative surgery, but leaving the flaps unsutured or even everted.

It is only too well known that during this war a very large number of wounded, whose limbs have been amputated by the circular sausage method, have entered the base hospitals with conical stumps with a granulating surface at the apex, through which the necrosed diaphysis protrudes, the patient presenting a chronic septic state. Reamputation with considerable bone resection becomes necessary, which frequently results in a considerable reduction in the ultimate utility of the stump. Simple resection of the protruding bone without complete reamputation does not always result in a satisfactory stump and traction on the soft parts after sausage amputation, although unquestionably useful, cannot make a good stump out of one bad at the start.

In trench foot the best practice is to wait until the line of demarcation has become distinct and then amputate, because too early an amputation may be too extensive or, on the other hand, it may compromise the vitality of the soft structures which have been saved but which are insufficiently nourished. When an amputation is performed it is to be as economical as possible. When the end of a flap contains cicatricial tissue, before reamputating higher up in healthy tissue, it is better to wait to see how useful the stump may really become.

#### MODERN WAR SURGERY.

*Distinguished Visitors Discuss Advances in War Surgery Before the College of Physicians and Surgeons—French, Italian, British and American Surgeons Tell of War Work on the Front.*

The group of surgeons who had been detailed from the allied armies to attend the sessions of the Congress of the American College of Surgeons in New York in October arrived in this city only to find that the prevalence of the influenza epidemic had necessitated the cancellation of the meeting. The visitors were invited to make a tour of the United States, and have addressed the members of the medical profession in several of the leading cities. On Wednesday, November 6th, the visitors were the guests of the faculty of the College of



Physicians and Surgeons at luncheon. On Thursday evening they were entertained at a dinner given by the medical profession at Delmonico's, and on Thursday evening they addressed the members of the profession at an open meeting held at the Academy of Medicine, a report of which will appear in a later issue.

On Wednesday afternoon several of the visitors addressed the students and the medical public generally at the College of Physicians and Surgeons. The meeting was presided over by Dr. Samuel W. Lambert, dean of the faculty, who spoke with regret of the fate which had befallen him and some others in being compelled to forego khaki and remain at their posts as teachers in order to provide recruits for the medical corps. Dr. Lambert said that he would first introduce a member of the faculty who had spent more than a year in active service abroad, Colonel George E. Brewer, whom he was proud and happy to welcome back to his home.

Colonel George E. Brewer said that he had been one of the fortunate group of surgeons who had received orders about a month ago to come to the United States to attend the Congress of the American College of Surgeons. He had joined the others of the group who had been detailed for this duty and had visited various cities, addressing the physicians in those places. In this way he had been thrown into intimate contact with these leaders in war surgery and had learned very much more than he could have possibly learned in any other way of what they had accomplished. He assured his hearers that they were most fortunate in having with them the men to whom modern war surgery owed so much. He first introduced Colonel Pierre Duval, of Paris, who had served on the Eastern front, as the master who had introduced modern French methods of treating wounds.

Colonel Duval spoke in French, his remarks being translated into English by Colonel Bastianelli, of the Italian Medical Corps. Colonel Duval said that at first the medical profession had made the mistake of Napoleon, in believing that wounds of war should be treated as they had been accustomed to treat the wounds of peace. They soon learned, however, that the infection and suppuration which occurred in every war wound often left sequelæ which left patients affected all their lives even after an apparent cure. It had been observed that if the wounds were treated properly the infection could be prevented from penetrating. This could only be done by operation within twelve or fourteen hours after receiving the wound. It was also learned that every wound was surrounded by dead tissue which furnished the best possible medium for the propagation of the germs of infection. These were the first two great truths learned that all wounds of war were infected and that all were accompanied by dead tissue.

These facts being borne in mind, three principles of treatment were adopted, as follows: First, every wound was opened out completely; second, every source of infection was removed, and third, the wound was closed after the excision of all dead tissue. In this way the contaminated wounds of war were converted into surgically clean wounds,

which healed by first intention. The great revolution in surgical practice brought about by war was the recognition of the fact that any wound could be made surgically clean and cured in a few days. This was true of the wounds of the soft parts, ninety to ninety-five per cent. of which healed by primary union. It was true of wounds of the joints, ninety-five per cent. of which healed by primary union. It was true of wounds of the cranium and of the brain, almost 100 per cent. of which were cured by primary union. Abdominal wounds and wounds of the lung tissue and lung cavity had been cured in the French army in about fifty-five per cent. of the cases.

To be entirely successful, however, it was necessary that the patients operated upon should be under the observation of the operator for at least fifteen days. This was possible only during a relatively quiet period, but during the course of active fighting it was impossible to keep the patient long enough under the care of the operator. In these circumstances, in the French army the rule had been followed of opening the wound completely, packing the cavity with iodine dressing and sending the patient on to the base hospital where the operation was concluded and the wound closed two or three or even as much as five days afterwards. This method of treatment was termed primary delayed suturing. It had given most satisfactory results, almost as good in fact as those which followed the prompt primary sutures, as about ninety-two per cent. of the wounds united by primary intention.

There were conditions in which the application of this method was impracticable as, 1, when too much time elapsed between the infliction of the wound and the operation; 2, when the infection spread too rapidly; and, 3, when for anatomical reasons the wound could not be properly cleansed. In these circumstances it was necessary to resort to antiseptics, and the method which had given the best results in the army was that of Carrel and Dakin. Where this method was applied with due attention to the technic, eighty per cent. of the wounded were able to return to active duty within two months' time. Partial success was observed in sixty per cent. of the cases, and in six per cent. the method had failed. Colonel Duval said that the application of these principles had caused a revolution in surgery.

Sir Thomas Myles was introduced by Colonel Brewer as the distinguished author, operating surgeon, and organizer, who had rendered invaluable service as consulting surgeon to the British Army. Sir Thomas said that he wished to acknowledge the debt which the world owed to that intellectual lucidity and logical mind of the French which in its military aspects showed in the admirable work being done by Foch as commander of the allied armies.

He then took up the subject of war wounds and said that a study of ballistics showed that the modern small bore rifle bullet wobbled in its course from the time it left the muzzle for a distance of about 200 yards describing a circle of an inch in diameter on an axis near the middle of the projectile. At 200 yards it straightened out and, re-

volving rapidly on its longitudinal centre, sped a straight course until it reached a distance of 1200 or 1500 yards when it again began to oscillate about its middle. If a soldier was struck with a bullet at a distance of 200 to 1,200 yards from the weapon fired, the bullet would be apt to make a clean cut wound of small diameter. If, however, the wounded man was within 200 yards of the weapon or was above 1200 or 1500 yards from it, the wound was apt to be a very large and ghastly affair; for if the bullet was slightly inclined when it struck, the resistance offered its penetration would probably cause it to tumble forward and pass through the body broadside on, thus making a very large wound. It was this action which was no doubt responsible for the many charges made by both sides that the other was using explosive bullets.

Sir Thomas said that one must not assume that

a patient who had apparently recovered entirely from a wound which penetrated through the eye into the brain several months later developed a drop foot. Investigation showed that the cicatrice had enveloped some of the brain cells and contracting on these had paralyzed their action, thus producing the drop foot. He had found one patient on guard duty who presented arms when he arrived but who upon close examination had shown an ununited fracture of the tibia, while another had an ununited fracture of the femur though still on active duty. He said that he did not want to be understood as lacking in appreciation of the marvels that had been accomplished by the newer surgery during the war, but he merely wished to point out the far-reaching consequences of wounds even though apparently healed.

Lieutenant Colonel Raffaele Bastianelli, professor



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#### DISTINGUISHED SURGEONS AT THE OFFICE OF THE COUNCIL OF NATIONAL DEFENSE, WASHINGTON.

Noted surgeons from Great Britain, France, and Italy are making a tour of cities in the United States in the interest of allied surgery during the war. In the group, seated, are, from left to right: Lieutenant Colonel George E. Brewer, U. S. A., who has been operating at the front; Sir Thomas Myles, of Dublin, Surgeon to the King in Ireland; Dr. Franklin Martin, chairman General Medical Board, United States Council of National Defense; Prof. Raffaele Bastianelli, one of the best known surgeons in Rome, and Major Pierre Duval, of Paris. Standing: Major George Grey Turner, of England, a veteran surgeon in the Mesopotamia campaign; Dr. Jos. A. Pettit, of Portland, Ore.; Lieutenant Georges Loewy, an instructor in the Rockefeller Institute, New York; Colonel George E. Gaik, of London, consulting surgeon of the British Army in France; Dr. Henri Beclere, a noted Paris x ray expert; Dr. Frank F. Simpson, chief of medical section, Council of National Defense; Dr. John G. Bowman, director American College of Surgeons; Colonel Charles U. Derole, French representative in the United States Surgeon General's Office, and Major Adrian Piolet, of Andre, France.

the favorable statistics given by Colonel Duval meant that the war surgery was so simple a thing as it sounded. For even though the wounds were closed complications might appear later. One complication which had come up not infrequently was the production of an arteriovenous aneurysm. In the hurry incident to surgical work at the front it was also possible that errors might be made. The surgical staff of the allied armies was an excellent one, but human, and whenever the human element entered there was always a possibility of error. On one occasion it had been his duty to examine a large number of men who had been operated upon and had apparently recovered but in whom some trouble had developed later. In one of these cases

of surgery in the University of Rome, was introduced by Colonel Brewer as Italy's foremost surgeon. Colonel Bastianelli said that Italy had gone into the war after Great Britain and France, fortunately finishing first, and had had the experience of the British and French surgeons as a guide. But like the surgeons of their allies the Italians had made errors, but they had likewise learned the necessity for a complete cleaning up of the wounds. Some aspects of this modern war surgery had indeed been developed independently by the Italians. In the surgery of the lung the Italians had been very successful in the application of artificial pneumothorax.

Major George Grey Turner, surgeon to the



British Army in Mesopotamia, of Newcastle-on-Tyne, said that in every war much was unlearned that had been taught before. He reminded his hearers of a statement made by Ambrose Paré, the distinguished French surgeon of the Middle Ages, who had treated the wounds of his patients by pouring into them boiling oil containing various escharotics. Owing to some fault in the medical supply service the supply of this remedy on one occasion was altogether exhausted. Paré spent a sleepless night worrying about the disastrous effects on his patients of this failure to apply the usual remedy, but on making his rounds in the hospital the next morning he found that those patients who had not been treated with boiling oil were in a better condition than those who had. It might be that we too would find some of our patients better for lack of treatment than if they had been treated. Major Turner pointed out that advances had been made by French and Italian surgeons and wanted it made perfectly clear that there was a unity in surgery as well as in command among the allies and that every improvement adopted by one of the armies was promptly passed on to the others so that all might benefit by it. He said that the Carrel-Dakin treatment had undoubtedly produced wonderful results, but it must be remembered that the use of this remedy was but the application of the underlying principles that the students before him were now engaged in studying.

Colonel Brewer announced that a meeting would be held at the Academy of Medicine at half past eight on Thursday at which a wholly different program would be presented, although some of the same speakers would appear. He also announced that Dr. W. B. Coley would give a demonstration of malignant disease at ten o'clock on Thursday morning at which all visitors would be welcome.

Major Adrian Piolet, professor in the school of medicine and surgeon to the hospital at Clermont, France, who is now attached to the Rockefeller Demonstration Hospital, U. S. Auxiliary Hospital No. 1, presented a number of slides illustrating the result obtained in that hospital by the use of the Carrel-Dakin technic in 2,223 infected wounds with delayed suture. Eighty-three per cent. of these cases had been completely successful, nine per cent. had been partially successful, and eight per cent. had been failures. As a rule they had been able to close these wounds in from twenty-five to thirty days. The illustrations showed marvelous recoveries, even where the lacerations had been very extensive.

Colonel George E. Gask, D. S. O., surgeon of St. Bartholomew Hospital and consulting surgeon to the Fourth British Army, spoke in a general way of the rôle which preventive medicine had played in the present war. He said that in the whole British Army there had been not more than a hundred or so cases of typhoid fever in the whole four years of fighting. He then spoke of war being waged against vermin and of the important rôle which this would play in the prevention of trench fever and other communicable diseases spread by body lice. The exercises were concluded with a few remarks by President Nicholas Murray Butler, who thanked the speakers for the informing addresses which they had made.

## MEDICAL NEWS FROM WASHINGTON.

*Major General Ireland Assumes Command.—Appointment in Military Intelligence Bureau General Staff Corps.—Transfer of Senior Surgeon Joseph H. White.—Food Nutrition Officers for All Camps.—Decline of Influenza Epidemic.*

WASHINGTON, D. C., November 4, 1918.

Major General Merritte W. Ireland, who was appointed Surgeon General of the Army several weeks ago, succeeding Major General William C. Gorgas, who was transferred to the retired list for age, arrived in Washington from France last week, and assumed duty at the head of the Army Medical Department.

\* \* \* \* \*

Brigadier General Edward L. Munson, Medical Corps, recently advanced from the grade of colonel, has been appointed chief of the morale section, Military Intelligence Bureau of the General Staff Corps, with headquarters at Washington. General Munson until recently was in command of the medical officers' training camp, at Fort Oglethorpe, Ga.

\* \* \* \* \*

Colonel J. R. Murlin, Sanitary Corps, chief of the division of food nutrition in the Office of the Surgeon General of the Army, reports that the school recently organized at Fort Oglethorpe, Ga., to instruct members of the Medical Department in matters pertaining to food, will be ready by December 1st to supply all camps in the United States with food nutrition officers.

The division of food nutrition has been engaged in a series of studies, involving considerable numbers of men in practical tests of the army ration, and it is reported that a number of changes looking to a better balanced ration and more economical provision for the troops in camps and on foreign service will be recommended.

\* \* \* \* \*

Reports from both army and navy camps indicate that the worst is over, so far as the epidemic of influenza affects those services. Occasional outbreaks still occur in some of the camps, but there has been a general decline in cases for the past week or so. The recent arrival of drafted men at some of the southern and southwestern camps brought a sharp increase in the number of cases, although apparently that is temporary. Elsewhere in the army camps the disease apparently has run its course, although it may be expected to continue for some weeks and probably will not be entirely stamped out during the winter as new men not previously exposed are brought into camps by the draft.

According to the latest reports, the total number of influenza cases in the army was 302,252, and the pneumonia cases numbered 49,224, with deaths from all causes since the outbreak of influenza amounting to 16,624.

Influenza in epidemic form has left the first, second, fourth, fifth, seventh, eighth, ninth, tenth, eleventh, and thirteenth naval districts, and is on the wane at all other naval shore stations in this country, except at Paris Island, S. C., and Mare Island, Cal. The training station at San Francisco, because of an effective quarantine, has had no cases of influenza.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

### Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine*

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### PEACE.

Peace has come. For 1,557 days Germany sacrificed lives and money without stint, ravaged defenseless nations, murdered innocent women and children, and raided peaceful towns and hamlets in its orgy of frightfulness in the vain hope that it could terrify the nations of the earth into submission to the dictates of the German Empire. The whole world rose in arms against that propaganda of frightfulness until at last twenty-two nations stood upon the side of justice, and of right, committed to their last drop of blood and their last dollar to the task of defeating Germany. Now that victory has come we must make sure, as sure as imagination can contrive, of some plan which will for all time prevent the recurrence of war. The blood of millions of men, the sufferings of millions of women, cry out that that blood shall not have been spilled and that suffering undergone in vain. The men charged with the task of dictating the terms of peace have indeed a weighty responsibility, for theirs it is to devise terms which will rid the world of war for all time and give us and our children, and our children's children, "The Parliament of Man, the Federation of the World." Then, indeed, may we feel that our dead have not died in vain for they will have given to the world for all time

PEACE.

### MODERN WAR SURGERY.

We present in our department devoted to medicine and surgery in the army and navy a brief report of a series of most interesting addresses delivered at the College of Physicians and Surgeons, of Columbia University, by visiting surgeons from the British, the French, and the Italian armies. In introducing Colonel Duval, of the French Army, Colonel George E. Brewer, of the United States Army, who had himself spent more than a year on the western front, said that the revolution in surgery which had been effected during the war was largely due to Colonel Duval and his teachings. The essential feature of this revolution is a recognition of the fact that all war wounds are infected wounds, that to prevent further infection it is essential that all dead tissue be completely removed, and that prompt attention is of primary importance.

Colonel Duval himself spoke in a most interesting and impressive manner. He told just exactly what had been done to meet the wholly new conditions which had developed in the present war and gave statistics showing an astonishingly large proportion of recoveries by primary union, the proportion ranging from ninety to ninety-five per cent. in wounds of the soft parts and the long bones, and very nearly 100 per cent. in wounds of the cranium and of the brain.

These results are in great and happy contrast to those reported in the initial stage of the war before the essential elements of success in wound treatment were recognized and acted upon. Many cases of wounds of the brain terminated fatally before the new methods were thoroughly worked out and applied. Even in abdominal wounds a record of fifty-five per cent. of recoveries was reported in Colonel Duval's figures, which sound almost incredible in view of the high mortality which such wounds carried with them in all previous wars.

One of the most interesting phases of the subject brought out by Colonel Duval and the other speakers on this occasion was the successful application of what the French term delayed primary suture. In cases where on account of the pressure of work it was impossible for the surgeons to give attention over a long period of time, the French open a wound, excise the dead parts, pack with iodine gauze, and send the patient back through the casualty clearing station



to a base hospital where the final cleaning up of the wound and suturing may be carried on under the most favorable auspices by a surgeon who can maintain his oversight of the patient for at least fifteen days. Even in these cases of delayed primary suture the proportion of recovery was almost as high, ninety-two per cent., as that observed in those cases where it had been possible to give immediate primary suture, about ninety-five per cent.

It must be understood that this procedure in no wise detracts from the value of the antiseptic treatment that is applied in the Carrel-Dakin technic, for the antiseptic treatment is the only recourse in those cases where, because of delay in receiving attention, of rapidity of spread of infection, or of anatomical complications, excision and immediate closure of the wounds are impossible. In such cases antiseptic treatment must be resorted to, but this means a much more prolonged convalescence than in cases where the wound can be cleaned up and sewed up promptly. The two methods, that of excision and prompt closure and the antiseptic method, are both great advances in surgery and are each essential in its own field to the greatest success. We are indeed fortunate in having with us these masters of surgery, the men who have created a new war surgery and have thus done so much to salvage the human wreckage of war.

#### NEEDED ADVANCE IN TRAIN SANITATION.

It has been well said that "the modern railroad train rides behind the ghost of an old stage-coach," for the width of the train, or, at least the gauge of the railroad, is dictated by what became the custom when flanged wheels were put on coach bodies and connected behind a locomotive. With all our progressiveness in railroad management, there are some other features in which train equipment has lagged behind almost as sadly as in the narrow roadbed.

The most striking of these is the maintenance, until the present time, of the open toilet from which trains scatter contaminating material, not only over their roadbed but into the small and large streams of the country, so many of which feed city and town water supplies. Besides, these open toilets become infested with flies or attract them whenever there are stops at stations, and thus become the means of distributing polluted material at the various stopping places to become sources of infection.

When we knew very little about the mode of the spread of disease, this did not seem so objectionable. In addition, at the beginning, comparatively few people used the trains, and of these, many took short journeys, so that the nuisance was, after all, extremely limited; now, however, hundreds of thousands of people are literally compelled every day, by the necessity of circumstances, to use these toilet arrangements, and the danger from them has increased greatly. In older times, too, when so many of our water courses did not feed reservoirs, and when so much water was not used for drinking, domestic, or agricultural purposes, water contamination was not so serious a consideration as at present. After all, the material that is not thrown directly into the water is eventually washed there by the rains, through the ditches alongside the train, instead of being brought there by seepage through the ground, where bacteria would be destroyed. When this does not happen, as during the dry season, the peril is perhaps greater, for the material is rapidly dried and pulverized and carried away by the air currents from passing trains, thus becoming a danger in the form of dust. This is later blown into the cars or the waiting rooms and restaurants at stations and becomes a source of danger. In this way it clings to the clothing of passengers and is carried to their homes. How simple a matter is the understanding of the rapid spread of various contagious diseases in recent years, once these gain a foothold. Now that the knowledge of the typhoid carriers has become general and we know of the presence of a number of other carriers of disease, present conditions have become literally intolerable. In these excretions living bacilli of various diseases are constantly present and it seems almost incredible that we should permit the further continuance of this dangerous practice.

Attention has often been called to the abuse, and attempts at corrective legislation have been made, for everyone recognizes the utter backwardness and dangers of the present train toilet, but, as can be readily understood, owing to the fact that railroads were so strong in the influence they exerted on legislatures, the matter was not permitted to get further than committees. Now, however, since the railroads of the country are in the hands of the Government, this factor of opposition is eliminated, and we should be able to secure the long and sadly needed improvement. This would be a benefit to the community which would argue in favor of Government management of the railroads. It is, without

doubt, a crying need. The only consideration has been of the slight additional expense involved in building sealed closets. The railroads of the country refused, for years, to equip their freight trains with selfcoupling devices, to the resultant serious maiming of many of their men, for the reason that human beings were less costly than improved equipment. Surely this argument cannot hold with the Government when there is a question of the lives and health of citizens.

Steamboats on inland waters have also distributed infectious materials at random in the waters on which they ply through the use of open toilets. The steamers on Lake George, we believe constitute a notable exception to this general rule. Closed toilets should be provided for all such steamers and this preventable contamination prevented.

Army experience has shown us the meaning of sanitary science. During the first six months of this war, according to a recent report, half a million less soldiers were sick and ten thousand less died than under similar conditions in the first six months of the Civil War. The sanitarian has been demonstrated to be no dreamer, nor a seeker after Utopian conditions impossible in ordinary life, but on the contrary a practical saver of health and strength, of time wasted over disease, and above all, of precious lives. The sanitarians of the country universally demand the change. The Government is now having new cars built for the railroads; it would add very little expense to have them equipped with sealed closets, and when cars came back for repair, they might be similarly equipped. By the end of the war and, perhaps, of Government control afterwards, so many of the cars would have been improved in this way that the problem—one of the most important sanitary problems now in our hands—would be effectually solved for all time.

### THE NAMING OF DISEASES.

Names of diseases, like names of other things, have originated in a variety of ways and have undergone many changes at the hands of the generations who have suffered from the diseases. Some, like Basedow's disease or Paget's disease, have received the name of their supposed discoverer; some, like acromegaly or paralysis agitans, are called for some pronounced sign or symptom; others, as malaria, from some apparently causal condition; while a few names have had a more sentimental origin—for instance, syphilis, which gets its euphonious title by way of a poem of a sixteenth century physician, named Fracastorius. The shepherd, named Syphilis, was

stricken with the disease by Apollo, in punishment for paying divine homage to the king instead of to the god. The disease stuck to the shepherd and somehow the shepherd's name became firmly attached to the malady. Certainly it is a more appropriate than *morbus gallicus*.

There is often a great deal in the name of a disease, and we pay too little attention to the meaning packed away in a few letters. The word malaria reveals the effort of many generations to pierce the veil of etiology, nor were they so far afield in their guess that we should wish to change the title upon more definite information. The name poliomyelitis unfolds a picture of the pathology of what by sign and symptom is more indefinitely named infantile paralysis. Exophthalmic goitre is an aid in remembering two cardinal symptoms of that disease, but now points clearly enough to the fact that the disease was not at first recognized, save when these two symptoms were prominent.

Few diseases have escaped without having many titles attached, both by the laity and the profession, and there are still all too many different titles for the same thing in practical use. In the course of their evolution one name was uppermost for a season, only to give place to another. How our Latin loving predecessors could have allowed the survival of any common names is a mystery, but somehow whooping cough is whooping cough and rarely pertussis. Many names point to a remote ancestry, such as measles; for "spots" are characteristic of many ailments. Even smallpox and measles were once confused, however, and that not so long ago. Names of modern origin tend to greater definiteness. The names of "discoverers" do not stick well, for there is no one discoverer. Graves's disease and Basedow's disease are being forgotten—and is it to be hyperthyroidism?

When a name has been found at all satisfactory it is most essential that it should be unchanged and that it should have no rival. It may not have mattered once upon a time—though some of us have a great curiosity to interpret what, according to family tradition, our ancestors suffered and died from—but for purposes of vital statistics we are helpless and hopeless without a definite nomenclature. That was a great stroke on the part of Bertillon, establishing the international list of diseases, so that all may speak the same language. No matter how much of a Babel there has been or may still be in the names of diseases, it is no longer necessary that the statistician be lost in the uproar.



## GENERALIZED NEUROFIBROMATOSIS.

Generalized neurofibromatosis is characterized by the following symptomatic triad: cutaneous and nerve tumors and pigmentation of the skin. To these, various functional disturbances should be added, such as those of the intelligence, paresis of movement, epileptiform paroxysms, indefinite anesthetics, and severe cramps.

The cutaneous neoformations are composed either of grains of molluscum or of neoplastic masses which may assume enormous dimensions.

The tumors of the nerves develop on the subcutaneous branches and in series along the nerve. By inspection they cannot be detected, but they are easily felt on palpation. The cutaneous pigmentation forms spots varying both in size and color, from "café au lait" to a reddish brown. In size they vary from that of a lentil to extensive patches, while their distribution over the cutaneous surface is most capricious. Pilous nevi may develop. In some few cases the pigment patches have been known to develop in the mucosa, thus making a differential diagnosis from Addison's disease a rather difficult matter.

The disease is now considered to be hereditary and not infrequently familial, and a neurofibromatosis occurring fairly late in life must be looked upon as a congenital affection. As to the familial character of the disease, it has been proved by a number of examples, the most curious of which is unquestionably the case recorded some years since by Czerny.

The prognosis is essentially variable according to the form assumed by the disease in a given case and is generally in direct relation to the number of new growths present. When the tumors involve the central nervous system the outlook is, of course, unfavorable. The prognosis should always be reserved because, although frequently individuals presenting the affection from birth may attain the age of fifty years or more, it must not be forgotten that very frequently also the affection takes on a much more rapid evolution. The extremely accentuated marasmus in which these subjects die must also be taken into account. Finally, the new growths may, at a given time, take on a considerable development and cause functional disturbances from size alone, and further, in spite of their apparent benignity the tumors have been known to undergo a malignant evolution in the form of a sarcomatous transformation.

The pathogenesis of neurofibromatosis is rather obscure, and all that can be said is that it

is a disease involving the ectodermic elements, since the skin and nervous system are the only structures involved.

The primary malformation of the ectodermic cells and their secondary lesions result in the development of the symptomatology of the affection. In the nervous system, the lesions of its elements result in various functional disturbances, while in the epidermis the lesion of its elements is the origin of pigment spots. Finally, the elements uniting the skin with the central nervous system, which are likewise derived from the ectoderm, are in a condition of inferiority because they are malformed and also because they imperfectly conduct the impressions. The result is the development of teratomata on the nerve trunks and this represents the first phenomenon of a process of proliferation. At a later date this proliferation may increase in intensity, and, although retaining its primary structural nature, it can give rise to enormous fibromata, or, returning to the embryonal state, produce sarcomatous growths with all the malignancy characteristic of this neoplasm.

## CANADIAN PENSIONS.

In October, 1917, the Federal Government of Canada brought into effect a scale of pensions for disabled soldiers, which is said to be higher and more liberal than that of any other country. The scale is as follows: Total disability, \$600 a year; widows, \$480; parents, \$480; children, \$96; orphan children, \$192. In addition, there is a special allowance for helplessness, not to exceed \$300. The number of classes of disability is twenty.

Up to May 31, 1918, the number of soldiers placed on the pension list amounted to 23,415, with an annual governmental liability of \$5,600,145.61; while the number of soldiers' dependents amounted to 24,213, with an annual liability of \$5,600,326. At the present time pensions are being awarded at the rate of 125 per day; and on the medical staff at Ottawa there are something like twenty-two physicians engaged. It is estimated that the liability for the year ending March 31, 1919, will be \$15,000,000. Up to April 31, 1918, the Canadian Government has paid pensions to soldiers resident in the United States to the number of 158; and in the British Isles 1,878. An interesting feature in this aspect of the pension question is that the Canadian Government has entered into arrangements with several countries for the reciprocal payment of pensions.

## News Items.

**Pediatric Section Postpones Meetings.**—Announcement is made that all meetings of the Section in Pediatrics of the New York Academy of Medicine have been indefinitely postponed until they are again demanded by members of the section.

**Nine Thousand Nurses Needed.**—The American Red Cross War Council announces that 9,000 additional nurses will be needed by the Army before January 1, 1919. Thirty thousand nurses have been enrolled by the Department of Nursing up to October 1st; about 15,000 of these are on active service in the Army and about 1,000 on active service in other lines.

**Correction.**—In an article on Paget's Disease of the Bones, by Dr. B. Stivelman, of New York, and Dr. E. L. Ray, of Louisville, Ky., published in our issue for October 19, 1918, a typographical error occurred. On page 679, left hand column, fourth line from the bottom, the sentence reading "The blood picture in Case I showed an eighty per cent. eosinophilia" should have read "The blood picture in Case I showed an eight per cent. eosinophilia."

**The History of Influenza.**—At a meeting of the Section in Historical Medicine of the New York Academy of Medicine, to be held on Wednesday evening, November 13th, with Dr. James J. Walsh in the chair, the history of influenza will be the topic for discussion. Dr. Lillian K. P. Farrar will read a paper on Epidemics, Countries, Nomenclature; Dr. James J. Walsh will present historical details of influenza therapeutics; Dr. D. Bryson Delavan will read a paper on the Disinfection of the Nasopharynx in Influenza, Historically Considered. The discussion will be opened by Dr. Gordon K. Dickinson.

**Mrs. Sage's Bequests to Charitable Institutions.**—The following is an authoritative list of the gifts of Mrs. Sage to charitable institutions:

An endowment fund of \$10,000,000 to the Russell Sage Foundation, the income to be used for the betterment of social and living conditions.

To the Russell Sage Institute of Pathology, an endowment fund of \$300,000.

For the Association for Relief of Respectable, Aged, Indigent Females, an addition to its building on 104th street, \$50,000.

Adirondack Cottage Sanitarium, \$25,000.

Working Girls' Home on East Twelfth street, \$25,000.

To the Young Men's Christian Association, for a new building for the International Committee on Twenty-eighth street, New York, \$350,000.

For addition to Y. M. C. A. building at Brooklyn Navy Yard, about \$340,000.

For building at Fort McKinley, Philippines, \$25,000; for Long Island Railroad branch, new building at Long Island City, \$100,000; for new building at Fort Slocum, \$50,000.

**Surgery of the War Zone.**—At a stated meeting of the New York Academy of Medicine, held on Thursday evening, November 7th, surgery of the war zone was discussed by delegates sent from the allied armies to attend the Clinical Congress of the American College of Surgeons, which was to have been held in New York during the week of October 20th. The congress was cancelled on account of the epidemic of influenza, and the delegates made a tour of the principal cities of the country, speaking before gatherings of physicians. On Thursday evening the principal speakers were Sir Thomas Myles, formerly president of the College of Surgeons of Ireland, Lieutenant Colonel Raffaele Bastianelli, professor of surgery, University of Rome, and Lieutenant Colonel George E. Brewer, M. C., U. S. Army, professor of surgery, College of Physicians and Surgeons.

**Accommodations for Fifty Thousand Sick Soldiers.**—The Hospital Division of the Surgeon General's Office has announced that during the past month hospital facilities have been secured for 10,200 additional patients, bringing the total facilities outside of camps and cantonments up to 50,000, or about one third of the number which it is estimated will be needed during the next eighteen months. Wherever possible hospitals and other buildings already erected and partially equipped will be obtained so as to accelerate and facilitate the work. Nine buildings in the Exposition Park at Rochester, N. Y., have been accepted by the government rent free. The Westchester Almshouse has been obtained as a general hospital and will accommodate 2,000 patients. The army will also take over North Brother Island now owned by the city of New York and will accommodate 1,500 patients.

**Personal.**—Dr. I. S. Wechsler has moved from 212 East Twelfth Street, New York, to 1291 Madison Avenue.

Dr. John Strother Gaines, Jr., of 200 West Seventy-first Street, New York, having accepted a commission as assistant surgeon, United States Naval Reserve Force (rank of lieutenant), on October 10th, is now awaiting assignment to active duty in the naval medical corps.

Colonel William P. Kendall, Medical Corps, U. S. Army, has been assigned to duty as department surgeon, Hawaiian Department, with headquarters at Honolulu.

**Polyclinic Hospital to Be Given to Columbia University.**—At a meeting of the trustees of Columbia University held Monday, November 4th, it was announced that the trustees of the New York Polyclinic Hospital, by unanimous vote, had proposed to transfer the property of that institution to Columbia University, to be maintained and perpetuated for the public service and for advanced instruction and research in medicine and surgery. By the acceptance of this proposal the university would come into possession of a finely equipped hospital, affording ample clinical facilities for the building up of graduate studies and research in medicine. The trustees of the university adopted resolutions receiving with grateful appreciation the proposal by the trustees of the Polyclinic Hospital, and appointed a subcommittee to arrange the detailed terms and conditions of accepting the proposed gift. The university would not be able in any event to use the hospital until after the conclusion of the war, since it is now in possession of the Government, being administered as a military hospital.

**Meetings of Medical Societies to Be Held in New York.**—The following medical societies will meet in New York during the coming week:

**Monday, November 11th.**—Society of Medical Jurisprudence; New York Ophthalmological Society; Yorkville Medical Society (annual); Williamsburg Medical Society.

**Tuesday, November 12th.**—New York Academy of Medicine (Section in Neurology and Psychiatry); Manhattan Dermatological Society; New York Obstetrical Society.

**Wednesday, November 13th.**—Medical Society of the Borough of the Bronx; New York Pathological Society; New York Surgical Society; Alumni Association of the Norwegian Hospital, Brooklyn.

**Thursday, November 14th.**—New York Academy of Medicine (Section in Pediatrics); West End Clinical Society; Brooklyn Dermatological Society.

**Friday, November 15th.**—New York Academy of Medicine (Section in Orthopedic Surgery); Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital; Brooklyn Medical Society.

**Visiting Surgeons Entertained.**—The New York Fellows of the American College of Surgeons gave a dinner at Delmonico's on Wednesday evening to the distinguished surgeons who had been detailed from the allied armies to attend the sessions of the Clinical College of the American College of Surgeons, which was to have been held in New York during the week of October 20th but which was postponed on account of the influenza epidemic. Dr. J. Bentley Squier acted as toastmaster and introduced the speakers, the first of whom was Colonel Franklin Martin, who described the tour made by the delegates, which embraced Camp Greenleaf, the Mayo Clinic, Chicago, Philadelphia, and other important cities. Colonel William J. Mayo, as president, then conferred honorary membership in the college on Surgeon General Merritte W. Ireland and the foreign surgeons, citing the specific achievements of the candidates, each of whom spoke briefly. The foreign delegates included Colonel Sir Thomas Myles, member of the Board of Consultants of the British War Office, former president of the Royal College of Surgeons in Ireland and surgeon to the King; Major Pierre Duval, surgeon in the Paris Hospital and consultant to all the armies of France; Lieutenant Colonel Raffaele Bastianelli, member of the Royal Medical Academy of Italy and an officer in the Italian Army; Colonel George E. Gask, British medical officer, Fellow of the Royal College of Surgeons, with a record of three years' front line service, and Major George Grev Turner, a veteran of far eastern operations of the British Army. A report of the visit of the delegates to the College of Physicians and Surgeons, Columbia University, appears on page 819 of this issue.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### STROPHANTHUS AND ITS ACTIVE PRINCIPLES VERSUS DIGITALIS.

By LOUIS T. DE M. SAJOURS, B. S., M. D.,  
Philadelphia.

(Continued from page 697.)

Clinical observations of Vaquez and Lutembacher, strongly suggesting that strophanthus—at least in the form of ouabain prepared by the Arnaud method—exerts a distinct effect on the tonicity and contractility of the heart, were referred to in a previous issue. Evidence, published by these authors, was adduced to the effect that digitalis and ouabain may be, in a sense, complementary in their action, the former, administered intravenously, often proving of great benefit where digitalis had lost its effect, and even restoring the therapeutic action of the latter drug when subsequently used, presumably by improvement of the tonicity of the heart muscle. The general tendency of the conclusions of Vaquez and his collaborators is to establish a difference in the clinical action of the two drugs, digitalis acting particularly on cardiac conductivity and ouabain on the dynamic functions of the myocardium.

These conclusions have recently (1918) received support in this country by J. H. Pratt, at least in so far as an action of strophanthin on the contractility of the heart muscle is concerned. This author believes strophanthin has not received from clinicians the attention it deserves, and states that he has seen it, when given intravenously, restore the circulation where the pulse at the wrist could no longer be felt or the heart sounds heard. Instead of Arnaud's ouabain or crystalline strophanthin, he uses the Boehringer preparation of amorphous strophanthin, in doses not exceeding 0.5 milligram, and never administered oftener than once in twenty-four hours.

Improvement was obtained by Pratt from this measure in forms of cardiac failure that are rarely relieved by digitalis. Striking benefit occurred in some cases of heart failure with regular rhythm. Thus he reports the case of a man aged fifty-nine years, with the left border of the heart in the midaxillary line, a blowing apical systolic murmur, normal rhythm with pulse rate of 76, severe dyspnea with Cheyne-Stokes phenomenon, restlessness, fatigue, and an anxious expression. The dyspnea had been present continuously during the eight days since admission to the hospital. That the cardiac rhythm was actually normal was shown by polygraph tracings. Half a milligram of amorphous strophanthin having been given intravenously, the breathing became less labored within fifteen minutes, and the Cheyne-Stokes respiration disappeared completely an hour later. At the same time the anxious expression and restlessness passed off and marked subjective betterment was experienced. A favorable effect of the drug on the myocardium is held to have been shown by the attending changes in the blood pressure, which, while registering 175 millimetres of mercury just before the injection, rose in fifteen

minutes to 205, and was 202 an hour after the injection, with the pulse rate 79. Next morning the patient remained comfortable, and the systolic pressure was 185, yet the left border of cardiac dullness was still in the midaxilla. Later Cheyne-Stokes breathing was resumed and slight restlessness and anxiety returned. An injection of 0.3 milligram of strophanthin was now given, and the use of digitalis begun, 0.1 gram being ingested three times daily until two grams had been taken. Prompt and continuous improvement now set in, the patient remaining comfortable, with a pulse rate of 68, and being eventually discharged one month after admission.

The salient feature of the action of strophanthin in this case was the prompt rise of thirty millimetres of mercury in the systolic blood pressure after the injection of the drug, without any slowing of the pulse, such as would have been expected from digitalis. That the favorable effect of the strophanthin was not dependent upon an action of the drug on the conductivity of the heart seemed indicated, not only by this absence of slowing of the pulse, but also by the fact that the heart rhythm was originally normal, with a normal rate. A difference from the action of digitalis, which as a rule distinctly influences conductivity, is thus suggested. The fact that the dilatation of the heart, as determined by percussion, was not immediately reduced seemed to show that the chief action of the drug was on the contractility of the heart rather than upon its tonicity. At any rate the strophanthin appeared to exert a prompt and definite effect in increasing the strength of the heart—a conclusion which, as we have already seen, agrees with Vaquez's conception of the action of ouabain.

However effectual the strophanthins may prove to be in certain desperate cases, the mistake should not be made, as emphasized by Vaquez and Lutembacher, of regularly postponing its use until the patient's condition is practically hopeless. While, even in such instances, the remedy may yield unexpectedly favorable results, it will often fail. Its field of use should by no means be restricted, as has for a number of years been customary, to cases in which all other remedies have proven useless. Indeed, according to the observers just referred to, its chief contraindication is advanced cardiac cachexia, with widespread edema, multiple fluid accumulations in the pleural and peritoneal cavities, and inflammatory lung complications. Nor should ouabain be prescribed for patients with severe chronic organic disease of the kidneys—unless it be with great caution and with definite knowledge that certain of the symptoms or signs are due to heart weakness. In secondary infectious endocarditis running a subacute or prolonged course, ouabain, like digitalis, is ineffectual, and may even lead to disastrous results, owing to the degenerated condition of the heart which often accompanies the valvular disease.

(To be continued.)

**Repair of Large Peripheral Nerve Gaps.**—Kenneth A. J. Mackenzie (*Surgery, Gynecology, and Obstetrics*, October, 1918) draws the following deductions from a limited number of cases: 1. Regeneration and recovery of function are promoted by the use of nerve flaps. 2. Both central and peripheral flaps can be used for such purposes. 3. A peripheral flap, by laying down a nerve path, may promote regeneration over a great gap. In one case quoted regeneration occurred over a gap ten and three quarter inches in length. 4. The approximation of nerves and their repair should be done in all cases with the least possible delay. This would apply as well to cases which are infected as to clean cases. 5. The arrest of trophic shock can be promoted by early closure of large gaps by flaps. 6. Unimpaired nerve tissue should always be utilized for the effective repair of damaged nerves. 7. In their repair, nerves can be successfully sequestered in muscular tissue so as to promote their own regeneration and that of the muscles in which they are imbedded. 8. The principle of sequestration can be utilized in proper cases so as to avoid infected zones in wounds and also scars and other obstacles to nerve repair.

**Pituitrin in Obstetrics.**—J. L. Bubis (*Ohio State Medical Journal*, September, 1918) uses pituitrin in cases where the progress of the labor seems to be unduly prolonged by weak and inefficient uterine contractions. One to three minims are injected hypodermically. Pituitrin will not start labor, but the uterus responds to it in any stage. The following complications occur from too large a dose of pituitrin: Rupture of the uterus or laceration of the maternal soft parts caused by the rapid descent of the firm, unyielding part of the fetus; fracture of the skull or laceration of the coverings of the brain; asphyxiation of the child due to the sudden tension of the cord about its neck; premature separation of the placenta. For retained placenta, one c. c. of pituitrin should be administered. To empty the uterus of retained secundines the usual preparation is made as for a dilatation and curettage. The cervix is then dilated and one c. c. of pituitrin is injected into the patient's arm. The uterus is then emptied with the curette, placental forceps, or finger. During the operation very little blood is lost and the uterine cavity decreases in size as quickly as the contents are removed. The uterine muscles become firm and there is practically no danger from perforation. No hot irrigations are necessary. The cavity of the uterus should be swabbed with a two per cent. iodine solution; occasionally an iodoform gauze pack is placed in the uterus for twenty-four to forty-eight hours. Ergot may be given after the operation is finished. During Cæsarean section one to two c. c. of pituitrin are injected directly into the uterine muscles after the incision into the uterus is made. If the injection is made too early there is danger of asphyxiation of the child. In this method the action of the pituitrin is almost instantaneous. As a galactagogue it is not always satisfactory. High blood pressure, arteriosclerosis, and exophthalmic goitre are definite contraindications to its use.

**Treatment of Toxemia of Pregnancy.**—J. O. Arnold (*American Medicine*, August, 1918) outlines the following general plan: 1. Morphine for the temporary control of convulsions, half a grain or more at a dose, and repeated as soon and as often as necessary. 2. Bloodletting as early as possible, fifteen to thirty ounces being withdrawn, depending on the case and the effect on the blood pressure. 3. Cleansing of the lower bowel and giving, by Murphy drip, sodium bromide, one or two drams, and sodium carbonate, two or three drams, to the quart of normal salt solution as rapidly and as constantly as the bowel will permit. 4. The darkening of the room and the securing of quiet and freedom until the convulsions have been brought well under control. 5. The induction of labor in all cases occurring before the eighth month, if the convulsions have been at all severe in type, or more than three or four in number; after the eighth month the termination of pregnancy, regardless of the number of convulsions, letting the circumstances and conditions determine whether the delivery shall be by the normal route, following spontaneous or induced labor, or by the more rapid method of Cæsarean section. 6. No food of any kind by mouth until at least three days after convulsions have ceased, but a continuation of alkali salt solution by bowel, or of alkaline water and salines by mouth, until the quantity and quality of urine are satisfactory.

**Principles of Treatment in Mercuric Chloride Poisoning.**—H. B. Weiss (*Journal A. M. A.*, September 28, 1918) cites the more recent experimental studies bearing upon the pathology of mercuric chloride poisoning in man and animals and agrees with MacNider that the cause of death in the majority of the cases is the severe acid intoxication which develops. This conception is shown to be correct by the fact that only three patients died out of a consecutive series of fifty-four treated with reference to overcoming the acidosis. Two of the three did not come under treatment until very late and the third had a preexisting nephritis and cirrhosis. The administration of alkalis does not materially enhance the excretion of the mercury. The treatment should be begun as soon after the poisoning has taken place as possible, the first steps being thorough lavage of the stomach with a quart of milk containing the whites of three eggs, followed by a saturated solution of sodium bicarbonate until the washings return clear. Then ninety to 120 grams (oz. iij to iv) of crystalline magnesium sulphate dissolved in 180 to 250 mls of water (oz. vi to viij) are left in the stomach. A soapuds enema is next given and the alkaline treatment is begun by giving an intravenous injection of one to two litres of Fischer's solution, this being repeated on the following day if the urine has not become alkaline to methyl red. Imperial drink is given every two hours in amounts of 250 mls (oz. viij). The reaction of the urine is watched and must be kept alkaline to methyl red, alkaline treatment being given also by rectum if necessary. The diet is not restricted. Under this treatment there is usually very free secretion of urine, its albumin content rapidly drops, and the blood and casts promptly disappear. Recovery is usually complete.



**Fibroid Tumors Treated with Radium.**—Howard O. Kelly (*Surgery, Gynecology and Obstetrics*, October, 1918) concludes that surgeons ought not to be less self-sacrificing than the wise physician who struggles to put an end to the era of drugs, toxins, and vaccines, by sanitation and hygiene. While it is the imperative duty of the surgeon to continue building up surgical technic, making operations safer and carrying surgery to a successful issue in new fields, nevertheless, he feels sure that all are willing and anxious, wherever it can be done, to commit an honorable suicide, a sort of hara-kiri of which posterity will be proud, by introducing wherever it is possible, newer methods which are found to be better and safer than surgery. Beginning back in the fifties of the last century, our predecessors, at infinite cost in life and in pains, built up the operation of hysteromyectomy by which so many lives have been saved, and to which also so many have been sacrificed. As long as it can be shown that an operation in a given series of cases will not only give better health, but also save lives, the necessary mutilations can be contemplated with mingled regret and satisfaction. This attitude of mind, however, is now no longer tenable, for now that there is a simpler, safer procedure at our disposal every death in the fibroid group becomes an indictment. It may be also emphasized that if radium fails, the operation has simply been postponed without detriment. Surely the logic of the facts presented proved that henceforth radium rightly demands the first place in a determination of the best method in a given case.

**The Treatment of Wounds of the Genital Organs in Warfare.**—Charles Greene Cumston (*Annals of Surgery*, September, 1918) states that if a missile or other foreign body is lodged in the scrotal cavity it should be removed at once—a simple matter, requiring no particular skill—but the treatment becomes a much more delicate question when the testicle is involved; not uncommonly the gland, be it either intact or injured, forms a hernia through the aperture in the scrotum. Now no hesitation is permissible when the testicle is untouched or only slightly contused, because the rational treatment is its reduction into the bursa and suture of the latter. The reduction should be attempted just as soon as possible in order to avoid strangulation and its shadow sloughing which always follows. The reduction may be delayed for a few days until the scrotal wound has been properly cleansed if it appears to be infected, as is usually the case; but at the same time, the vitality of the testicle must be carefully watched. When reduction is undertaken, the utmost gentleness must be observed. After having carefully cleansed the structures, the lower or upper angle of the scrotal wound must be enlarged by incision and the ragged edges of the vaginalis carefully evened off with scissors. With the exit of the testicle from the scrotum, all the tunics will, of necessity, be turned outward; therefore, since in the circumstances the vaginalis will form a virtual cavity, the testicle can be reintegrated if the walls of the vaginalis are first raised up and retracted. In cases seen shortly after the receipt of the injury, it may be possible to rein-

tegrate the testicle under its serous covering, otherwise the gland must be covered by any means possible, such as a moist dressing, and then await events. Not uncommonly, the congestion will subside in a few days, the surrounding structures will relax and the general aspect of the process will assume an aspect of excellent behavior, far from what might have been assumed when the case first came under observation. Admitting that the testicle and its vessels are intact, irreducibility is never an indication for primary castration. There is every reason to attempt reduction, even when the testicle is contused or offers a superficial wound. The parenchyma forming the hernia should be carefully reduced and the albuginea minutely sutured. The great value of the organ in question should incite one to attempt treatment along conservative lines.

**Treatment of Acute Suppuration of the Middle Ear.**—J. Clarence Keeler (*Pennsylvania Medical Journal*, September, 1918) points out that, during this treatment, it is of supreme importance for the patient to rest in bed. A brisk cathartic of calomel should be given. In the early stage of a mild form, accompanied by moderate pain, douching the external auditory canal with hot saline solution, 105° F., will afford relief; where the pain is severe, opiates may be given. No oily preparations should be used. Leeching is also condemned because it is unsanitary and presents grave danger of transmitting serious infection. The drum membrane may be anesthetized by applying a solution of equal parts of menthol and cocaine. A pledget of cotton is saturated with this mixture and carefully placed in apposition with the inflamed bulging drum; the tampon is removed in ten minutes and the membrane incised. A mild suction pump is employed to draw the inflammatory exudate from the tympanum, and the auditory canal is irrigated with one of the antiseptic solutions, and a piece of plain sterilized gauze is placed in the canal to facilitate drainage.

**Magnesium Sulphate Solutions in the Treatment of Spastic Contractures of the Rectum and Sigmoid Colon.**—Horace W. Soper (*American Journal of Medical Sciences*, August, 1918) comes to the following conclusions: 1. Spastic contractures of the lower colon are etiological factors in many cases of chronic constipation. 2. These contractures are the result of disturbances in Meltzer's law of contrary innervation. 3. A saturated solution of magnesium sulphate applied locally to the contracted segment produces a relaxation. Repeated applications finally overcome the spasticity and permit the restoration of normal colonic function. 4. Contractures in the rectum and lower sigmoid, with accompanying dilatation of the colon, are found in many cases of postoperative abdominal distention. Magnesium sulphate enemata are very efficacious in relaxing the contractures and thereby relieving the distention and "gas pains." 5. Enemata of magnesium sulphate are also very useful in partial organic obstructions in the rectum and lower colon, inasmuch as they relax accompanying muscular contractures without stimulating peristalsis. 6. Magnesium sulphate solution applied by means of the cotton applicator greatly facilitates the introduction of the sigmoidoscope.

**Cancer of the Breast.**—J. H. Jacobson (*Ohio State Medical Journal*, September, 1918) concludes that, 1, the only hope of cure for patients suffering from cancer of the breast is a radical operation; 2, a large proportion—32.86 per cent.—of patients operated on by the radical method pass the three year period, and 23.77 per cent. the five year period; 3, most patients are operated on when the disease is too far advanced; 4, cancer of the breast must be recognized before the lymphatic glands in the axilla become involved; 5, there are no positive differential clinical signs for early cancer, and therefore all breast tumors should be removed and submitted to microscopic examination; 6, the removal of all breast tumors, an early diagnosis, and an early radical operation are the means at our command for lowering the death rate in cancer of the breast.

**Treatment of Syphilis.**—Joseph Kaufman (*American Medicine*, August, 1918) concludes the following: 1. Every case of syphilis should receive intensive treatment immediately upon making the diagnosis. 2. Every case of early syphilis should be kept under active treatment for at least two years, with short intervals between courses. 3. Every case of latent syphilis should be treated if the spinal fluid is positive; if the fluid findings are negative, and the patient has not had sufficient treatment, the patient should be kept under the treatment as described. In the positive cases intraspinal therapy must be given. 4. The patient should be given long courses of mercurial injections, keeping the dose at more than one grain, repeated every five to seven days. All of these patients should receive iodides. 5. Every case of tertiary syphilis should be given intraspinal treatment, associated with mercurial and salvarsan injections and the internal administration of iodides.

**Treatment of Facial Erysipelas.**—Anthony A. Avata and Rollin T. Woodyatt (*Journal, A. M. A.*, September 14, 1918) tried all of the methods recommended for the treatment of this infection without finding that any one was superior to the others until they began to use Niehans's method of collodion circumscription. The ordinary nonflexible collodion of the United States Pharmacopœia is painted on the skin in a strip half an inch wide and one inch outside the erysipelatous margin so as to surround the lesion completely. The strip is painted over repeatedly until, when dried, it causes a deep furrow about the lesion. This must be watched to see that it is perfect and unbroken at any point and repaired by further coats if necessary. The lesion will advance to this furrow but not beyond it. This ring of collodion is left in place until the swelling and temperature have wholly subsided. The enclosed inflamed area is treated by the application of cold compresses of a saturated solution of magnesium sulphate. This treatment was controlled by comparison with patients receiving other forms of treatment and it was found to stop the progress of the disease, to reduce the toxic symptoms and constitutional reaction, to shorten the average duration of fever from an average of eight to three and a half days, and to shorten the period in hospital from an average of thirty to an average of fifteen days. It also reduced almost entirely the development of complicating abscesses.

**Protein Treatment of Arthritis.**—S. P. Beebe (*Medical Record*, July 27, 1918) describes improvement attained in sixty per cent. of chronic arthritis cases treated by injections of his nonspecific protein preparation made from millet and alfalfa seeds. This is used in a two per cent. solution and the dose starts with ten to twelve minims and is given in increasing doses three times a week from four to ten months.

**Treatment of Syphilis with Novarsenobenzol.**—Erwin P. Zeisler (*Urologic and Cutaneous Review*, September, 1918) concludes that: 1, Novarsenobenzol is a safe and effective remedial agent in the treatment of syphilis in all its stages; 2, clinically and serologically it is equally as effective as neosalvarsan; 3, concentrated solutions are to be preferred on account of the freedom from reaction and simplicity of technic.

**Venesection in Eclampsia.**—P. Balard (*Presse médicale*, August 8, 1918) finds that a moderate bleeding—500 grams—is sufficient to induce, in eclampsics with high blood pressure of the renal type, an immediate and lasting reduction of the systolic and diastolic pressures, as well as a reduction in the energy expended by the heart muscle, as shown by oscillometric studies. These observations justify the confidence which obstetricians have long reposed in blood letting in eclampsia.

**Stannoxylin in Staphylococcal Infections.**—Arthur Compton (*Lancet*, August 24, 1918) calls attention to the proved value of this agent in the treatment of various forms of localized staphylococcal infections like furunculosis, osteomyelitis, etc., and records three cases of bronchopneumonia (two tuberculous) in which its administration seemed to be of distinct benefit, reducing the temperature to normal and causing an improvement in the patient's general condition. He believes that the drug either renders the soil unfit for the organism, or causes an attenuation of the organism's virulence.

**Physiological Action of Alkaline Chlorates.**—J. E. Abelous (*Presse médicale*, August 1, 1918) finds that after injection of sodium chlorate there is no increase of chlorides in the urine; the xanthuric bodies, however, are augmented. There occurs a distinct diminution in the number of leucocytes, with a relative increase of the polynuclears at first followed on the second day by an increase in the large mononuclears, with the appearance of voluminous, vacuolated mononuclear cells. The pharmacological reaction of the chlorate is exerted on the leucocytes and not by a direct oxidizing effect.

**Modified Stokes-Gritti Amputation.**—W. A. Chapple (*British Medical Journal*, August 17, 1918) recommends the complete division of the attachment of the quadriceps to the upper margin of the patella and the suture of the patella in place on the under aspect of the lower end of the femur by stitching its margins to the edge of the periosteum with catgut. One or two additional deep catgut sutures are usually required and a firm button suture should be placed through the skin flaps. By this method the patella is prevented from being displaced through action of the quadriceps and a good weight bearing end is provided for the stump.



# Miscellany from Home and Foreign Journals

**Parathyroid Insufficiency.**—Arthur F. Hertz (*Endocrinology*, April-June, 1918) reports the case of a clerk, forty-seven years of age, whose symptoms appeared to be due to a functional insufficiency of the parathyroid glands. He was first seen in 1910 and was under the author's observation for four years. In 1908 the greater part of the thyroid gland had been removed because of enlargement of the gland. After this he had remained well until four months before consulting Doctor Hertz, when he had become suddenly depressed, nervous, restless, and sleepless. There was a constant fibrillary twitching of the eyelids, but tetany was never present. His eyes were sunken; the thyroid gland could not be seen or felt, and though the patient's appetite was enormous, he constantly lost weight. There was some difficulty in swallowing, which fluoroscopic examination showed was due to an irregular spasmodic contraction of the esophagus. He passed three or four large stools a day; the urine was normal, but diminished in quantity. His pulse was constantly about 120; his face and neck were deeply flushed; his hair had stopped growing, and he had become completely impotent. A definite diagnosis was not made, but it seemed obvious that the disease was of endocrine origin, possibly due to injury of the parathyroids during the previous thyroid operation. Various methods of treatment were tried in the hospital, including the administration of desiccated thyroid gland and Moebius's antithyroid serum, opium and bromides, but the patient continued to lose weight until he began to take one tenth of a grain of dried ox parathyroid glands four times daily. On this treatment he gained 28.5 pounds in the first nineteen days, and at the end of six months of parathyroid therapy all his symptoms cleared up, his sexual functions being restored. Once in 1913, when his pulse was faster and he was restless, he began to take one tenth of a grain of parathyroid daily, which he continued taking for four months. At this time his face became brick red, the vessels in his neck throbbed, and his throat was full. These symptoms disappeared on stopping the parathyroid, and since that time he has remained perfectly well.

**Clinical Aspects of Peptic Ulcer, with Special Reference to Röntgen Ray Diagnosis.**—F. H. Baetjer, and Julius Friedenwald (*Bulletin of the Johns Hopkins Hospital*, August, 1918) present the results of investigations in 743 cases of peptic ulcer in which the value of the x ray as a diagnostic means is definitely brought out. The authors find that x ray examination is as great an aid in excluding the presence of ulcer as in establishing positive findings, for in 698 cases ulcer was ruled out by this method of examination. Another important application of the x ray is in following the progress of healing, as revealed by repeated x ray examinations over a long period of time. In 185 cases of peptic ulcer proved by operation, positive x ray findings were observed in 147 cases, or 79.4 per cent.; in 323 undoubted cases, not confirmed by operation, the x ray findings were positive in 272

cases, or eighty-seven per cent; and in 235 somewhat doubtful cases, 210, or 89.7 per cent., showed positive x ray findings. Such figures clearly show the value of this means of examination. When adhesions are present the diagnosis is often difficult, as these conceal the usual findings and make it impossible to determine whether there is an ulcer of the stomach or a lesion of some other organ. When the ulcer is at or near the pylorus, signs of partial obstruction often help in arriving at the correct diagnosis. The x ray picture usually affords sufficient evidence as to the extent and induration of the ulcer to indicate the need for operation. In duodenal ulcer there is excessive hypermotility of the stomach, with rapid evacuation of its contents, so that the greater portion is expressed in the first half hour; there is hypermotility of the duodenum with formation, usually, of a deformity which remains fixed in all of the examinations. The diagnosis of gastric ulcer depends on the functioning of the stomach and the finding of the filling defect, which latter can only be demonstrated when it is situated along the anterior surface of the stomach and along the anterior surface of the lesser and greater curvatures. On the other hand, no matter where the ulcer is situated, there is always a certain amount of retention of contents and a more or less well marked hour glass formation, so that the authors regard the functional signs often as important as the filling defects in making a diagnosis, particularly as eight per cent. of their cases showed no filling defects, but the functional changes pointed definitely toward ulcer.

**Pneumonia and Meningitis.**—Paul G. Wooley (*Journal of Laboratory and Clinical Medicine*, July, 1918,) in discussing the pneumonia and meningitis problem at Camp Greene, compared the situation there with that reported in various camps throughout the country. He believed that the best preventive method against pneumonia was to send all recruits to a camp where for a certain period they would start training and at the same time the upper respiratory passages of all the men should be disinfected as thoroughly as possible without regard to bacteria. This plan had been tried in Casual Camp No. 1 at Camp Greene, and seemed to have been effective, as there had been less pneumonia there than in the rest of the camp, and measles and mumps, which appeared in the casual camp in contacts from other camps, declined more rapidly in the casual camp than elsewhere. Apparently in attacking the pneumococci and meningococci in the nasal passages all the infections of the upper respiratory tract were influenced. Wooley emphasized what so many other writers did, the importance of pneumonia and meningitis prophylaxis. As both diseases were due to the invasion of the upper respiratory tract by bacilli, the only method for preventing their spread was to apply antiseptic methods to the nose and nasopharynx; and this treatment should be put into practice before the season of the year in which diseases of the upper respiratory tract became widespread.

**Filterable Toxic Product of the Hemolytic Streptococcus.**—Admont H. Clark and Lloyd D. Felton (*Journal A. M. A.*, September 28, 1918) find that by growing hemolytic streptococci in rabbit's blood, diluted with Locke's solution, a filterable toxic substance is produced. The formation of this toxic substance depends on the pressure of hemoglobin in the medium, as shown by the results of the various modifications of the culture medium. The toxic substance is readily destroyed by heating it to 50° C. for half an hour. It is dialysable and is not hemolytic in vivo or in vitro. It slowly loses its toxicity when kept in the cold. The substance requires an incubation period after its injection into test animals before it exerts its toxic effects. An immunity can be developed toward it rapidly, and animals thus immunized are also immune to the living streptococci. The toxin is, further, neutralized by the blood of rabbits immunized against it.

**Moisture in the Air Spaces of the Lungs.**—C. F. Hoover (*Journal A. M. A.*, September 14, 1918) presents a series of observations made upon gassed soldiers and in other forms of dyspnea which give new importance to the presence of moisture in the pulmonary air spaces. Where there is much moisture present, as in the gassed patient, there is deep cyanosis with relatively slight air hunger and the cyanosis can be relieved by the inhalation of oxygen, while the air hunger is little or not at all affected. Where there is much moisture the entire air space of the lungs may be occupied by foam at the end of expiration and this foam is alveolar air foam. The only area for the gaseous interchange is that of the cross section of the trachea or larger bronchi, hence gaseous interchange is reduced to a minimum. All escape of carbon dioxide from the blood into the pulmonary air spaces ceases as soon as this foam contains the same partial pressure of this gas as that of the blood. In such a case the inhalation of oxygen for several minutes is capable of relieving the cyanosis by superventilation of the foam free units of the respiratory tract, but the air hunger is not affected because of the continued flow of anoxic blood from the other portions of the lung. This accounts for the dissociation between anoxemia and air hunger. In other words the inhalation of oxygen will compensate for the anoxemia so far as the cyanosis is concerned, but the continued admixture of this superventilated blood with the unventilated blood from the foam filled areas is sufficient to maintain air hunger. The area for the escape of carbon dioxide is not affected by the inhalation of oxygen, though the high concentration of the latter administered can cause local superventilation. Thus in any condition in which a portion of the blood from the lungs is unrespired there will be cyanosis and some little hyperpnea, and in such circumstances the gas analysis of the expired air will not measure the partial pressure of the oxygen and carbon dioxide in the aortic blood. Such conditions are found in lobar pneumonia and some cases of cardiac incompetence, and the observation of the effects of the inhalation of pure oxygen in such cases is of diagnostic value to confirm the presence of excessive pulmonary moisture.

**Subacute Bacterial Endocarditis.**—H. J. Starling (*British Medical Journal*, August 17, 1918) records the detailed histories of five consecutive cases of this form of endocarditis on account of its comparative rarity and because of the peculiar manifestations with which it is associated. Of especial interest in these cases was the development of ephemeral spots of painful nodular erythema, as described by Osler and by Parkes Weber. Such spots were found in two of the cases and possibly had been present in a third. They were painful for about two days and remained visible for some four or five days. They might recur on and off for months and appeared most commonly on the finger tips or on the palmar surface of the fingers and caused much distress while painful. Petechiæ were present in all the cases at different times and in varying degrees. Enlargement of the spleen was also found in all the patients, was associated with a good deal of pain in the splenic region, and at times a friction rub was heard over the organ. The fever was never severe, varying between a normal temperature and 102°, and there were long periods of apyrexia. Arterial embolism of unusual degree occurred in four of the cases, but no suppurative process was associated with these emboli. Embolism occurred at the bifurcation of the brachial artery in one patient; at a branch of one of the retinal arteries in another; in a third there were emboli in the radial artery at the wrist, in the popliteal at the bend of the knee and in a branch of the suprascapular; the fourth had emboli in the femoral artery, in the posterior tibial and in the right axillary at the junction of the brachial. Pulsation was often felt distally to the site of embolism in spite of complete occlusion, probably due to a free collateral circulation. In spite of the various evidences of embolism in these cases hematuria has not been marked and it was often necessary to centrifugalize the urine to discover the few red cells present. Only one case gave positive blood cultures and that one showed a gram positive coccus in pairs and short chains. Post-mortem vegetations were found characteristically on the mitral and aortic valves, on the chordæ tendinæ and within the auricles.

**Tonus Waves from the Sinoauricular Muscle Preparation of the Terrapin as Affected by Adrenalin.**—Charles M. Gruber and Casper Markel (*Journal of Pharmacology and Experimental Therapeutics*, August, 1918) state that adrenalin caused a disappearance or a diminution in the tonus waves observed in the sinoauricular muscle preparation of all the terrapins used, and there was a simultaneous increase in the force and amplitude of the contraction, and in some instances an increase in the rate of contraction. When the solution was strong, the waves ceased almost immediately; when a more dilute solution was used, only a few tonus waves appeared after the addition of the adrenalin to the Ringer's solution. The length of time required after an injection of adrenalin, before the recurrence of the waves, varied directly with the strength of the adrenalin solution used. Oxygen added to Ringer's fluid seemed to hasten the process of recovery, which might be only a matter of hastening the oxidation of the adrenalin.



**Oculomotor Reaction to Labyrinthine Stimulation.**—H. B. Lemere (*Journal A. M. A.*, September 14, 1918) concludes from a careful investigation of the reactions, as well as of the actual anatomical positions of the canals in the intact skull, that there is a direct relationship between the stimulation of the canals and the reaction of the muscles of the eye. The superior canals influence the superior and inferior recti of the eyes; the horizontal canals, the internal and external recti; and the inferior canals, the obliques. The horizontal canals are influenced by movements with the head nearly in a horizontal plane; the superior, in a longitudinal plane; and the inferior, in a transverse plane. The anterior vertical canals should be called the longitudinal; the posterior vertical, the transverse, and the conception that the posterior canal of one side is on a plane with the anterior of the other is erroneous and should be corrected.

**Tooth Impacted in a Secondary Bronchus of the Left Lung; Removal by Lower Bronchoscopy after Two Unsuccessful Attempts by Upper Bronchoscopy.**—St. Clair Thomson (*Practitioner*, August, 1918) reports the following, in a child of ten years. The aspiration of the tooth was not noticed or even suspected at the time of the accident. According to the dentist the tooth did not fall from his forceps in the mouth, but it fell on the napkin below the child's chin. As she was recovering from the nitrous oxide anesthesia she threw up her arms and made a deep wide mouthed inspiration. It must have been at this moment that the tooth was aspirated into the left lung. The first attempt at peroral removal failed, owing to the tight impaction of a smooth, hard body, whose slippery, conoidal surface offered no grasp for the forceps. The second effort failed because the patient collapsed before removal had been attempted. The collapse was possibly due to the traction on the heart necessitated by the obliquity of the bronchoscope tube in the peroral route. The removal through an opening in the trachea was found to be simple, safe, and prompt and in no way comparable to the difficulties and anxieties of the two peroral attempts. The following conclusions are arrived at: Endoscopy of the air and food passages must always remain in the hands of the expert laryngologist. If he is well experienced and in regular practice he will first make his approach through the mouth, and in most instances he will succeed. But in a certain number of cases, particularly the rarer and more difficult ones which occur in the left lung, the lower route, through a tracheal opening, is the preferable one to be taken in the interest of the patient. It will also be the route taken more readily by those who are less experienced. The advantages can be summarized as follows: 1. Less anxiety with the anesthetic, as we all know that the administration through a tracheotomy opening avoids all pharyngeal and laryngeal reflexes, and is therefore much smoother and safer; 2. ability to succeed with several trained assistants, because there is no longer the necessity to mobilize the head; 3. the use of a wide and shorter tube, thus obtaining 4. better illumination, 5. a larger field of vision, and 6. increased

facility of manipulation; 7. less leverage and traction on the important structures at the root of the lung; 8. shorter sitting; 9. greater certainty in result; 10. in the event of failure, or of the foreign body shifting its position during the séance, the tracheotomy is a decided security. Lower bronchoscopy will therefore be the necessary method in certain circumstances, or when foreign bodies are tightly impacted, or when they have receded to the deepest corners of the airway, and particularly in the greater difficulties presented by their entry into the left chest. The only drawback is the insignificant one of a slight scar.

**Experimental Meningococcus Meningitis.**—Charles R. Austrian (*Bulletin of the Johns Hopkins Hospital*, August, 1918) found that the cerebrospinal canal can be infected by way of the blood stream. It was impossible to infect the normal cerebrospinal canal of rabbits by intranasal injection of the meningococci. The demonstration of meningococci in the nasal secretion is to be regarded as an evidence of their excretion by this route, but the conclusion is not necessarily warranted that the organisms find a direct portal of entry to the meninges through the nose. When the animal is normal, the presence of a bacteriemia does not lead to the development of meningitis, but when hyperemia of the thecal vessels exists, meningeal inflammation may result. This may explain in a measure the occurrence of the disease in some persons exposed, while others who come in contact with the same sources of infection remain well. Austrian says that his experiments suggest the probability that epidemic cerebrospinal meningitis, occurring in man, is to be regarded as a metastatic disease developing in the course of a general infection.

**Noninfluence of Rise in Body Temperature Induced by Drugs upon the Protein Quotient and Enumeration of White Corpuscles.**—Florence McCoy Hill (*Journal of Pharmacology and Experimental Therapeutics*, August, 1918) found that fluidextract of ergot, given intravenously in doses of from one to 1.5 c. c. per kilogram of body weight caused a steady rise of from 1.5 degrees to 2.2 degrees of body temperature in rabbits. Higher doses proved fatal, the rabbits dying either immediately on receiving the intravenous injections, or in clonic convulsions following the injection directly, and ending in death in twenty minutes. Calcium lactate, given intravenously in doses of from five to eight c. c. of a one twentieth solution, induced an initial fall in temperature of from 0.4 degrees to 0.6 degrees, while in the higher doses symptoms of calcium lactate poisoning were noticed. This drop in temperature was followed by a marked rise of from 1.5 degrees to 2.5 degrees and disappearance of the symptoms of poisoning. Doses higher than eight c. c. were fatal. A study of the leucocyte count and protein quotient in rabbits whose normal range was known showed no definite alteration after administration of sublethal doses of either fluidextract of ergot or calcium lactate, so that the experiments show that the "aseptic fever" produced by the drugs used causes no change in the globulin content of the blood, nor in the leucocyte count.

# Proceedings of National and Local Societies

## MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held March 18, 1918.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn,  
in the Chair.

*(Continued from page 795.)*

**Camp Sanitation.**—Dr. REYNOLD WEBB WILCOX, late major, Medical Reserve Corps, said that camp sanitation, dealt with, first, the selection of camp sites; second, the suitability and excellence of all foods and drink used by the soldiers; third, the disposal of wastes; and, finally, with individual personal hygiene. Theoretically, camp sites were selected upon the advice of the sanitary medical officer attached to that particular body of troops. In the field, they were selected from military necessity, their value as camp sites from the sanitary standpoint being a secondary consideration.

The inspection of food and water was an important part of camp sanitation. In the mere matter of meat, for instance, there were regulations which the contractors were obliged to observe, i. e., accept only meat of steers between the ages of four and six years of age. The water supply must be safe and adequate. If water was used from a reservoir, either natural or artificial, and this reservoir became infected with algae, it was easily cured with an extremely weak solution of copper salts. Ordinarily, the water which was doubtful in regard to its bacterial content could readily be made potable by the addition of about fifteen grains of sodium hypochlorite to thirty gallons of water. This is usually done as a matter of precaution on the march, and in permanent and semipermanent camps. The Lyster bag with its four spigots at the bottom, with one tube containing the proper amount of the hypochlorite, rendered almost all of the pathogenic bacteria harmless in about thirty minutes. Theoretically, boiled water is the safest, but as a matter of fact opportunities for boiling water were not always present and the flat taste of the boiled water became unpleasant.

The disposal of waste was extremely important. Ordinarily this could be burned or buried, and some of it could be sunned, but circumstances might forbid the use of any one or two of these methods. Burning probably was the safest, and the Rock Pit incinerator of standard size, properly managed, disposed of an enormous quantity of waste. This excavation was lined with "nigger heads" which would stand the heat without cracking; and, if used with care would take care of the waste of a regiment effectively and safely. Three such incinerators would take care of the entire waste of 71,000 men. Human excreta is taken care of in latrines, kept under careful and continuous inspection, with sufficient accommodation for about five per cent. of the command at one time. Straw is sprinkled over the bottom of the pit and then saturated with crude oil and fired. As soon as the flames become low enough, the wooden covers are placed over them and the pit left filled with smoke, which disposes of

all the flies. This made the excreta harmless, so far as infection of the soldiers was concerned. Eventually, when the latrines are nearly full, they are covered in. The picket line was always a source of great annoyance in camp sanitation, for horses that were tormented by flies easily got out of condition and were useless for military purposes. Constant watchfulness was necessary. All the horse droppings were raked up, dried in windrows, and burned as soon as possible. The soil of the picket line was covered with straw or hay, saturated with oil every three or four days and the whole set on fire. This destroyed the larvae of flies in the upper two or three inches of soil and prevented those embedded deeper from coming to the surface. Screening was necessary at times. Every particle of waste food, crumbs, etc., was destroyed by fire and the empty cans burned out. Mosquitoes were abolished by destroying their breeding places. From the medical standpoint a camp with a large sick call of soldiers complaining of diarrhea, meant a laxity in the inspection of foodstuffs and drinks and in the disposal of wastes. An ideal camp was flyless.

How is all this brought about? The staff officer has command only within his own department. He advises the commander of the camp as a staff officer as to matters which require attention. The line officer either approves of his recommendations, or if he disapproves he states why in his endorsement, and the recommendations and the endorsement automatically go to the highest military authority upon whom rests the responsibility for the personnel and material necessary for the efficient care of the sick and wounded in a camp. Camp sanitation consists in doing the necessary things to make the site safe by using the available material and personnel. The recommendations of the sanitary officers should deal with the measures and the conditions of which the danger was immediate and important. These recommendations should ignore remote and theoretical dangers; and not only must the sanitary officer be trained and intelligent, but accustomed to effective administrative work according to military methods.

CAPTAIN ALEC N. THOMSON, M. R. C., of the Division of Venereal Diseases, Surgeon General's Office, said that he was on his way to Boston to assist the Health Department of Massachusetts in a state wide campaign regarding venereal diseases. Doctor Park had given him a valuable cue in speaking about the carrier rate of the important infectious diseases in the army. No carrier rate had been computed for venereal diseases in the army, properly speaking, but there was a tremendous carrier rate in the civilian community. Some very elaborate plans had been started in regard to the control of syphilis in the service. Doctor Pollitzer referred to syphilis as it related to the future of the country. The man in the early stages of syphilis was kept in the army hospital for a certain period, usually two weeks, during which time he could be sterilized with salvarsan, etc. Patients with gonorrhea were kept in the hospital until there was no



discharge, and when they were out of the hospital and assigned to light or even full duty, they were restricted to the post until a genitourinary specialist decided that the condition was no longer communicable in the sense of danger to the general population. That restriction had been going on for years with regular army men, and since September with the drafted men. Doctor Thomson said he knew of one man who had never been allowed leave once since he went to camp because he was in a chronic condition when he came from the civilian community. He was booked as a communicable venereal case because he had a discharge from which gonococci were recovered, and he was still kept under restriction. The man had been in the hospital most of the time since entering the army, and when his comrades sailed for France he was left behind. There was venereal inspection of every man twice a month in camp, and once just before sailing. If any cases were found among the men on their arrival abroad it was unfortunate for the physician who had made the final inspection. General Pershing had a way of inquiring why any case of venereal disease was permitted to slip through. The infected soldier would not have a chance to even try to get "over the top."

Why did the army exercise its authority outside the reservation to attack venereal disease? For the same reason that it did so to attack malaria or yellow fever, or in the control of typhoid. It was necessary to go outside in the control of venereal disease, for the source of infection was in the civilian community, and the cooperation of the civilian community was essential. The civilian community was expected to send men to the army *fit to fight*, and the army would do its best in keeping them fit. Doctor Pollitzer had described some of the measures established for carrying out this work. Health officers and physicians in general could give much help in this direction. The vital thing was to arouse the civilian community to an interest in the subject and to demand that the police do their part in keeping the disease from getting into the camps, via the prostitute. Infected women in this nefarious trade should be handed over, not alone to the police department, but to the health department, where they belonged as disease carriers, and held until their syphilis or gonorrhea was cured. The proposition before the army was to get at the source and remove it, as in any other disease. If the civilian community would earnestly cooperate, it could be done. The State of New Jersey knew more about the status of venereal disease within its own borders than ever before. Every time a Jersey boy came into the service with venereal disease the camp sanitary inspector knew it within three or four days. Upon his reporting the facts to the State Health Department, they investigated conditions in that town. New Jersey passed a new law to help the army; New York State had the matter under consideration, and the bill would be brought up before the Legislature in a few days. California was the first State to pass a law for co-operation, appropriating \$60,000 for this purpose; hospitals and dispensaries had been established, full time workers employed, and a state wide campaign instituted. The zone lieutenants of the army—and

there was one at every camp—kept the matter constantly before the public, and the police well informed as to conditions. Hundreds of sources of infections were being reached. The first line of defense was education; the soldier was getting it, and its effects were already apparent. They were realizing the desirability of continence in the big job that they were training for, to win the war, and if it was going to help accomplish this they were willing to stay away from women. Then there was the matter of prophylaxis. From the reports of thousands of examinations it would seem that over fifty per cent. of prostitutes had syphilis, and almost all had gonorrhea with clinical symptoms. The men were accordingly told, in the talks given on prophylaxis, that any woman who would give herself to any man but her husband could be assumed to have venereal disease, and that all men so exposed should be treated immediately after infection; that a man who did not submit himself to such early treatment was not doing his duty but was disobeying orders and would be subjected to discipline, restriction from leave, imposition of extra duty, etc., if he contracted the disease. There was no doubt that prophylaxis was doing a great deal to keep down the development of new cases, and in addition, as a result of the educational propaganda, the men were not exposing themselves as they did before all these protective measures were established by a paternal government.

MAJOR THOMAS DARLINGTON, M. R. C., said that all over the United States there was a feeling of depression because of the war, and so much would be lost before it was finished, but it would be a cause of deep rejoicing if all these people could hear what had been said tonight regarding the advantages that would accrue as a result of the care of the authorities for the enlisted men. The work which had been described by Major Pollitzer and Captain Thomson was most encouraging. The attitude at Washington and in the army itself, and as a result what had actually been accomplished, was splendid, but it should not be forgotten that it has been due as much as anything else to the civilian doctors, the men of the Medical Reserve Corps, who had gone into the army and given their best efforts without stint, doing everything they could to educate the people both in and outside of the army, and spreading broadcast knowledge of how life and health could be best conserved under the new conditions of living.

Dr. HERMANN M. BIGGS said that the work done by the medical officers was on a par with the spirit shown by everyone engaged in this war; there was an earnestness and a high idealism that was very apparent. The men were healthful, square jawed, sincere in their desire to do everything to accomplish their high purpose. It was like a great crusade. Every means of education, moral, physical, and intellectual, were being employed for the aid of these boys. Doctor Biggs said that he had recently met a quartermaster from a nearby camp and had asked him what sort of books he should send to amuse the men. The quartermaster told him not to send any, as the men had no time to read them; they were studying nothing but war, and were intent upon that, and had no time to spare for any-

thing else. The medical men and all the others who were working for the army are to be commended for the wonderful work they are doing, not only for the present but for future generations.

*Stated Meeting, Held April 15, 1918.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn, in the Chair.

**X Ray Treatment of Tumors of the Breast.—**

Dr. J. H. BRANTH reported a case in which the patient had been cured of axillary and mammary tumorous growths of five years' standing by x ray and high tension high frequency treatment. She was now practically well, but was still taking one x ray treatment a week, of about seven minutes, in the axilla and also on the breast. Doctor Branth said that he had had a few other such results, but the cases required a longer course of treatment than this one. Nearly all tumors of the breast became malignant, if they were not so from the beginning. If cancerous from the beginning, they were local at the start, and should be excised; it was practically too late if the capsule was broken and diffusion had taken place.

**Papillary Cystadenoma of the Ovary.—**

JOHN CORCIA, of New York, said that the question as to whether cystic papillary growth were or were not malignant, or to what extent they underwent malignant changes, was not fully determined. Cases, apparently innocent, sometimes had a very rapid recurrence, proving to be malignant, while in other cases which clinically presented all the character of malignancy, the patients had been permanently cured by operation. The following case seemed worth reporting on account of its peculiar features. The patient was an unmarried woman, thirty-two years of age, a school teacher. She had been amenorrheic for six months before coming under examination. Her abdomen had been gradually increasing in size for a year, eventually reaching such distention as to interfere seriously with digestion and respiration. She complained of no pain, but of weakness and extreme emaciation. She also had dyspnea and vomiting and was unable to retain any kind of food. Physical examination showed the abdomen to be very much distended, causing enlargement of the costal arch, and there was considerable quantity of free fluid in the peritoneal cavity. Vaginal and rectal bimanual examination were negative, as it was impossible to locate the uterus and adnexa. Very careful palpation gave the impression of the presence of something solid or semisolid in the abdominal cavity, the origin and nature of which it was quite impossible to establish. A diagnosis was made of probable ovarian cyst or abdominal tuberculosis. Laparotomy was done and on opening the abdomen the case seemed quite hopeless. In the peritoneal cavity there were about five gallons of clear liquid and an extraordinary number of cysts of different sizes, surrounding with racemose disposition a central and larger cyst containing more than a gallon of fluid. On the external and internal surfaces of these cysts were numerous papillomata which extended also into the peritoneum, intestines, bladder,

and to the ovary on the other side. After tapping the central cyst, the whole mass was removed. It originated on the left side, but no trace of the ovary could be found. The right ovary was also removed. It was studded with papillary growths and a few small cysts. As much as possible of the papillomata scattered on the peritoneum and other organs was removed and the abdomen closed without drainage. The patient had an uneventful recovery and after three weeks was able to leave the hospital. Seven years after the operation she was still enjoying good health, presented no sign of recurrence and could be counted among the cases of papillary cystadenoma of the ovary reported permanently cured. Although its histological examination did not show real sarcomatous or carcinomatous degeneration, clinically it had to be considered malignant on account of the ascites and of the implantation of the papillomatous growths upon the peritoneum and other organs of the abdominal cavity; and of the cachectic condition of the patient.

To explain the pathogenesis of the proliferating cysts one must remember that their walls are formed of three layers, the external of fibrous tissue, the middle of connective tissue, and the internal formed by a capillary plexus covered by epithelium. According to Waldeyer, this epithelium was formed of very short cylindrical cells, but Mallassez and De Siney insisted on the polymorphism of these cells and demonstrated also a subepithelial endothelial layer, proving that on the same type of cyst the most varied forms of deformed epithelium could be found. Besides, they established a certain relation between the epithelial cells of these cysts and that of the epithelioma of the breast. Now the most hybrid forms of degeneration might be found in such cysts. The main forms, according to Waldeyer, were the papillary and the glandular, or both, according as they originated from the middle or internal layer. When one or both of these forms existed it was easy to understand how these cysts might also have a carcinomatous or sarcomatous degeneration at any moment, presenting a complete picture of malignancy. While the dermoid cysts might be quiescent for many years, the papillomatous cysts had a marked tendency to multiply, thus seriously affecting the general health of the patient. But unfortunately it was not known yet to what extent these cysts had to be considered malignant. Even the pathological examination might fail owing to the limited area of degeneration in the neoplasm, but when the affection was bilateral and when the barrier of the fibrous tissue forming the external layer of the cysts was broken and there existed ascites and implantation of the papillary growths on the peritoneum and other organs, they had to be considered malignant and allied to carcinoma. Some time ago papillomatous growths were considered as forming a special class of malignant tumors, and many times it happened that cases which at operation presented a very extensive process had been declared inoperable, with lethal termination.

From a brief review of the reported cases the following conclusions were reached: 1, Papillary cystic growths should always be considered clinical-



ly malignant, but operation might give unexpectedly good results; 2, early operation was always desirable when a diagnosis of cyst was made; and, 3, in the advanced state, when there was ascites and great emaciation of the patient, the diagnosis of cyst was difficult to differentiate from a general cancerous or tuberculous affection of the abdomen.

Dr. THOMPSON T. SWEENEY expressed his complete agreement with Doctor Corcia's views. Cases of cystadenoma were generally considered to be due to the ingrowth of superficial germinal epithelium, and classified under two types according to their chemical contents, the pseudomucous and the serous, both rather prone to develop papillomata. There might be only a few papillomatous growths, or they might fill the whole cyst cavity, authorities differed very greatly excepting in regard to the frequency with which proliferating cysts of the ovary tended to degeneration. Schottlander found one third of them to be malignant and the other two thirds to be potentially malignant. Pozzi and McCallum believed that they were not malignant in themselves. It was well, however, to suspect every cyst of the ovary of a tendency to become malignant. Nicholson and Pick reported an autopsy on a woman sixty years of age with a cystadenoma of the left ovary which was pseudomucinous. It was entirely benign histologically, but had destroyed the cervix by direct invasion, and the lungs were studded with metastases which histologically were identical with cystadenoma. Yet Pozzi and McCallum stated that these papillomatous growths never produced metastases, that they were simply grafts. Regarding treatment, not every ovary or both ovaries should be removed because a cyst was found. The proper treatment was operation and the removal of the cyst as soon as the diagnosis was made. Rupture of the cyst and freeing the contents should be avoided, for if it contained papillomata it would invite trouble. Then there was the question of the frequency with which proliferating cysts of the ovary might recur in the other ovary. The question, should both be removed, must be settled by the operator at the time of the operation. Naturally, he would hesitate to remove an ovary that was apparently healthy in a woman who wished to have children.

**Syphilis of the Stomach.**—Dr. ALBERT F. R. ANDRESEN, of Brooklyn, said that until very recent years, syphilis of the stomach was considered a medical curiosity, references to it in the literature being rare, and the diagnosis in the few cases reported being based either upon autopsy findings or upon a disappearance of certain gastric symptoms under antisyphilitic treatment. The use of the x ray and the Wassermann reaction had made possible a more certain diagnosis. Writers were still, however, very much confused in regard to which cases should or should not be reported as gastric syphilis. On the one hand they claimed that only cases demonstrated by microscopic examination of the suspected tissue should be so reported, whereas at the other extreme they based their diagnosis entirely on the clinical cures of gastric symptoms after antiluetic treatment. Autopsies had revealed a very small number of cases in which histological diagnoses of gastric syphilis were made. The pro-

portion of syphilitics with gastrointestinal symptoms or lesions of various kinds had been reported in the literature as being from .3 to 2 per cent. Of one thousand cases studied by the writer, in which gastrointestinal symptoms were present, seventy gave a positive Wassermann reaction although only one was a definite, demonstrable case of syphilis of the stomach. It was unwise to class all gastric ulcer cases with positive Wassermann reactions as cases of gastric syphilis. The symptoms of gastric syphilis were not characteristic. In general they depended upon the character and the location of the lesion. The small localized areas or small gummata might produce all the symptoms typical of gastric or duodenal ulcer, namely, epigastric pain in definite relation to food intake, sour regurgitation, constipation, and, more rarely, hematemesis or melena. Perforation, acute or chronic, would give the same, though possibly not quite as severe symptoms as with ordinary ulcer. Pyloric stenosis usually resulted in hypersecretion of a hyperacid gastric juice, just as in pyloric stenosis due to simple ulcer, and was associated with the same symptoms of pain and delayed vomiting. More extensive infiltrations of the stomach wall resulted in reduction of gastric acidity, even to the extent of a total achylia, with its attendant dyspeptic, diarrheal, and hemolytic manifestations. Hourglass contractions, occurring usually in cases with somewhat more extensive involvement of the stomach wall, were also attended by the symptoms of subacidity or achylia, as well as the usual vomiting of this type of stenosis. Perigastric adhesions might produce symptoms of hyperacidity or hypoauidity, depending on the extent of involvement of the gastric mucosa, and the usual symptoms occurred when stenosis developed. Loss of weight was a constant symptom in all types of cases, together with a more or less severe anemia. Other symptoms of syphilis occurred coincidentally. While the gastric symptoms might be very severe, a fatal termination always seemed a long way off.

The diagnosis of syphilis of the stomach was difficult and often overlooked. The lesions most likely to be confused with gastric syphilis were gastric ulcer or carcinoma. A routine Wassermann test in all gastrointestinal cases, especially those showing evidence of gastric lesions, helped to detect many cases. A strongly positive Wassermann reaction invited further study of the gastric lesion. A negative Wassermann reaction did not definitely rule out syphilis, as spirochetæ were sometimes found in the tissues in latent cases, with negative Wassermann reactions. The presence of luetic lesions elsewhere was suggestive and, in congenital cases, the family and previous history and the general appearance of the patients should be taken into consideration. The fact that apparently simple symptoms had not been relieved by ordinary treatment should occasion a suspicion of their specific origin. An absolute diagnosis could only be made on microscopic examination of tissues obtained at operation or necropsy, but even here syphilitic lesions could not always be differentiated from tuberculosis. Gastric analysis did not aid materially in the diagnosis. The x ray examination was a great help in diagnosis, although it only indicated

the size, location, and general character of the lesion.

The treatment of gastric lues was primarily the treatment of the lues itself. On the institution of the antiluetic treatment, especially on giving salvarsan, there might temporarily be an irritation of the gastric lesion, causing an increased swelling perhaps resulting in increased obstructive symptoms for a time. As a rule, however, there was an immediate marked amelioration of all symptoms, with the maximum improvement attained within from four to six weeks. Pyloric or hourglass lesions might be cleared up completely, but more frequently a cicatricial stenosis developed in these cases. Patients with perigastric adhesions would improve under treatment, but, would not be cured, while the cirrhotic type of stomach would necessarily remain small. The ulcer or gumma cases were probably the most favorable for treatment, but in these the ulcer symptoms should not be neglected. The diet should be soft, soothing, and concentrated, with frequent feedings. Demulcents and alkalies might be indicated, and lavage necessary. Rest was important. Foci of infection in other parts of the body should be eradicated if possible. Operative procedures were indicated only in the presence of complications and should not aim at the radical removal of the gastric lesion, but should be purely palliative. Deformities or stenoses, severe hemorrhages and perforation required suitable operations, gastroenterostomy being the usual procedure. As a rule, complete and permanent relief from symptoms did not occur in more than forty per cent. of the cases, even where the best treatment was carried out.

Dr. WILLIAM A. DOWNES said that his observations in reference to the incidence of this condition corresponded to those made by Doctor Andresen. His own opinion was that syphilis of the stomach was much more common than was usually supposed, he himself having seen eight cases. It was very difficult to determine definitely whether a given duodenal ulcer in a syphilitic patient was syphilitic or not, but it was better to give the patient the benefit of syphilitic treatment. One of the most common symptoms of syphilis of the stomach was extreme loss of flesh. These patients lost in proportion more flesh than any other stomach cases. One of the patients, a woman, went down from 150 to seventy-five pounds. It was a nonoperable case, but, treated with salvarsan and mercury, the patient's weight was doubled in three or four months. The pathological findings had been very unsatisfactory. The treatment depended upon the stage in which the case came under observation. If there were infiltrating ulcerations before cicatrization had taken place and there was no obstruction at the pylorus, only medical treatment was demanded. Operative treatment became necessary to relieve the symptoms due to obstruction as shown by loss of weight, nausea, and vomiting. In five of the eight cases the patients had been entirely relieved of symptoms, had gained in weight, and were following their usual occupations. Doctor Downes believed that it was inadvisable to defer operative treatment for any length of time, but antisiphilitic treatment was justified for a short period before resorting to operation.

Dr. ROBERT COLEMAN KEMP expressed his interest in the subject of syphilitic stenosis and presented some radiographs of cases similar to those shown by Doctor Andresen. It had been his experience that in the tertiary stage of syphilis there was generally a deficiency or absence of hydrochloric acid and this was to be expected on account of the fibrosis of the liver, spleen, pancreas, or stomach. As Doctor Andresen said, there might be a fair amount of acidity, but generally in the progressive cases that had lasted for some time the findings had been very much those of cancer. One did not often find carcinoma developing upon a syphilitic ulcer, and when an ulcer of the pylorus or duodenum was determined to be syphilitic it seemed preferable to leave it alone. As far as diagnosis was concerned, a positive Wassermann and the clinical symptoms of syphilis would be conclusive. There were gastric cases with tertiary syphilis and cases of arteriosclerosis with a history of syphilis and positive Wassermann, or with spirochetes in the blood. They did very well under antisiphilitic treatment. The speaker agreed with Doctor Andresen that these cases should be carefully studied and given the benefit of the doubt before resorting to surgery. In many cases, however, a gastroenterostomy was necessary for the relief of conditions advanced too far for other therapy.

Dr. TASKER HOWARD, of Brooklyn, said that in a series of 100 syphilitic patients, he had found only four with any digestive symptoms. One was in the secondary stage and had symptoms of gastric ulcer. The other three were suffering from *tabes dorsalis*.

(To be continued.)

## Book Reviews.

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

*Surgery of the Spine and Spinal Cord.* By CHARLES H. FRAZIER, M. D., Sc. D., Professor of Clinical Surgery and Surgeon to Hospital of University of Pennsylvania, Philadelphia. With Six Colored Plates, Two Charts, and Three Hundred and Seventy-eight Illustrations in the Text. New York and London: D. Appleton & Co., 1918.

In reading through this book, one is most favorably impressed by several features. In the first place, the book work is very good, the illustrations are excellent, both as drawings and because they illustrate so well the points under discussion. Moreover, the book is founded on the personal experience of the author and his collaborators. There is practically nothing copied from other books, although frequent references are made to the work of other writers.

A valuable feature is that the anatomy of the spinal column and its contents is clearly and concisely given. There is an interesting chapter on the cerebrospinal fluid, which brings up to date the results of recent investigation, and a clear exposition is made of the bearing of variations in the spinal fluid, both as to quantity and quality, upon the probable cause of the lesions in the spinal canal.



In addition, there is given in detail the method by which each of the tests is to be made. The method of intraspinal treatment is also given in detail. The anatomical relations of the spinal segments to their surroundings and to their peripheral connections are given in a way that is more easily understood than is usual in the majority of textbooks, and the question of reflexes and the influence upon the reflexes of injuries to the spinal cord is put forth very clearly.

The chapter on röntgenology of the spine warns of the necessity for a careful reading of plates. Errors that are common because of distortion of the rays are pointed out and a good working idea of how to read x ray plates of the spine is given. Every surgeon who handles cases of spinal disease, or injury, should be able to interpret the plates himself, in order to do his full duty by his patient, and he will be greatly helped by a careful reading of this chapter.

Perhaps the most interesting chapter in the book is the one on fractures and fracture dislocations with injury of the cord. The experimental work of Allen on cords of dogs gives the only rational foundation for treatment in these cases, and while the indications seem clear, there still is, and probably will be for some time, a great deal of argument as to the desirability of applying the deductions from experimental dog work to the treatment of human beings, who have suffered from injury to the spine, with associated cord lesion. In the human beings, it is usually impossible to attempt the exposure and splitting of the cord within the period of three or four hours, which seems to be the time limit before edema and hemorrhage have caused serious damage to the cord substance. While the work here quoted gives a most helpful and hopeful turn to the perennial discussion as to the best treatment of these injuries, it will be necessary for some one to have a series of cases, so as to operate in a portion of them and keep the others tentatively as a check to determine just how far Allen's procedure is applicable to the human subject, under the conditions that usually obtain.

One could take up each chapter in detail and find much to praise definitely, and little if anything, to criticise adversely. There are a few typographical errors, which change the meaning of the context somewhat, but these errors are discounted in the immediately related context, so that one can, in those few instances, avoid misunderstanding of the author's meaning.

On the whole, one is driven to feel that the book is a very marked accession to spinal surgery, and every man who is interested in that work should have the book handy for reference.

## Births, Marriages, and Deaths.

### Died.

ARTIGUES.—In San Francisco, Cal., on Tuesday, October 22d, Dr. Joseph Emile Artigues, aged fifty-five years.

BECK.—In Asbury Park, N. J., on Saturday, October 19th, Dr. Murray D. Beck, aged twenty-seven years.

BROWN.—In Houston, Texas, on Friday, October 25th, Dr. Herbert Edges Brown, aged forty-three years.

BRYANT.—In Carpenter, Ky., on Friday, October 25th, Dr. William M. Bryant, aged forty-two years.

BURDICK.—In Oneonta, N. Y., on Monday, October 21st, Dr. Lewis W. Burdick, aged thirty-seven years.

BURKS.—In Fresno, Cal., on Monday, October 21st, Dr. William Tillman Burks, aged sixty years.

CONNORS.—In Shelton, Conn., on Thursday, October 24th, Dr. Thomas A. Connors, aged twenty-eight years.

GORRILL.—In Buffalo, N. Y., on Sunday, October 27th, Dr. George W. Gorrell, aged forty-one years.

GROSVENOR.—In New York, N. Y., on Tuesday, October 29th, Dr. Robert Grosvenor.

HANSON.—In Los Angeles, Cal., on Saturday, October 26th, Dr. Wayne P. Hanson, aged thirty years.

HAWLEY.—In an Army Hospital, in France, on Friday, October 4th, Lieutenant Franklin M. Hawley, M. C., U. S. Army, of Mercer, Wis., aged fifty-five years.

HAWLEY.—In Georgetown, Mass., on Monday, October 28th, Dr. John Winthrop Hawley, aged thirty-one years.

HEYEN.—In Northport, L. I., on Wednesday, October 30th, Dr. John P. Heyen, aged sixty years.

HORTON.—In Edgerton, Wis., on Saturday, October 5th, Dr. Clyde Switzer Horton, aged forty years.

HULL.—In Little Rock, Ark., on Saturday, October 19th, Dr. Eugene F. Hull, aged thirty years.

KAUFMAN.—In New York, N. Y., on Monday, October 28th, Dr. Joseph D. Kaufman, aged thirty years.

KEEN.—In Philadelphia, Pa., on Wednesday, October 23d, Dr. James Watt Keen, aged fifty-six years.

KER.—In New York, N. Y., on Friday, October 25th, Dr. John E. Ker, of Kingston, Jamaica, aged fifty-eight years.

KITSON.—In Yonkers, N. Y., on Saturday, October 19th, Dr. Frederick H. Kitson, aged thirty-five years.

L'AFRICAIN.—In Hempstead, N. Y., on Monday, October 28th, Dr. Urban L'Africain, aged twenty-eight years.

LANE.—In Boston, Mass., on Tuesday, October 29th, Dr. Francis A. Lane, aged fifty-two years.

MC EWEN.—In Summerside, Prince Edward Island, Canada, on Wednesday, October 23d, Dr. Henry E. McEwen, aged fifty-four years.

MCKAY.—In Salem, Mass., on Tuesday, October 29th, Dr. Andrew J. McKay, aged forty-four years.

MEYER.—In Brooklyn, N. Y., on Thursday, October 24th, Dr. David W. Meyer, aged forty-eight years.

MILLER.—In Millersburg, Ky., on Friday, October 25th, Dr. William A. Miller.

NORRIS.—In Florence, Italy, on Tuesday, October 22d, Dr. Isaac Norris, of Philadelphia, aged eighty-four years.

OLANDER.—In St. Paul, Minn., on Friday, October 25th, Dr. Edwin Olander, aged forty-one years.

OZMENT.—In Fort Smith, Arkansas, on Wednesday, October 16th, Dr. Samuel J. Ozment, aged fifty-two years.

PALOMEQUE.—In New York, N. Y., on Thursday, October 31st, Dr. Jose Palomeque, aged seventy-five years.

REID.—In Roebuck Springs, Ala., on Friday, October 25th, Dr. L. E. Reid, aged thirty-five years.

RUSH.—At Camp Merritt, N. J., on Friday, October 25th, Dr. Playford L. Rush, of Englewood, N. J., aged twenty-nine years.

SAMELSON.—In Fresno, Cal., on Saturday, October 19th, Dr. S. Samelson, aged eighty years.

SCHALLERN.—In Ripon, Wis., on Monday, October 21st, Dr. Ottman Schallern, aged seventy years.

SCHWARTZ.—In Fresno, Cal., on Monday, October 21st, Dr. Edward I. Schwartz, aged twenty-seven years.

STAHL.—In Brockton, Mass., on Sunday, October 27th, Dr. Alfred F. Stahl, aged fifty-two years.

STEPHENS.—In Gardiner, N. Y., on Wednesday, October 30th, Dr. M. E. Stephens, aged fifty-five years.

THOMPSON.—In Lakewood, N. J., on Monday, October 14th, Dr. Otto C. Thompson, aged forty-two years.

TURNER.—At Fort Oglethorpe, Ga., on Sunday, October 20th, Lieutenant Ralph Waldo Turner, M. C., U. S. Army, of Troy, N. Y.

VEST.—In Clarksville, Va., on Friday, October 25th, Dr. William Waller Vest, aged forty-eight years.

WEBB.—In Winlock, Wash., on Monday, October 21st, Dr. William Walter Webb.

WHITEHEAD.—At Hoosick Falls, N. Y., on Monday, October 28th, Dr. Ira Conduit Whitehead, aged thirty-two years.

# New York Medical Journal

INCORPORATING THE

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WHOLE No. 2085.

## Original Communications

### OPERATION FOR SENILE CATARACT.

*Some Personal Experiences.*

By FRANK ALLPORT, M. D.,  
Chicago.

This paper is not intended to present any new facts concerning operations for senile cataract. I desire merely to outline my own personal views on the subject; to tell what methods I like best, and what procedures have given the most satisfactory average results in my hands. I do this because the profession is somewhat at variance as to the best methods of operating, and the long experience of any man of average ability, experience, and surgical skill must be of more or less value in its influence. It is only by the frank and honest exchange of personal views and the surrendering of desired and brilliant, but perhaps impracticable technic, that we shall ever find our feet resting on solid ground and the cataract operation placed in a secure position, from whence it cannot be disturbed except by strong and indisputable evidence.

The object of this paper is to narrate in a simple manner my own method of operating; not that I consider it better than other methods, but it is merely the routine that I have found most satisfactory to me. Other operators have other methods that very likely are better than mine, methods that seem to suit their particular needs, and it would be a mistake for them to change unless they sincerely desired to do so. Neither shall I attempt to go into details concerning all the steps of the operation, as this would obviously be almost intrusive, as there are, of course, some things that everybody does—no matter what may be their practice in other respects.

In the first place, I never operate upon more than one eye at a time. Patients should be in the hospital twenty-four hours before a cataract operation is performed. By so doing they become accustomed to their surroundings, are more quiet, and will act better on the operating table. The bowels should be moved gently and a careful diet prescribed, so that indigestion will not be troublesome after the operation. Besides this, the eye should be carefully prepared for the ordeal by being irrigated three times a day with a one in 10,000 bichloride solution, followed by the use of White's bichloride ointment, which has the following formula:

Mercury bichloride, .....	1 gr.;
Atropine sulphate, .....	30 gr.;
White petrolatum, .....	3,000 gr.

An hour or so before the operation the pupil should be dilated with atropine and the lashes should be gently but firmly scrubbed with one in 10,000 bichloride solution and gauze, to get them as clean as possible. The entire face—the eyes, the brows, etc.—should be well cleansed, and after the patient is on the operating table the face should be again washed, the eye irrigated, and the lashes and eyebrows gently scrubbed.

It is better to perform the operation on the bed where the patient is to lie, or perhaps in the same room or ward or, at least, to have the patient moved as little as possible after the operation. If the patient is moved from an operating room to a private room or ward, the moving should be done as quietly as possible and superintended by a reliable and conscientious person. The patient should not help himself at all.

I always wear thin, tight fitting, rough surfaced gloves. The operation is much safer and I can handle delicate instruments perfectly well with them on.

Good illumination of the field of operation is essential to the best operating. I prefer a hand electric light with condensor, and a glazed globe. Besides this, a trained assistant focuses accurately a large convex lens on the eye, between the hand light and the eye. My associate, Dr. James Smith, has devised what I consider to be the best light for cataract operation that I have ever seen. He has merely taken a Ziegler hand lamp and fastened it to an arm that projects out beyond the light. To this arm is attached a roundish concaved bifurcation, into which can be slipped any strength of convex glass to be found in a trial case. This glass slips in the bifurcation just as a glass is slipped into a trial frame. In this way a stronger or weaker glass can be inserted and a corresponding focus of intense illumination thrown accurately upon the eye. I like the hand lamp much better than the stationary lamp, as you can put it wherever you want it. This addition to the Ziegler light, devised by my associate, Doctor Smith, produces an ideal illumination for a cataract operation.

All water used for cleansing and irrigating should be warm. It should not be dropped on the eye from a distance, as this startles the patient and may make him jump, which would be especially unfortunate after the eye had been opened by the incision, as under these circumstances jumping and squeezing of the eye might be very unfortunate. The speculum should be introduced gently and the



patient told what is being done. Be careful not to press on the arms of the speculum. Teach the attendants and the patient to keep quiet, and reassure the patient by a friendly word once in a while, telling him what is being done so he will not be taken by surprise.

When the initial puncture of the incision is made, the handle should be elevated a little so that the knife does not pass between the corneal layers, but directly through them all. When the counter puncture is made in the opposite side of the cornea, the handle should be somewhat depressed, as otherwise the knife is liable to pass too deeply into the eye and into the sclera.

I use a solution of one per cent. holocaine with four per cent. cocaine, and I always put a drop in the eye not operated upon, as it induces more ocular quietude. If a conjunctival flap is made, a few drops of adrenalin should be used, as otherwise considerable hemorrhage will occur, which may flow into the anterior chamber and embarrass the operator and lessen the chance of a successful result. A conjunctival flap lessens the chance of infection and hastens healing. Before the iris is cut, a drop of the holocaine and cocaine solution may be dropped upon the incision, which will obtund sensibility. The patient should be told that this step in the operation may be a little painful, and he should be cautioned not to jump. Where it is possible, I very much prefer to make a preliminary iridectomy. I am confident that this renders the cataract extraction much safer and surer. There are several reasons for this opinion. In the first place the attack on the eye is divided into two parts: first, the iridectomy, and second, the removal of the lens. It is easier to recover from a thus divided assault than if both are done at the same time. Besides this, if the iridectomy is done separately, there is very little and sometimes no hemorrhage when the lens is removed, which of course greatly facilitates the operation. Another important reason for a preliminary iridectomy is, that a patient, by having once gone through the iridectomy operation always behaves better when the real cataract operation is performed. I might say at this juncture that I consider the cataract operation with an iridectomy a safer and surer operation than the operation without an iridectomy and for this reason I always make an iridectomy.

The iridectomy should be as small as possible and this can be done by holding the scissors vertically, instead of horizontally. After the iridectomy, I take out the speculum, as this renders the escape of vitreous much less likely to occur. I then pull up the upper lid with a strabismus hook and rupture the capsule with the cystotome, which should always be very sharp so that the capsule can be easily and accurately ruptured. The assistant pulls down the lower lid with his finger. In this way the eyelids are freely opened without pressure on the eyeballs. I then press upon the lower portion of the cornea with a spoon, to gently coax the lens from its bed and at the same time gently press upon and depress the posterior lip of the incision with another spoon in order to open the wound and encourage the escape of the lens, which should always be slowly and not suddenly delivered.

For the last few months I have been using the lid elevators of my friend, Dr. W. A. Fisher, of Chicago, instead of a speculum, and wish to say that I regard them as infinitely superior to any speculum that has ever been devised for a cataract operation. An assistant inserts one elevator under the upper lid and another under the lower lid. The two elevators are then gently but firmly separated and raised, thus opening the palpebral space to its fullest capacity. This provides a wide operative space and at the same time maintains a control over the lids, orbicularis muscle, etc., unobtainable in any other manner. The danger of winking, lid movements, etc., is thus eliminated and the operation, therefore, made just so much safer. The assistant, while spreading the lids apart by the elevators, should at the same time lift the lids from the eye, thus preventing all pressure on the eyeball and very much lessening the liability of escaping vitreous. The freedom from this accident renders the expulsion of the lens much easier and safer. If the anterior chamber is irrigated, it can be done with much greater assurance and safety than by any other method. I leave the elevators in until the end of the operation and then gently remove them. Great care should be taken that the upper lid and lashes do not pass into the corneal space made by the incision. This might produce infection. In case the lens seems too large for the incision, its forcible exit should not be encouraged, but the incision should be carefully enlarged by small, curved, round pointed scissors.

After the lens has been delivered and any remaining lens substances gently stroked out (that can safely be delivered), I carefully wash out the anterior chamber with warm, sterile, normal salt solution with a specially devised irrigator. This consists of a rubber bulb, large enough to fit the hand. The rubber should be of the best quality—soft and pliable—and should not flake so that particles from its interior can be found in the solution. Some years ago I devised this irrigator and had it made with a glass end, about the same shape as a strabismus hook, only flattened in such a direction that the hand enclosing the rubber bulb could be at the side of the patient, instead of above the eye, which is always a constrained position from which to operate a bulb with a bent end. The glass end proved to be difficult to make correctly and uniformly. Besides this, it broke easily and was a source of considerable annoyance. I therefore had an end made of gold and since then have had no trouble with the irrigator. It is a perfectly satisfactory anterior chamber irrigator. Not much force should be used. Loss of vitreous should be borne in mind and air bubbles should be ejected from the irrigator before it is used. In an unmanageable patient, I sometimes am afraid to use the irrigator, as a sudden upward turn of the eye, or a quick motion, might inflict irreparable damage. I prefer to leave some cortical substance and take care of it afterward by a needling or some similar operation, if it proves to be necessary. I take great care, however, to free the incision of all debris. The pillars of the coloboma should be carefully replaced by a spatula with stroking movements outside the cornea, if possible, inside the cornea, if necessary.

The bichloride and atropine ointment is then placed inside the lids with a probe and a suitable dressing over both eyes is applied. An aluminum shield is also placed over both the eye which has been operated upon and the slightly covered eye. For two or three days only the eye which has been operated upon is protected.

The patient is given a chloral hydrate and bromide of potassium mixture at bed time for one or two nights to insure rest. The hands are gently tied with a bandage cloth to the foot of the bed for a few nights, and if possible, the services of a day nurse and night nurse are secured for nearly a week to watch the patient constantly and administer to his needs. Immobility of the bowels for two or three days is secured by giving a small dose of morphine hypodermically. I then give a mild laxative.

I trust I may be pardoned for dwelling upon these simple details of the management of cataract cases. It may be borne in mind, however, that such operations are essentially a chain of small, fussy, details and that the operator who most carefully ob-

serves details will, other things being equal, obtain the best results. I also request that these fragmentary notes shall not be regarded as a description of the cataract operation. They are merely intended to convey to your minds some of the details that I have found useful in my operative work.

7 WEST MADISON STREET.

## SPANISH INFLUENZA.\*

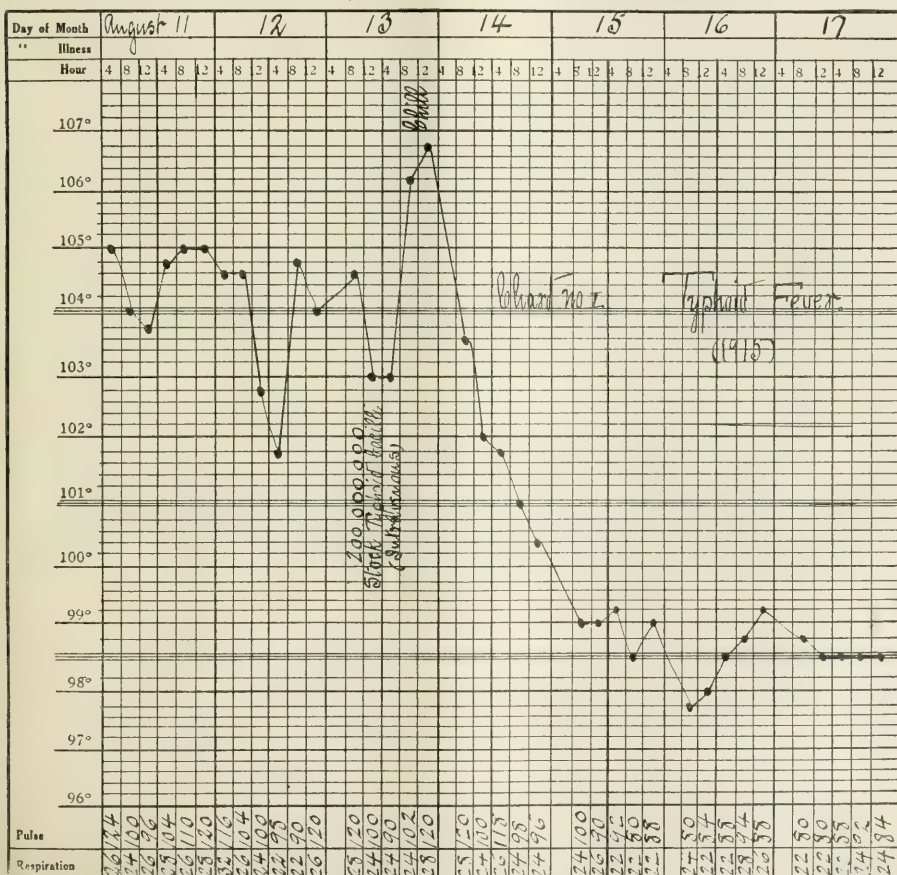
*Its Treatment by the Use of Intravenous Injections  
of a Nonbacterial Split Protein.*

BY R. GARFIELD SNYDER, M. D.,  
New York,

Assistant Professor of Clinical Medicine, College of Physicians and Surgeons; Attending Physician, City Hospital.

The writer's first experience with the intravenous use of a foreign protein, in the combating of an acute infection, was gained in 1915. In that year a typhoid vaccine was used at the City Hospital in

\*Manuscript received November 4, 1918.

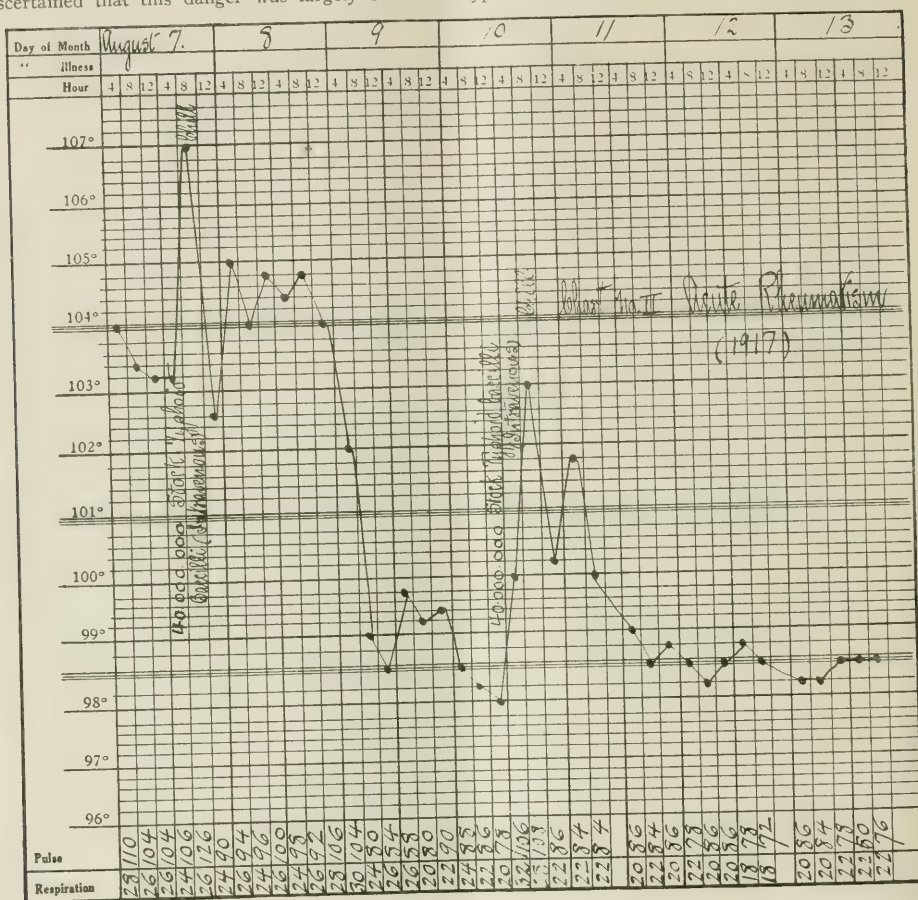


### CHART I.



an effort to check a local epidemic of typhoid fever. Many brilliant results were obtained, of which Chart I is an example, but at the time the severity of the chill and the danger of its causing a fatal perforation had the effect of dampening our enthusiasm for this form of treatment. It was later ascertained that this danger was largely confined

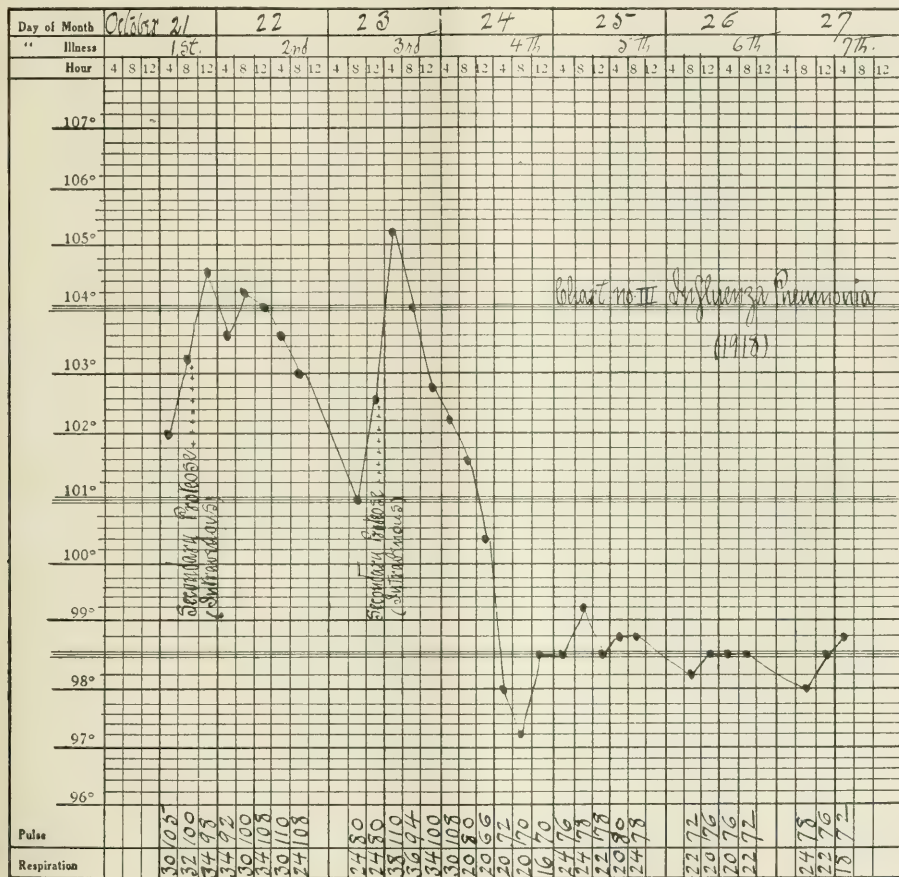
six months, treated another series of arthritic cases—acute and chronic—with intravenous injections of a secondary proteose prepared from milk<sup>1</sup> instead of the bacterial protein mentioned above. The results from the secondary proteose preparation have been equally good or better than those from the typhoid vaccine and serve to further illustrate the



some direct method of combating this infection was accentuated by the lack of success of the ordinary routine treatment.

Acting on this hypothesis, I have treated during the past month a small series of influenzal cases by the intravenous injection—occasionally subcutaneous—of a nonspecific, nonbacterial protein split

As pointed out editorially in the *NEW YORK MEDICAL JOURNAL* for November 2d various preventive vaccines are being tried, but so far the results have been inconclusive. This editorial opinion emphasizes my contention that the beneficial results to be obtained by this form of treatment in influenza or other infections are in no way due to the use of



### CHART III.

product, namely the milk proteose mentioned above. The results have been most satisfactory, as shown in Charts III and IV. Twenty cases have been treated so far without a fatality. Twelve had a general influenza infection, while eight presented typical pneumonic symptoms and physical signs. It is obvious that in resorting to this secondary proteose, no attempt was made to use specific treatment.

I am aware, however, that attempts have been made to obtain a specific vaccine, made from dead influenza and associated bacteria, and that preparations of this nature have been tried to some extent by physicians, especially in the army.

a specific agent or vaccine. To the contrary, the results are in fact due to the use of a nonspecific foreign protein which, as explained in the paper previously referred to (1), may be bacterial, animal, or vegetable in origin.

The easy accessibility of a typhoid or other bacterial vaccine to the general practitioner, together with the equally easy regulation of the dose by numerical count, has commended the use of this form of foreign protein to many physicians. However, when obtainable, a secondary proteose—similar to that used with the influenzal cases reported herein—is preferable to the bacterial protein of a typhoid or other vaccine, for the following reasons:



1. A secondary proteose preparation is free of bacterial toxins.

2. It is equally free of any toxic peptone which is, with difficulty, dissociated from bacterial proteins, owing to their method of preparation and incident to the culture media used.

In view of this irregularity of numerical and nitrogen content of the bacterial vaccine, it follows that the amount of protein in the bacterial dose must vary considerably. This lack of uniformity probably explains the occasional failure to obtain the expected reaction for a given dose when the bacterial type of foreign protein is used.

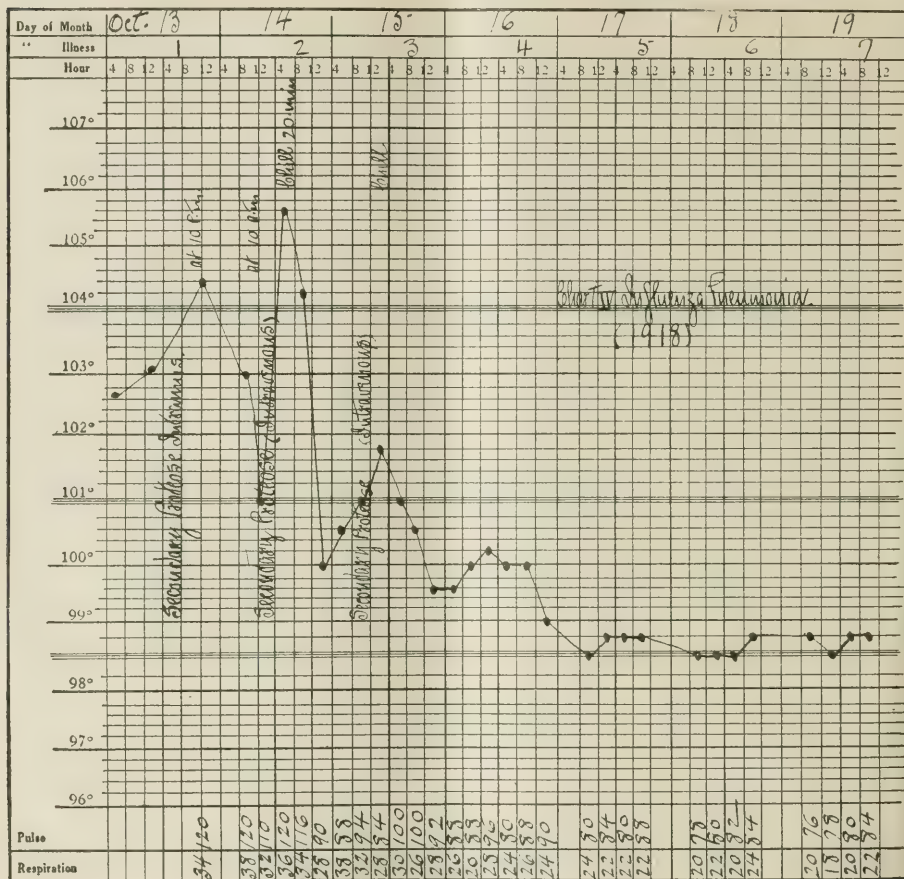


CHART IV.

3. It eliminates the danger of anaphylactic shock (2).

4. Finally the dose of a secondary proteose preparation can be accurately standardized by nitrogen content.

By contrast, the estimation of the dose of typhoid or other vaccine by bacterial count can be but approximate. This because there is a relatively large margin of error in counting bacteria, as is admitted by competent bacteriologists (3). Further, the percentage of nitrogen in the cellular substance of microorganisms is not constant and has been shown by Vaughan (4) to "vary from 5.964 in subtilis to 11.765 in violaceous."

For the sake of brevity there has been no attempt in this paper to review the theories or cite the literature on nonspecific therapy.

The above ideas, suggestions, and clinical results are offered in the hope that they may prove of timely value to physicians in their present dilemma, and, in addition, contribute to the successful treatment of acute infections in the future.

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## THE TREATMENT OF INFLUENZAL PNEUMONITIS.

*Remarks on Accessory or Supplemental Measures.*

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From experience, observation, and a review of much data accruing from the recent influenza pandemic, I am led to mention certain remedial measures which deserve and have gained confidence. Only accessory or supplemental agencies are considered. These, or many of them, may be strongly recommended as aiding and reinforcing the effects of medicaments. Used alone, as "home remedies," they often go far in turning the tide toward recovery and economic convalescence. For any form of pneumonitis they hold good and may be epitomized as follows:

*Rest.*—Any or every infection demands rest, as the first consideration, to prevent aggravation and complication. This is equally true of surgical infection. At the oncoming of a pneumonitis rest must be immediate and absolute; no tampering, no postponing, no modifying. A chill—other than that inevitable to exposure to sudden or unusual cold—portends some serious perturbation of functional balance, and must not be disregarded. A chill or chilliness is the characteristic portent of pneumonitis. Any one who experiences this, disregards it, and survives (as I did), will have learned a valuable lesson. Rest must be complete. During active stages no sitting up should be allowed, not even for examination. I have seen men otherwise perfectly vigorous and healthy die from this exertion alone.

Posture is most significant in pneumonitis. The side chiefly affected is down and the competent side up, but this attitude should be changed occasionally for short periods. Lying constantly on the back should be discouraged. The head of the patient should be toward the light but not facing a window. Constant glare in the eyes is a severe strain. Only in this attitude with the eyes protected can the patient be free to assume conservative postures. The reasons for avoiding upright or sitting postures are many and based on biophysics. Among them are the condition of the blood, which is overviscid; stagnation in and extra weight of the lungs, hence the drag of dependent and weakened organs on the diaphragm; irritation of the splanchnic branches of the vagus; the heart (myocardium) being seriously overburdened, peripheral resistance is often so complete as to inhibit circulatory distribution.

*Cleansing of the alimentary tract.*—This is peculiarly important in pneumonitis and the colon should be at once irrigated, slowly, with one quart of warm water, to which has been added half an ounce (one heaping tablespoonful) each of sodium chloride and sodium bicarbonate. Soap may be added if desired and also any emergency drug which may seem indicated. The main purpose of the saline irrigation is to cleanse the lower bowel and supply the loss of sodium chloride by absorption, and to supply sodium bicarbonate to the kidneys to act as an alkaline diuretic. In my judgment any laxative

irritates and is of questionable value. It also hurries the half digested food out of the tract. Even saline laxatives, while partly efficacious, fail to serve the manifold purposes of the alkaline colon irrigation. Diuresis is thus effected most efficiently, and relief to the kidneys is of the greatest value. Calomel is only incidentally a laxative; it is used for other and excellent reasons, and is best supplemented by an enema, not by a cathartic.

*Revulsion.*—This is of great importance as all experienced clinicians know through a certain and reliable knowledge. The long discarded poultice or mustard pack served excellent purposes, but better means are now at hand. The best form of revulsion, in my judgment, is that powerful home remedy, ironing the back. In pneumonitis there is often such disturbance of the vasomotor system and sweat glands that experience shows the peculiar value of a damp woolen cloth or bit of blanket applied to the bare back and ironed by a not too hot flat iron, lifting promptly from contact with the skin when it burns and continuing for five or six minutes. This will effect more of good than any other available revulsive, causing free sweating, and relieving the headache, headache, dry mouth, and the stagnation in the lung structures.

Dry cupping is efficacious and strongly endorsed. A much simpler method of achieving local hyperemia and revulsion is by subdermal traction, a lifting and pulling of the skin by the hand from the underlying structures all up and down the back, especially from the fourth to the ninth thoracic vertebrae, and all over the lateral areas, stimulating subsidiary sympathetic (vasomotor) subcentres. This, while painful at first soon ceases to be so, and can be repeated to advantage every hour or two by the nurse. The effects are just as emphatic as by Bier's hyperemic cupping. It will often promptly reduce or check cough. During the later stages and convalescence, much of the cough is due to irritation of the pharynx and is to be relieved by application of ten per cent. aqueous solution of argyrol or protargol or cargentos, and yet later by the iodine, iodide of potassium in glycerin mixture commonly used by laryngologists, carried well down the trachea.

Delirium, which so often accompanies pneumonitis, causes more disasters, or even deaths, than clinicians realize. There is good ground for the opinion, certainly ample warranty for the suspicion, that most persons in the early stages of lung or typhoid or other febrile processes, are thereby rendered so confused as to be incapable of appreciating the seriousness of the situation. There is usually, perhaps always, mental bewilderment which so impairs judgment that follies are committed, the most common of which is refusal to take reasonable precautions. I could relate many illustrative instances since my own eyes were opened by a personal experience wherein, during the onset of sharp influenza two or three years ago, I was plainly conscious of the fact of chills, discussed them with myself, but being exceptionally busy was incapable of rightly assessing the value of the observation and was soon ignominiously landed in bed guarded by a nurse. A physician on one occasion was conferring



with me on a matter in my office, when I remarked that he was looking seedy. He admitted he was droopy but insisted that nothing was wrong, till I took his temperature which was 106° F., and per-cussed his lungs, both of which were so solid that he could hear the board like pitch.

Suffice it to say any careful clinician should keep this peril of mental confusion prominently in the foreground and institute treatment for the condition as well as the underlying one. Every wise person should keep in mind the gravity of disregarding the plain warning given by a chill as well as the psychopathy which follows.

It should be a common rule of conduct in all fever states to go at once to bed and seek expert advice especially when infections prevail, otherwise death may ensue and too often does. When mental confusion is recognized quieting measures are required. One of the most efficacious measures is the neutral immersion bath, or tepid soaking in water at 100° for twenty minutes or so long as comfortable. I believe many a life would be saved by observing so simple a measure, accompanied by a saline enema, hot drinks, and some sedative medication. A chill is due to a prolonged perturbation of function, and calls imperatively for external heat, and the best and most available relief is a hot bath. Trypsin, to carry on oxidation, must be fortified by heat. When delirium persists repeated warm affusions are indicated, tepid sponging or hot packs or the heat and pressure of the flatiron over a damp blanket along the bare back. The violently delirious, struggling patient often dies, and this fatal result in pneumonia is more than probably due to the intense overexertion. Thus psychogenic perturbation comes to be recognized as of the deepest significance.

The significant fact should be always considered that the sodium chloride loss in pneumonitis is enormous and should be supplied. This is best done by adding salt in the proportion of normal salt solution to all drinks at all times.

One final admonition as to care in convalescence from pneumonitis or any infection. Here again success or economic care becomes an equation between the full appreciation by the physician of the absolute need for abundant rest and time and consistent rebuilding reconstructive measures.

**A Rapid Means of Nitrogen Determination in Blood and Urine.**—During a period covering many years physicians and chemists have endeavored to discover an efficient inhibitor of the foaming tendency associated with the rapid estimation of the ammonia in urine and blood—brought out particularly in chemical and microchemical analysis of the latter, especially in instances when the percentage of the glucose content is abnormal. The difficulty has been met in the discovery of a new product, which has been called caprisol and which has been made available by New York chemists, Antoine Chris Co. The addition of a few drops of caprisol to blood and urine solutions stops effectually any tendency to foam, and thus eliminates a very annoying feature connected, heretofore, with microchemical determinations.

## THE NEED FOR MEDICAL SUPERVISION DURING PREGNANCY.\*

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Of the infants who die in England and Wales, during their first year of life, about one fourth die during their first month of life from "causes connected with birth." This represents about twenty-five deaths per 1,000 births, and to this must be added stillbirths and abortions, which are believed to be about thirty and 120 per 1,000 births respectively, say 175 per 1,000 in all. So that more than one in six children die between their conception and one month after birth from "antenatal causes or causes connected with birth." When it is thankfully remembered that only four women per 1,000 births die as a result of these "causes connected with birth," the enormous difference is at once seen. One mother dies in 250 confinements, while one child loses its life for every six children who reach one month of age, or over forty children die to every one mother, for apart from causes connected with childbirth very few women die during pregnancy.

Why should the embryo, the fetus and the one month infant die at this rate, 175 per 1,000 births? Because the fetus, and still more the early ovum, has but a small measure of resistance to maternal diseases, such as antepartum hemorrhage, toxemia, syphilis, malnutrition, all of which affect its early development stages. These conditions may lead to very early death and expulsion of the ovum, often entirely unrecognized as such by the mother and attributed to a functional delay. If every pregnant woman were under medical observation, many of these and other maternal causes of fetal death would be eliminated. Doctor Ballantyne has suggested that infantile deaths during the first month of life should be called "neonatal" mortality.

Statistics seem to show that the following are approximately the average percentage causes of antenatal, natal, and neonatal infantile mortality.

### APPROXIMATE PERCENTAGE CAUSATION OF ANTENATAL, NATAL, AND NEONATAL INFANTILE DEATHS.

Syphilis	per cent.	20
Toxemia	"	10
Prematurity	"	10
Prolonged, difficult, or complicated labor,		
including antepartum hemorrhage...	"	25
Other known causes	"	10
"Unknown"	"	25

100 cases

I wish to speak of only three of these causes, prematurity, syphilis, and accidents and complications connected with childbirth.

### PREMATURITY.

Prematurity was the cause of death of over half the number of children who died in the first fourteen days of life in 10,000 consecutive births at the Sloane Hospital for Women, New York, and Drs. L. E. Holt, and E. C. Babbitt state that 66 per cent. of these cases occurred during the first day.

\*Remarks made at the National Baby Week Conference, London, July, 1918, on some Antenatal and Neonatal Factors in Infantile Mortality.

Prematurity was also the cause of 4 per cent. of the stillbirths at the same hospital, and in the Johns Hopkins Hospital, in a similar series of 10,000 cases, it was the cause of 7.1 per cent. of the stillbirths and deaths during the first fourteen days of life.

In Queen Charlotte's Hospital in 1914, 231 (12.9 per cent.) of the total births were "premature," and 30.4 per cent. of the premature births were stillborn (46), or did not long survive birth (24).

At St. Mary's Hospital, Manchester, in the same year, the premature births were 173, or 20.4 per cent. of the total births, and 74 per cent. of these were stillborn (93), or died before they left the hospital (35).

The precise significance of the word prematurity needs standardizing, but the last two hospitals use it to mean "born before the thirty-eighth week of gestation."

#### 1. ANTENATAL SYPHILIS.

*Estimated fetal mortality.*—From a careful consideration of such statistics as have been published, I have formed the opinion that in urban districts twenty-five per cent. of the total antenatal deaths and deaths during the first month after birth, are due to syphilitic infection of the fertilized ovum or fetus, and that probably twenty per cent. would be a fair percentage over the whole of England and Wales. This would mean that about 27,000 deaths would occur annually in England and Wales, from syphilis during the antenatal period and first month of life.

In addition to those infants who die, a large number would show no evidence of syphilis till some weeks after birth, and some would remain apparently healthy until puberty or early adolescence, when cerebrospinal disease may become manifested.

*Gravity of congenital syphilis.*—Congenital syphilis is a more serious infection than primary syphilis. Congenital syphilis is rarely cured, and it is said that a positive Wassermann reaction in a congenital syphilitic child never becomes negative. This is not surprising when it is remembered that the infection usually has been present in the child from the beginning of gestation, and if the mother is herself infected, the child has been receiving continuous added infection all the time.

Cases are on record of congenital syphilis being carried to the third generation, and there is no doubt that the unrecognized presence of congenital syphilitic infection explains many obscure complications of ordinary disease, especially as regards affections of the nervous system and of the large secretory and smaller ductless glands.

Very little evidence as regards the antenatal incidence of syphilis can be obtained from hospital records, as cases are not usually admitted for abortions or miscarriages, and until quite lately, rarely admitted in England except to Poor Law infirmaries, if found to be syphilitic.

Dr. E. W. Hope, medical officer of health for Liverpool, gives pathological proof that in the Poor Law infirmaries in that city 16 per cent. of the stillbirths are syphilitic. Statistics are recorded re-

garding the stillbirths in 10,000 consecutive labors in each of two American hospitals—Johns Hopkins Hospital and Sloane Hospital. In the former, the stillbirths due to syphilis were shown to be 32 per cent. of the total deaths up to fourteen days after birth, and in the latter 9 per cent. of the stillbirths were syphilitic, though all recognized cases of maternal syphilis were refused admission.

Stillbirths from antenatal syphilis in unmarried women are about double such deaths in legitimate pregnancies. Thus Doctor Hope states that in two large Poor Law establishments in Liverpool, the stillbirths among illegitimates were sixty-four per 1,000 births as compared with thirty in legitimate births, and he says that seventy-five per cent. of these illegitimate stillbirths were due to syphilis, toxemia, antepartum hemorrhage and dystocia, which are universally recognized as the main causes of antenatal death.

A woman, infected primarily by her husband, would not thereby be rendered sterile, but she would readily conceive and would infect her child through her blood continuously during the pregnancy, and under such circumstances the child may not survive the gestation period, for it would often be infected by both parents, and be stillborn.

It is remarkable that any child born of untreated syphilitic parents can escape death during pregnancy.

This escape is apparently due to the fact that in the placenta at the points of union of mother and child, certain processes are going on by the action of trophoblastic cells of the membranes of the fertilized ovum, which digest, by a process of fermentation, the maternal tissues, and so allow the fetal bloodvessels to penetrate the maternal tissues. This is part of the "give and take" symbiosis which Doctor Ballantyne has described and which goes to prove that the fetus is not a parasite, as some have taught.

These chorionic ferments or their derivatives (1) appear to have a powerful action as a chemical filter, so that germs like tubercle bacilli and even large organisms like the mature *Spirochaeta pallida* of syphilis are either destroyed, or, in the case of the spirochete, broken up into "granules."

These granules may, as Noguchi, of the Rockefeller Institute, New York, has shown (2), remain biologically inactive for long periods, and if not destroyed may develop later on into the mature organism.

The chorionio ferments seem able to hold up, as it were, these granules and control their activity during pregnancy. Then after labor, when the mother and child are both removed from all contact with the ferments, the granules may develop into the spirochetes and both mother and child would then show clinical evidence of syphilis. In a few cases both mother and child escape altogether if the ferments have been able to destroy the life of the granules. Maternal treatment by mercury in the early months of pregnancy will usually ensure a healthy child, but the treatment must be carried out in subsequent pregnancies; treatment with salvarsan and mercury may permanently cure the mother and give her healthy children.



STILLBIRTHS, OR INFANTILE DEATHS WITHIN A FEW  
DAYS OF BIRTH, DUE TO ACCIDENTS OR  
COMPLICATIONS OF CHILDBIRTH.

The chief accidents and complications apart from toxæmia connected with childbirth may be grouped as follows:—

1. Fetal Conditions.
  - a. Malformations.
  - b. Malpresentations.
2. Maternal Complications.
  - a. Antepartum hemorrhages.  
(Placenta prævia).  
(Accidental hemorrhage).
  - b. Contracted or deformed pelvis.
  - c. Pelvic tumors.

The death of mothers from "causes connected with birth" are four per 1,000, one in 250 confinements, while about 25 per 1,000 children die from the same causes during the first three months of life, six times as many; or if we include antenatal deaths as already mentioned, forty children die to each one maternal death from "causes connected with pregnancy and labor."

In lying-in hospitals, a similar but less marked proportion exists between maternal and child mortality, though here two opposite conditions have to be noted: 1, Expert obstetric skill; 2, admission of complicated cases beyond the average. The *Report of Queen Charlotte's Hospital for 1914*, thus shows that the maternal deaths were twelve (at a rate of six per 1,000 births), the stillbirths were 100, and forty-four infants died shortly after birth, so that the deaths of children between the mother's admission and a fortnight later, were exactly twelve times as numerous (72 per 1,000) as those of mothers, in spite of every effort on the part of the expert staff. This rate of infantile death rate does not include antenatal deaths of children born before admission into the hospital.

It must be remembered that if a woman is not delivered, no matter what the complication is, she must almost inevitably die and her child also.

Attempts to deliver have often been made before admission to the hospital, and such women may be "septic" and their risks thus enormously increased for all forms of the operative measures which may be required to deliver them.

Taking the 1914 operation statistics of the two British lying-in hospitals already named, I find that 591 operations were performed, to save the lives of mothers and children, twenty women died, 571 mothers being saved. Of the children, 174 were stillborn or died soon after birth, so that only 417 children were saved. The percentage of deaths of these mothers and children, in spite of the operations done to save them, were thus 3.3 and 29.4 per cent., respectively. Thus in these operations nearly nine times as many children died as mothers. Of course these deaths were not due to the operation, for all would have died if these operations had not been done.

Many of these operations performed in emergency cases are septic and most of these operations could have been prevented or dealt with by minor methods without any appreciable maternal or infantile mortality, if admitted earlier in the preg-

nancy when the threatening complications had been discovered.

Probably the most serious maternal complication of childbirth, from the point of view of the child, is when birth is associated with maternal antepartum hemorrhage, for the hemorrhage may come on without warning, even in cases under medical supervision. In many such cases serious operations are required to save the mother.

Thus in the two lying-in hospitals, there were 119 cases of placenta prævia and accidental hemorrhage with the mortality of ten mothers (8.4 per cent.) and ninety children (75 per cent.).

Now nearly all these conditions in early or late pregnancy, or at birth, could be materially lessened by medical supervision during pregnancy and that should be our present most urgent aim.

#### CONTRACTED PELVIS.

To show the need of medical supervision during pregnancy, take one of the most serious complications of childbirth, viz., contracted pelvis, which may prevent a normal child from being delivered alive at full term without some sort of operative assistance. Here recognition of the condition during pregnancy will in slight contractions indicate induction of labor one, two, or three weeks before full term, with assistance, if necessary, by forceps or version, or if the contraction is more marked, the patient will have Cæsarean section performed in the hospital at or near labor. In "clean" cases, where no attempts at delivery have been made before admission, the maternal mortality is about two per cent. and the child mortality still less. If the case is septic, the maternal mortality is often over thirty per cent. In some severely septic cases, Cæsarean section would almost surely be fatal, so that as alternatives, either the child would have to be destroyed (craniotomy) or the womb would have to be removed to give the mother a chance of survival.

The following table shows the operations that had to be done in cases of contracted pelvis at Queen Charlotte's Lying-in Hospital, London, and at St. Mary's Hospital, Maternal Department, Manchester, in 1914, with the maternal and infantile mortality:

Name of operation	No. of cases.	Maternal mortality. Per cent.	Infantile mortality. Per cent.
Induction of labor...	65	1 (1.59)	4 (6.36)
Forceps .....	44	1 (2.3)	13 (29.5)
Version .....	7	0 (0.0)	6 (86)
Craniotomy .....	32	2 (6.2)	32 (100)
Cæsarean section ....	70	3 (4.3)	3 (4.3)

Totals ..... 218      7 (3.2)      58 (26.6)

Here again fifty-eight children died in childbirth as compared to seven mothers, so that 211 women and 160 children were saved from certain death.

It is almost certain that if these cases had been seen by a doctor during middle or late pregnancy and had had the date and nature of the treatment decided upon then, very few, if any, of these mothers or children need to have died.

Let me urge, therefore, as strongly as I can, that all young women be educated and encouraged to voluntarily put themselves in the hands of a doctor when they think they are pregnant, and so avoid

such complications as these when labor comes, and also reduce the risks of such further complications during pregnancy as puerperal convulsions, the early symptoms of which are usually quite easily recognized.

The Local Government Board, under the skilled advice of Sir Arthur Newsholme, has done much to secure medical supervision of all pregnant women, by encouraging the formation of maternity centres and antenatal clinics and by giving them fifty per cent. grants in aid, by its similar seventy-five per cent. grants as regards diagnosis and treatment of venereal disease, and by its endeavor to secure beds for pregnant women with venereal disease or other complications in general hospitals.

As compulsory notification of pregnancy is out of the question, education of women to enable them to realize their need of medical supervision during pregnancy should be our main effort and aim.

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### ORIFICIAL LUES.

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It might, at first sight, appear a little anomalous for a dermatologist to undertake the discussion of a condition so closely allied with the mucous membranes. However, there are two considerations which justify his attitude. One is that many lesions about the orifices of the body involve the skin as well as the membrane; the other is that the diagnosis of lues is so frequently made upon the cutaneous manifestations, that everything confirmatory falls, naturally, within the province of the dermatologist. This, to be sure, is confined to the field of investigation. He does not assume to treat the alien structures upon which he has ventured in search of information. For example, an indefinite eruption upon the trunk might arouse suspicion which the eye or mouth would confirm. He should rest content with the aid obtained from scanning these structures and, if special attention is demanded for their diseased condition, he should advise the intervention of the indicated expert.

Orifices of the body are apertures whereby communication is had or may be had with the interior. In the male, they are the mouth, nose, eye, ear, anus, and urethra; in the female, the vagina and nipple are added. This enumeration may sound ridiculously elementary, as every one is cognizant of these facts, but it is always advisable to clear the ground in beginning a discussion. Even familiar circumstances take on additional importance if marshalled in unusual relations. Furthermore, the inclusion of the ear in the number of orifices may demand some explanation. There is certainly no connection with the interior of the body via the external auditory canal; but there is via the Eustachian tube from the pharynx. There is a staunch membranous wall dividing the outer

from the inner ear. There is no escape of secretions externally and no thoroughfare for infection. This obtains in health, but in disease the ear may become an undeniable orifice, by the perforation of the membrana tympani. This may be questioned as a strained construction, but it is perfectly rational nevertheless.

In the male the commonest location of chancre is the glans penis. It favors the corona usually, but occasionally it occurs at the meatus urinarius. Here it is apt to be accompanied by a purulent discharge, which on hasty examination may be attributed to gonorrhea. The infiltration at the meatus in this interpretation would be ascribed to the pouting due to gonorrhea. Of course palpation would reveal the indurated character of the lesion. It is prudent to palpate every urethra secreting pus, for it has come to be recognized that chancre may develop anywhere in its course and, if out of sight, may be overlooked for the lesser evil. Many of the cases of lues that have occurred in perfectly frank and intelligent patients denying an initial lesion have begun in this way. The patient has never seen a "sore"; he never had anything but the "clap." A subsequent roseola, if noticed at all, was utterly misconstrued. Having had no chancre he would not be alarmed at a skin eruption of slight extent causing no inconvenience. The whole thing might quickly fade away and leave no impression on his memory. When the suspicious outbreak comes up for elucidation ten years later all the positive assertions of the patient would be clearly against the correct diagnosis. When the physician's opinion has been confirmed by a Wassermann reaction, he mentally and sometimes (in the case of a dispensary patient) audibly registers his conviction that the patient is a liar. But this has always appeared illogical and unfair to me, for is there any reason why he should deny having a chancre when he admits having the clap? The opprobrium attaching to the manner of acquisition is identical in both conditions. The following is a case in point: A very intelligent person, who had served as a reporter on a Boston daily newspaper presented himself with an eruption on his forehead, just at the hair line and steadily encroaching upon the uncovered area; this was confined to the left side, and had a fluted border. It was infiltrated and scaly, and was obviously luetic. It had resisted treatment by a number of physicians, because of the patient's unequivocal denial of syphilitic manifestations at any time in his history. It was certain that if he had been cognizant of such manifestations he would have admitted it. It was equally certain from the nature of the lesion that he had acquired lues. How could these circumstances be reconciled? The patient confessed to gonorrhea. A little later on he had been attacked with scarlet fever. These were the only illnesses within his recollection. The probable occurrences were: An urethral chancre and a secondary outbreak mistaken for scarlet fever, because of the denial of an initial lesion. Orifical lues may be of especial significance in relation to such a history.

In the female, the chancre may occur anywhere in the vaginal tract from the vulva inward, or it



may occur, as in the male, about the meatus urinarius. If inside the vulva its detection may be a matter of the common precaution so frequently lacking in the management of vaginal discharges. The pus is ascribed to ordinary "whites," or gonorrhoea. If there is too little discharge to excite the interest of the patient no attention will be given to it at all; the freedom from pain characteristic of lues will deceive her if she cannot see or palpate the lesion. Every vaginal discharge is open to suspicion in a woman who has had intercourse. In history taking its possible bearing upon luetic infection should be studiously considered. At this point the up to the minute diagnostician is heard to interject impatiently, "Why all this fuss about nosing out histories? Why not just take a Wassermann and have done with it? Surely that will go to the heart of the matter and will usually be decisive." Note the tone of dubiety in the last few words. But suppose a case is encountered where it is not decisive. Suppose one is confronted with a luetic lesion, by all the rules of clinical detection, and the Wassermann proves negative; shall one abandon his opinion and resign the patient to the ravages of a disease which we know exists, despite the adverse findings of the serologist? And if the Wassermann is apt to play such a trick as that, is it not rational to proceed to develop every other scientific resource likely to prove of service in accomplishing what the test tube failed in proving? Is it not wise to exert every effort to show that there may have been a chance concealed from the observation of the patient, and that, despite his honest denials of conscious infection, he gave a recital of occurrences warranting suspicion of error and the application of medication of a specific character?

Again, the pursuit of this inquiry into the manner of occurrence of undetected initial lesions is of importance, not only in establishing a diagnosis in the case in hand, but in developing precautions against repetitions of error. For if at the beginning of the disease we are alert to the possibility of lues masquerading in the trappings of a milder malady, we shall have all the advantages of position in making our attack. We shall be protected from the humiliation of a disagreeable surprise, and even before the Wassermann is available, may make a feint in force upon the concealed intruder. This may uncover his strength, and enable the bringing of all our resources for his speedy subjection. It is therefore an act of prudence to have a safer dependence than a serological test for the determination of so important a question. Needless to say that a spirochete examination, under the circumstances, is impracticable; that can be utilized only where the sore is within reach and free from clattering secretions. Another reason why the impatience of the rapid fire diagnostician of the present day for indiscriminate bloodletting must be firmly controlled is that patients sometimes have sensibilities and imagination. They frequently grasp the significance of the procedure and are deeply wounded by its suggestion. Horrifying suspicion of conjugal infidelity may be heedlessly and needlessly aroused; mental suffering far more

serious than actual disease may be callously inflicted. Even if the report is favorable doubt will often persist and make a syphilophobiatic of a hitherto levelheaded subject. This deplorable state incites the victim to demand more and still more Wassermanns, under the delusion that carelessness or error has affected the results. It would actually be preferable to have the disease than the unbalanced mentality that is constantly suspecting its existence. We might be able to give the patient substantial assistance in the one instance, whereas we are utterly helpless in the other. It is manifest then that the off hand demand for a Wassermann in every doubtful conjuncture is far from being the rational road to the heart of the perplexity. If it is our business to conserve the health of the patient it certainly is not our business to "put him off his head." One must be fairly sure of the condition which confronts him or of the absolute urgency of the serological decision before one is justified in arousing the mental disturbance which we are powerless to control. The icily scientific investigator who is bent only on establishing a diagnosis, without regard to the psychic upheaval associated with his methods, may be an admirable precisian but he certainly is not a true physician. It would be better for him to deal with agricultural products or the domestic animals where tactfulness would not enter as a factor in the problem. The old fashioned conception which combined in the doctor the qualities of the gentleman, humanitarian, and diagnostician, was based upon a rational estimate of his knowledge of the world. The mere interpretation of symptoms with the absence of sympathy and a helpful optimism will not go far toward the alleviation of human ills. We have seen one nation push scientific precisianism to a high degree of efficiency and yet, under stress of territorial greed, resort to such methods of warfare as would have made it better for mankind if she and her *Kultur* had never existed. Any salvage of lives that may be attributed to her eminent investigators is more than counterbalanced by the wholesale slaughter on her selfsought battlefields. Science without soul has brought mankind to the brink of destruction; but the soul aroused in the resisting peoples has proven more than a match for cold blooded calculation. This digression is simply to emphasize the fact that in seeking to come to a speedy determination in a disputed case of lues there is more to be considered than the bare scientific details and that the prudence and altruism that are necessary qualities of the worth while doctor forbid the precipitation of the mental debacle that will put the patient in a worse condition than the disease we are trying to identify.

Chancres of the lip has been so often brought to our attention, that its escape from recognition must be ascribed to hasty examination. The main difficulty lies in failure to recall its possibility. Once it is realized that chancre may occur upon the lip, certainty is assured. We may be a bit tardy in arriving, but continued contemplation of the lesion and its history will bring enlightenment. We miss, not because we do not know, but because we do not suspect. The moment the real character of the

lesion is suggested, we marvel at our want of penetration. The whole thing appears so simple when explained! Confusion is produced by the accidents of age and variation of type. In the elderly we are prone to jump to the conclusion of cancer; in the young, if the induration is lacking and little appears but a persistent erosion, we wander off in a diagnosis of herpes. The patient, reassured by this comforting information, gives little heed to the painless abrasion, and probably does not return to the doctor for further observation. After the manner of chancres the "cancer"—if it escapes operation—will spontaneously recede, to the astonishment of the beholders. The obstinate "fever sore" will do likewise. Given a roseola that is unobtrusive, it is almost certain that the discovery of the real nature of the condition will not be made until some remote outbreak of disquieting proportions compels a thorough investigation. Eccentricity is so marked a quality of lues that this outbreak may be delayed for many years or may not occur at all in the acquirer, but in that of his offspring. The only evidence of infection in the parent may be spontaneous abortion.

In view of all these consequences of unidentified chancres, how are they to be differentiated from their counterfeit presentments on the lip? Youth excludes cancer; rare indeed are the exceptions. Within the cancer zone, other points of distinction must be relied upon. Induration may exist in both. This is greater in chancre than cancer but the comparison of degrees of induration between lesions not synchronously under the palpating fingers is a doubtful expedient. Chancre will be accompanied by a satellite gland in the neck or in front of the ear. Cancer, unless it has existed long enough to dispel all doubt as to its identity, will lack this adenitis. Chancre is a much more rapid growth than cancer; it gets to maturity in a short time. The proportion in speed might be fairly stated as four or five to one. Chancre having attained its growth, remains thereafter stationary until recession begins; cancer steadily advances. Chancre is painless; cancer is painful. Chancre has a shallow ulceration with a purulent secretion that tends to form a thick crust; cancer has a shallow ulceration whose scantier secretion forms an adherent scab that bleeds on detachment and is promptly replaced. The border of chancre is simply a grisly rim; the border of cancer is frequently made up of little pearly bodies that constitute cancer nests and are pathognomonic. All this has to do with typical examples of each form of disease. A chancre that is merely a solid papule will rest only on suspicion. Corroboration is absolutely essential to a diagnosis. A chancre that is nothing but an erosion may yield spirochete or a satellite gland and thus dispel the doubt of herpes; if it does not receive either form of confirmation, its obstinacy will soon come to our aid with the same result. The requisite to success is to remember the likelihood of chancre appearing in such a situation and under varying aspects.

Chancre of the ala nasi is extremely rare. This very circumstance should impress one with the possibility of its underlying a rebellious infection of

the nostril. Persons with the courtly habit of manual excavation of the nasal fossæ would be exposed to this unusual mischance. Also that particular brand of lunatic who pulls hairs out of his nose as a pastime.

The palpebral fissure is even more rarely visited by the chancre. A most remarkable combination of exceptional circumstances would be necessary for its appearance in that situation, yet a little reflection will show that that combination might occur without any straining of possibilities. A careless nurse with a labial mucous patch, might wipe out a baby's eye with the corner of an apron moistened in her mouth! The foolhardy physician who has been palpating a sore with his ungloved hand might absentmindedly, rub his eye which shows a propensity to become itchy just at the moment when it is least advisable to touch it. While disaster is, happily, most uncommon under these circumstances, it requires very little imagination to picture its occurrence.

The nipple of the female fulfills our definition of an orifice; it is the port of egress for a secretion and of ingress for infection. Chancre here will inevitably come under suspicion as cancer. It may be due to wetnursing or to osculatory demonstrations on the part of an infected lover. If the patient is young, as she is apt to be under either of these etiologic hypotheses, error will lie in trying to prove an abnormally early malignancy. In the case of the nursing baby, the truth is likely to suggest itself to the least penetrating inquiry; in the other case the very circumstances attending the infection will be the cause of deflecting the examination to an erroneous conclusion. But here again if we bear in mind the possibility of a chancre in this situation, we shall be a long way on the road to a correct diagnosis. It is because this does not occur to us that we fail to consider it in the light of a possibility.

Chancre of the external auditory canal, in the very nature of things, must be a very infrequent mishap. It is conceivable that the use of dirty instruments might bring it about, but the likelihood of the same instruments being used without sterilization upon successive patients is very remote. True, the counterpart of the nose picker exists in the ear delver, and in pursuit of his absorbing passion he might have recourse to an implement that had seen service elsewhere and had become a spirochete carrier. The providentially brief existence of the spirochete, apart from its human habitat, renders such an unfortunate mischance highly improbable. Chancre of the internal auditory canal, at the pharyngeal end of the Eustachian tube, is likely enough in the well recognized involvement of the tonsil. Chancre of the lobe of the ear could invade the meatus. Its appearance in this situation is ascribed to the eccentric manifestation of the affection known as dermophagia. Ardent lovers sometimes bite their innamorata's ear. Given a mucous patch in the ardent lover's mouth, the transfer of spirochetes is easy.

Chancre of the anus may be due to pederasty. It may also be due to brutish postures in intercourse between the sexes. It may be due to infected fingers or instruments in making examinations for hemor-



rhoids or other rectal diseases. This last contingency is extremely unlikely, owing to the readiness with which the spirochete succumbs outside the body.

The mucous patch is a luetic manifestation confined to the mucous membranes. Its commonest location is the mouth. It may occur on any membrane where the conditions of pressure and moisture macerate the papule. Its appearance is quite distinctive. It is decisive corroboration of a dubious cutaneous outbreak. It is to be differentiated, on occasion, from the herpetic eruption usually dominated as canker sore. The confusion has arisen and may again arise. There are points of distinction. The mucous patch is usually painless; the simple erosion is extremely painful. This is always a significant feature of lues. It does not produce much pain. Exceptions due to accidental conditions do not invalidate this rule. A simple herpetic lesion will give more trouble than a mouth full of mucous patches. The herpetic lesion is round, the luetic oval as a rule. The mucous patch looks like the markings made by nitrate of silver on the membrane. Sometimes there is no inflammatory areola, but if there is, it is much less angry looking than that around a herpes. There may be a loose pellicle of membrane detachable from an underlying raw surface. The patch is obviously the effect of maceration and the herpes of minute ulceration, the latter being acutely inflammatory and the former a granulomatous deposit with surface softening. On the tonsil massed mucous patches have simulated diphtheria. The constitutional symptoms and the Klebs-Loeffler bacillus are both lacking. At the angle of the mouth the patch will make a fissure if it is folded on itself. This is highly suggestive. *Perlèche* is frequently paradiagnosed; the latter is an impetigo. It is commonest in children, in whom it occurs as an epidemic from sucking infected pencils. It is a sodden condition of the epithelium; it is bilateral. On the whole, it is wise to be deliberate in coming to a conclusion with regard to *perlèche* in an adult, because of the well known propensity of lues to counterfeit other conditions.

The region of the mouth is a favorite site for the grouping of the macules and papules of the secondary eruption. A half circle about the angle of the mouth will throw confirmatory light upon an otherwise indeterminate condition. It will be well to pause and consider this fact, for it cannot be too strongly emphasized. It has cleared the ground of many a perplexity. If a fissure at the angle of the mouth is suggestive, so is the tendency of the cutaneous outbreak to cluster about it. It is without question one of the most valuable indications. Deliberate examination will preclude the confounding of a herpes with this highly important danger signal. Herpes will be painful, or at any rate uncomfortable; it will be inflammatory and vesicular; it will be transient. The syphilitic manifestation will be papular or macular in this stage; it will be discovered by the sense of sight; it will be inactive; stationary. Acne lesions might affect the same region. But they would be accompanied by similar lesions elsewhere and their peculiar follicular char-

acter would be conclusive. It is admissible that circumstances might render distinction difficult on some occasions, but much of the confusion will disappear if one remembers the likelihood of lues to produce such an eruption *circum oram*.

Mucous patches may appear anywhere on the mucous surfaces; the vulva and cervix are often invaded. About the genitals, owing to the favoring circumstances of heat, moisture, and sebaceous luxuriance papular lesions are apt to take another form, which will be described later. The conjunctiva and the nasal mucosa do not appear to be commonly affected: the former from some inherent quality of resistance; the latter from the seclusion offered by the narrow passages. The angles of the *alæ nasi*, however, are affected as are the angles of the mouth. Fissures due to folded patches indicate the presence of these lesions in the nose.

Within the vagina there is no doubt of the occurrence of these characteristic luetic phenomena but they are not so frequently discovered because they are not so diligently sought for, and because they may be readily hidden in the folds of the voluminous membrane.

Within the rectum the search for mucous patches would doubtless be successful, but it is never undertaken unless some insistent discomfort draws attention to that locality. In general terms, the mucous patch speaks through the mouth of the patient and usually with unmistakable emphasis.

The diagnosis of lues is frequently facilitated by iritis and keratitis. Doubt yields to certainty upon the discovery of either of these complications or of their telltale vestiges. We may confirm acquired lues with otherwise indeterminate markings, or we may confirm heredolues of the variety known as tardy. It is true that iritis is ascribed also to gout and rheumatism, but taken in connection with the other features of the case its significance is obvious. It is becoming questionable, moreover, whether we are not confronted in iritis with a situation similar to that in *tabes* before its unique etiology was definitely settled. Keratitis is frankly luetic. Glaucoma may produce a hazy cornea but its associated symptoms are unmistakable.

In the area between the buttocks and about the scrotum and labia majora papules develop which are flattened by pressure and softened by heat and moisture into unmistakable evidences of syphilitic activity. They are described as moist papules or condylomata lata. They are present in the second stage, and often merge into extensive plaques of dull red, slightly raised, sharply outlined secreting tissue. They are not likely to be mistaken for any other sort of dermatosis. They are defined by their location, their limitation, and their level, moist surface. Venereal warts might come into comparison with them but venereal warts are inclined to the cauliflower conformation and do not present the picture of evenness and sharp circumscription. Condylomata acuminata and condylomata lata are exactly distinguished by their titles. Condylomata acuminata are the result of the irritation of pathological discharges other than those of lues. Gonorrheal pus, the pus of chronic vaginitis, filthy habits, sweltering rolls of fat, all may induce the forma-

tion of the nonspecific wart. But this is not flat; it is acuminate. It is the rank vegetation of a fetid locality. It is the tropic luxuriance of a highly manured miasmatic soil. The papillae undergo forced development. That is the whole case. But the condyloma latum is a distinct granulomatous deposit in the part entirely foreign to it under normal conditions, and acquiring from the pressure, heat, and moisture, not its incentive to growth but only its peculiar compressed appearance and oozing surface. Any solid lesion of lues subjected to the same macerating process will yield the same result. You will find it in heredolues; in the second stage of acquired lues; in the late secondary stage, and also in the tertiary. While not an instance of orificial lues its occurrence between the toes may be noted, in passing, as illustrating the manner of its production. The tendency of corns to become soft in this situation is familiar to everybody; the same tendency is displayed by papular forms of lues. Beneath the behemoth breast of certain grossly obese women, the specific paules are likely to assume the same pultaceous character.

The secretion from condylomata lata is very contagious, and many an obstetrician officiating without gloves has lived to regret his carelessness. Examinations for supposititious hemorrhoids have brought the absorbing surface of the physician's finger in direct contact with the virulent exudation. In explorations in these localities nothing should be taken for granted, either from the unimpeachable character of the patient or an attractive exterior; the Wassermann reaction has demonstrated the prevalence of lues in quarters utterly unsuspected. We are no longer under any delusions regarding the "unspotted from the world" reputation of any class or person. This is far from being a cynical indictment of the virtuosity for there are many such—very many indeed. Our women are fairly entitled as a class to the appellation, but many burns have made us dread the fire of misplaced confidence. Here and there we have stumbled upon an unusually promising case which has brought humiliation and embarrassment upon us. Often our demure young miss has proved to be a whited sepulchre. Often on the other hand the fetching sweetness of young motherhood has brought forth a weazened, whining, condylomatous little old man engendered by a lecherous father. From the external indications nothing of this could be suspected. Prior to this day of diagnostic precision, it was frequently impossible to put the blame upon the proper person. If the husband was a cur he could hint at conjugal infidelity on the part of an innocent woman; showing nothing, on close examination, he could indignantly shift the responsibility. But armed as we are today, his assurance and mendacity would avail him nothing. He would promptly be placed in the class to which he belonged; his denial would only add the crime of slander to that of blood contamination. Had the Wassermann performed no other service for humanity than of exposing the slayer of reputation, it would well have justified its claim for recognition and applause. A little above we have counselled prudence in the demand for blood examinations; but here is a situation where it would be criminal to forego it.

In the tertiary stage of lues, there is displayed the same propensity to orificial involvement as in the preceding stage. It is not alone that the mucous membrane is susceptible to attack, but that the locality of the apertures seems to be selected by the spirochete for its most significant demonstrations. About the nose it will weave a curvilinear deposit of little nodules with ulcerating summits, or it will produce a solid, inflammatory area sharply defined and with the characteristic wavy outline. At the edge of the nostril a gummatous infiltration may eat away the ala; within the nose the septum may suffer similar devastation. Upon the very end of the nose, like a small eccentrically limited rosacea, it may blaze forth in ridiculous effulgence. The sharp limitation and the absence of contributory telangiectases should arouse suspicion, and means should be taken at once to verify it. The Wassermann will serve us here most decidedly if we can have it made without exciting too much mental disturbance or an ungovernable family upheaval. There is a possibility of such a lesion being lupus or lupus erythematosus. All our diagnostic criteria go amiss sometimes and rules of differentiation contribute to our discomfiture. Lupus may begin in the adult. It may be acute enough to upset the chronology. Lupus erythematosus may early show no atrophy, and very little, if any, scaling. If we jump to the conclusion that the phenomenon is surely lues because it presents the customary markings, we may get ourselves into a most uncomfortable dilemma and set innocent people by the ears. It is wise to proceed with the caution of the hunter stalking the wily beast of prey. Running in on him will not do; it may result in a disastrous scrimmage. He must be trailed until cornered and then dispatched. Prudence is the watchword where married people are involved. To be sure nothing should prevent the physician from doing his full duty in the premises; but there may be two ways of accomplishing it. The wrong way is to embroil one's self and the parties of the second part; the right way will lead to the important point by the exercise of a little strategy. If we can discover that our doubts are unfounded without the highstrung patient being aware of their existence, we shall prove ourselves better physicians for our discretion.

The painless dysphonia of tertiary lues is a very striking phenomenon. It is quite decisive. Any other pathological process resulting in the same amount of incapacity would be accompanied with marked distress. Acute laryngitis or tuberculous laryngitis are both painful. It is true that hysteria is sometimes accountable for aphonia, but the absence of pain is compensated by the luxuriance of characteristic stigmata. Painless dysphagia is in the same class as painless dysphonia. It is distressing in that the patient has to force the food past the obstruction but it is not associated with actual pain.

In tertiary lues the eye sometimes gives invaluable aid in establishing the diagnosis and in forewarning of graver developments. The reflex iridoplegia of oncoming tabes is a case in point; the choked disc of cerebral syphilis is another. It is indubitable that both the tongue and eye of the



infected sufferer are eloquent of the depth of his affliction.

About the mouth, again, the tubercular ulcerating or gummatous lesions will be found following the peculiar law of their being, in arranging themselves in ellipses, half circles, or festoons. Or there may be one larger deposit whose necrotic surface will reveal a similar configuration. Lues, while frequently wily and deceptive in pretending to be something else, almost invariably betrays its identity by its tendency to grouping and circinate deployment. So true is this that if one sees an ulceration with a fluted border or a number of papules or tubercles in bent bow formation, one is off on the hunt for corroborative evidence. Any part of the body may be the site of these dull red sluggish granulomata, but in the neighborhood of the mouth or nose they take on added significance. Here also they are liable to dangerous misconstruction if their identity is not made out. The most frequent error is the miscalling of lues, cancer, and of cancer, lues. This has been done to the reproach of the surgeon on more than one occasion. In this event the patient has simply suffered unnecessary inconvenience, mutilation, and expense; his life has not been endangered. But in the other event of an error by the physician, malignant activity has been permitted to continue until successful interference becomes impossible. This calamity is becoming rarer because of the refusal of most practitioners to abide by the judgment of their senses in such a serious dilemma. Here is a situation where the invocation of the Wassermann is imperative, no matter what contingent disturbances it may create. With a decision involving the life of the patient demanded within a short time, no paltering should be tolerated: delay is the one unpardonable factor in the circumstances. If one is sure he is dealing with lues one should be emboldened to demand the Wassermann in the knowledge that domestic relations will not be unnecessarily embittered; if in doubt, the gravity of the problem overshadows every deterrent consideration. If one is certain that he is dealing with cancer the Wassermann will hasten indicated interference, and any misgivings aroused in a jealous mind will be swallowed up in the magnitude of the tragedy.

Gumma has attacked the penis and has given a highly artistic representation of carcinoma. It is on record that the penis has been amputated under this delusion; however, no cautious practitioner would venture a positive opinion on the gross appearances. Histories frequently confound instead of assisting; they are usually so vague and so "fed up" by leading questions that they do not convey any trustworthy information. Add to this the inexplicable propensity of patients to favor the production of a preconceived or flattering diagnosis, by coloring their testimony accordingly, and we have good and sufficient reason for distrusting clinical histories. At any rate they are to be received with reserve in grave perplexities. The Wassermann is as imperative here as in the differentiation of cancer and lues anywhere. Even with a positive Wassermann, however, we may be facing disaster. For it is unfortunately true that a luetic may become the

victim of cancer, and right on top of a gummatous lesion. With a negative Wassermann we may still be at sea, for in a certain number of tertiary conditions it fails to register correctly. The only sane procedure when the distressing doubt arises is to take the blood, and if the findings are against lues, to give salvarsan at once and try for the therapeutic test. If this proves abortive one is sure of his ground and may proceed to the measures indicated for cancer.

Gumma of the penis has been responsible for that mysterious masquerader denominated chancre redux. Methods of treatment which pretended to cure syphilis with great rapidity and certainty have accounted for the inexplicable reappearance of the symptoms by postulating a reinfection. Chancre redux proved the reinfection. And every one of the inevitable manifestations of the old infection was pointed out as a consequence of the new. It was convenient and bewildering. It was what our dear old friend, Dick Swiveller, would style a "quencher." The mention of Dickens brings to mind another quotation apropos of the chancre redux when in speaking of Mrs. Harris, Betsy Prig said to Sairey Gamp, "I don't believe there ain't no sich a person!"

Gumma of the tongue is often one of the most puzzling conditions that confront us. The problem is of course to distinguish it from cancer. Usually it appears in a different situation. It favors the dorsum while cancer favors the sides. This is ascribed to the effect of dental irritation in the latter instance. Why irritation should not precipitate gumma here as it does elsewhere, is not made at all clear, but practically the gumma usually does break forth upon the dorsum. Cancer is painful; gumma is ordinarily not painful. This distinction must not be too implicitly relied upon, as gumma sometimes hurts inordinately. Both produce an ulcerating growth. Gumma is speedier than cancer, but relative degrees of speed are not a safe dependence, because in a vascular region like the mouth cancer is rather speedy also. The induration in cancer should be greater than in gumma. Cancer should have an associated adenitis of the nearest glands; gumma lacks this, although it is easy to mistake an old luetic adenitis for glands invaded by cancerous metastasis. That is the case epitomized. So nice is the distinction at times that surgeons have been accused of removing a tongue which medical treatment would have saved. Complement fixation stands in the way of a repetition of that enormity. No man should trust his own senses in framing an opinion that is fraught with so much risk. The aid of every method of determination should be invoked.

Gumma of the palate is not likely to be confounded with anything else after it has produced a perforation; prior to that its location should be regarded as highly suggestive. Cancer is not to be differentiated, as it does not attack the vault.

The cheeks may be the field of extensive tertiary ulcerations. Depending, it may be, on lowered vitality or upon conditions impossible to determine, the mouth and throat may be involved to an incredible degree.

The floor of the mouth forward of the lingual attachment is liable to be the site of either gumma or cancer. History and palpation will incline the examiner to one or the other opinion; but after he has reasoned himself into a plausible diagnosis he will conclude by asking for a Wassermann. Induration and adenitis make a strong case for cancer but despite the confidence expressed in the clinical findings operation will never be advised until the serologist has reviewed the proceedings. And let it be ever remembered that luetics are not immune to other diseases. When your Wassermann has come back positive do not rush headlong to the conclusion that the lesion is unqualifiedly specific. A luetic may acquire a cancer as readily as another man. In point of fact his luetic lesion may form the basis of cancer as in Marjolin ulcer of the leg. The serological determination is of vast assistance. It gives a rational point of departure for interference. But after intensive specific treatment has proven of little avail it will be wise to pause and consider whether we are not dealing with a dual pathology. Operation may unfortunately be delayed too long under a stubborn adhesion to a single string policy.

The etiology of leucoplakia is going through the same eliminative process as that of tabes. Time was when tabes had many causes: infection, cold, injury, and excessive venery were all admitted into etiological complicity with lues. An amazing commentary on our fatuous ignorance. We used to congratulate the patient if we could make out a history of lues, as we were confident of curing him on that hypothesis. Gradually as our information grew, the weeding out process put the whole responsibility on lues, and we sorrowfully acknowledge that we could not cure it at all. Today leucoplakia is credited in the literature with a diverse causation. It is a shining example of the tenacity of tradition. But little by little we are coming to understand that the spirochete is a jealous being, utterly averse to sharing its glory with any other. Consequences referable to its activities are referable to them alone. Leucoplakia is a keratosis of the mucous membrane producing white patches or streaks. It is a late manifestation and very prone to cancerous degeneration.

Gumma at or within the anal margin will arouse suspicion of carcinoma, especially in the middle aged in whom both conditions are likely to occur. Rapidity of development, absence of pain, of pulpy instead of grisly feel, all argue for syphilis. Needless to repeat that the Wassermann will be resorted to, if any suspicion of the true state of things occurs to the observer. Unless he is too hasty in forming his opinion and too obstinate in maintaining it, he will expeditiously apply every diagnostic criterion within his reach.

Gumma may invade the inner aspect of the buttock and simulate ischio-rectal abscess or fistula. It may extend from the anterior border of the anus forward on to the scrotum. In this situation uncertainty has arisen regarding its identity. It has been supposed to be cancer, of course, but otherwise it has been paradiagnosed tuberculous. A negative Wassermann leaves the doubt; a positive relieves

it. A concomitant affection of the lungs would clarify the situation greatly. A deliberate consideration of all the circumstances, with an eye to all the possibilities, will lead to the right conclusion.

Gumma of the labia will evoke the shade of chancre redux just as will gumma of the penis, if the deposit is single and the mind of the observer is of the grandiose quality that maintains the radical cure of lues. Gumma may be, on the contrary, so diffused and destructive as to permanently distort the invaded tissue. A species of pseudo-elephantiasis has been described in consequence of a plastic lymphangitis affecting one or both sides.

Gumma of the introitus may result in narrowing of the orifice; deeper in it may produce a recto-vaginal fistula. Another tendency of tertiary lues is toward the development of fibrous tissue in situations where its contraction may interfere with function. We are all familiar with the tabetic spinal cord. We are not perhaps quite as familiar with the strictured esophagus and rectum. In our consideration of lues we are apt to forget that, in addition to the granuloma which subsequently breaks down and leaves a scar, there is this initial fibrosis—actual scarring—without any preliminary neoplastic deposit. There may be, and probably is, histological alteration of which the fibrosis is the culmination; but this is inappreciable. Clinically the first manifestation is interference with function. Endarteritis resulting in arterial fibrosis is first revealed by high tension; just as the fibrosis of the spinal cord is first revealed by disturbances of sensation or locomotion. Until the displacement of functioning tissue by fibrous tissue, we are unaware of the insidious process at work.

The orificial manifestations of lues are peculiarly significant in the inherited disease. The classical picture of the senile baby with the hoarse cry, purulent coryza, and the condylomatous anal rosette is familiar to all. We recognize him by the orificial involvement. We should suspect him because of his used-up aspect, but we cannot definitely account for him without the concomitants mentioned. There is little need of dwelling on this characteristic group of symptoms. There is no likelihood of mistaking it for anything else.

The purpose of this paper has not been to give a better description of the lesions of lues about the orifices—because in that it were beaten at the start—but to emphasize the importance of this localization in the forming of correct opinions. If the eruptio circum orem arouses suspicion, not on account of what it is but on account of where it is, the liability to err has been markedly diminished. If lues will be thought of every time an orificial lesion is seen it is certain that while one may go astray in an excess of zeal it shall not be for long nor in a dangerous direction.

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**Ultraviolet Light a Symptomatic Cure for Eczema.**—John Bryant (*Boston Medical and Surgical Journal*, September 19, 1918) says that ultraviolet light, while not preventing recurrence, has proved an active therapeutic agent and an almost instantaneous specific for the intolerable itching.



## THE INGROWN TOENAIL AND THE COUP D'HACHE.

BY DOUGLAS H. STEWART, M. D., F. A. C. S.,  
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It may be mentioned in all kindness that our French friends derive amusement from ridiculing translations that were originally made for the benefit of readers who were unfamiliar with the French language, though they were interested in the hatchet stroke or a certain mode of amputation that is referred to in France and elsewhere as *coup d'hache* or *coup d'hachette*. Bearing this in mind it becomes apparent that American editors must have nodded if they used such title as *coup d'hachis* or *coup d'hacher*. Ever since that mutation is supposed to have taken place, there have been witty word plays that turned upon similarities in the Gallic words serving as synonyms for the English nouns, hatchet, hash, choppings, hackings, and mince meat.

Critics of the matters herein set forth assert that the author has adapted the hatchet technic to the ingrown toenail, or to the operation for that condition. If so, so be it. For that method could hardly be more indicated elsewhere, nor could it have a better aim; because the overhanging roof of flesh and skin and the underlying floor of tissue, will cover, conserve, and foster every germ energy that may be pathogenic, mud borne, or have its origin in any place where the foot of man may tread—be that place stream, swamp, sewer, stable, trench, ditch, vault, cellar, or other. Once infected the flesh, scratched and irritated by the hook of the nail, together with the cuplike receptacle that is furnished, forms an ideal nest for incubating, for feeding or for furnishing a port of entry to any mixed culture that may accumulate where there is not only advantageous friction, and vaccination by rubbing, during the act of walking, but even the interference of pressure, as exemplified in siphons of charged waters, is absent. Pressure is intermittent and absorbed by the cushion that is furnished by the stocking. There is no flow nor current to remove germs or to displace their activities to less favorable habitats, as there is about the prepuce or the anal puckerings; on the contrary warmth, moisture, food, darkness, protection, and putrefaction tend to make a favorable environment. In short, small as is the field, it lacks but area, though otherwise it is so excellent for germ cultivation that one marvels at the resistance that is furnished by the host. If the *coup d'hache* has a value in the presence of conditions that make for infection and if sutures or stitches have the disadvantages of foreign bodies, then an ingrowing nail would seem to be an admirable site on which to demonstrate that value and to avoid the presence of foreign bodies.

Operations for ingrowing toenail are many; yet their outcome is not at all what it might be, despite the fact that the first issue may have been satisfactory to the operator. In fact it might have remained satisfactory to the patient had he not been compelled to wear shoes that never were designed to agreement with the measurements and structures of any human foot. Rather were those foot coverings

made with the idea in mind that a big, strong, straight, well arched, uncalloosed, and undeformed foot was a monstrosity, once admired perhaps, though only by Greek sculptors, pagan sandal wearers, and such people, but having no tolerance among the hobblers who parade the middle aisle among the so called lucky ones, or among the so called unfortunates who stand behind a counter or before a piece of machinery.

The high priced shoe pinches laterally or horizontally, though the cheap shoe bears or presses down vertically. Therefore the nail hook of the workman is fairly likely to cut almost directly downwards against the solid resistance of the sole of the shoe, as that rests upon the ground and the foot is wedged forward into a narrower and a compressing space. The uncus of the man of fashion, who wears a pointed boot, is apt to cut laterally against the counterpressure of the second toe. This depends upon the bearing of the shoe, though it will often be found that a right handed man has his right toe affected and vice versa. If both toes—of both feet—are involved, the worse is usually upon the side of the most employed hand.

Anger's and Cotting's operations have been popular. Anger's requires suturing and Cotting's is rather easier to perform, while it is rather more certain of securing success. This latter operation is performed by a transfixion of flesh and nail with a sharp pointed knife, and then, from the point of transfixion, cutting backward and forward so that a slice containing healthy and unhealthy tissues together with the hook of the nail is cut away. After granulation, cicatrization, and contraction of the open wound are complete, the flesh is drawn away from the nail and a permanent cure is obtained through the process of healing.

The method here suggested implies taking two wooden tongue depressors that should be fixed firmly with adhesive strips in such a manner that the proximal piece of plaster compresses the bloodvessels, by surrounding the proximal phalanx of the great toe, thus insuring a nonwobbling, bloodless, operative field that mitigates the dangers of cocaine absorption by furnishing a free exit through the open incision, with a blocked entry through the compression. The distal ends of the two depressors should have their binding plaster strip free of the toe, i. e., beyond the outer end. If the wooden depressors are properly placed, a line drawn with a pencil using their edges as a ruler and guide, should pass one eighth inch to the mesial side of the hook of the offending nail. Whatever projects beyond that guiding line or protrudes between the guiding edges of the tongue depressors with which that line was made should be sawn off with a heavy razor or suitable knife, and this from a point a full quarter inch proximal to the lunula to the distal end of the slice that is to be removed. Such a slice includes germ nest, uncus, sound and unsound tissue. Stitching is not necessary, ligation should be avoided if possible, and the scar will not touch the sole of the shoe when walking, later. Healing is expedited by nonsticking dressings and the absence of the act of tearing off scabs, together with the employment of a properly cut shoe. The sole objection to the oper-

ation is urged upon the grounds of extreme simplicity of method.

The patient should walk well in a week, and usually has done so in less time; though seventy-two hours in bed is a great help to rapid healing.

128 WEST EIGHTY-SIXTH STREET.

## THE PROPHYLAXIS OF HAY FEVER

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The patient should wear clothing suitable to the climate, should take cold shower baths in order to tone up the nervous system, and should abstain from rich, albuminous, and stimulating foods. These measures are important in the prophylaxis of the disease.

Bostock's summer catarrh, or true hay fever, is very difficult to cure, even the authorities most at variance with one another are agreed on this point. Adrenalin and the various pollen extracts and antigens give some relief and in many cases apparently relieve the patient for several years, but as a rule, eventually the recurrence of hay fever appears. In addition to the use of pollen extracts, pure white petrolatum is a valuable adjuvant if used daily. It should be liberally inserted in the nostrils, smeared on the roof of the mouth, and rubbed on the inner and outer canthus of both eyes. It has a soothing influence and allays the irritation. This procedure is preferably carried out just before retiring. If the attack is very severe one grain of powdered pantopon may be used; the powder is thoroughly mixed with the petrolatum. This remedy seems to give great relief. Another important measure to observe is the brushing of the teeth. The ordinary tooth powders and pastes are best discontinued during the course of the disease as it is known that they contain antiseptics which are irritating to the mucous membranes when they are in the inflamed abnormal state during hay fever. It has been proved that the weakest solutions of antiseptics will cause an attack of sneezing and all the other uncomfortable symptoms accompanying the disease. In brushing the teeth the patient should not try to brush the posterior borders, as the mucous membrane of the gums in this area are hypersensitive and often the mere touch of the tooth brush ushers in the dreaded attack. These are simple procedures every hay fever patient can observe. The writer believes the victim of this disease who follows them will be amply repaid for his trouble.

**Intranasal Operation for Dacryocystitis.**—Carl F. Bookwalter (*Annals of Otolaryngology, and Rhinology*, December, 1917) believes that the results of the intranasal operation for the relief of dacryocystitis are ideal if the canaliculi are in good condition, the operation well done, and the after treatments carefully carried out. The suppurative is invariably relieved; and even in cases with defective canaliculi, there is little tearing, and then only at times or with certain positions of the head.

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IN MEMORIAM: DR. FRANK BAKER  
(1841-1918).

BY FIELDING H. GARRISON, M. D.,  
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Dr. Frank Baker, professor of anatomy in Georgetown University, Washington, D. C., died at his residence on September 30, 1918. Although well past seventy, Doctor Baker had remained in full possession of all his powers until the year 1916, when his health began to break and he was obliged to sever his official relation with the government. Symptoms of heart trouble began to develop, but his general health was vastly improved by a visit to the Pacific Coast shortly before his death.

Doctor Baker was born at Pulaski, N. Y., on August 22, 1841. His ancestors, who came from Gloucestershire, England, were New Englanders who fought in the Revolutionary War, and his father, Thomas C. Baker, was a well read man. His schooling was private and local. When the Civil War broke out, he at once enlisted in the Thirty-seventh New York Volunteers in 1861, serving until 1863, when he was transferred to Washington, where he later entered the government service and began the study of medicine. On September 13, 1873, he married Miss May E. Cole, of Sedgwick, Me., who survives him with six children. His son, Colonel Frank C. Baker, M. C., U. S. A., is now in France.

Doctor Baker took his M. D. degree at Columbian (now George Washington) University, and later received the degrees of A. M. (1888) and Ph. D. (1890) from Georgetown University. In 1883, he became professor of anatomy in the Medical School of Georgetown University, occupying this chair continuously for thirty-five years (1883-1918). He became assistant superintendent of the United States Life Saving Service in 1889, and in 1890 was made superintendent of the National Zoological Park, D. C. (1890-1916). Doctor Baker was one of the founders of the Biological, Anthropological, and Medical History societies of Washington, was president of the Association of American Anatomists (1897), the Anthropological Society of Washington (1897-98), the Medical History Club of Washington (1915-16) and secretary of the Washington Academy of Sciences (1890-1911). He was editor of the *American Anthropologist* (1891-98), one of the collaborators of Billings's *National Medical Dictionary* (1890), supplied the definitions of anatomical and medical terms in Funk & Wagnall's *Dictionary*, and contributed several monographs on regional anatomy to the *Reference Handbook of Medical Sciences*. His first contribution to medical literature comprised two papers on President Garfield's case (1881-82), in which he showed that the wound was caused by the second bullet and correctly diagnosed its course in a well accredited diagram made two days after the event. This was followed by a number of papers on anatomy and anthropology, notably *The Rational Method of Teaching Anatomy* (1884), *What Is*



*Anatomy?* (1887), *Some Unusual Muscular Anomalies* (1887), *Anthropological Notes on the Human Hand* (1888), *Ascent of Man* (1890), *Nomenclature of Nerve Cells* (1896), and *Primitive Man* (1898). His monograph on the *History of Anatomy* published in *Stedman's Handbook* compares favorably with the well known article of Sir William Turner (*Encyclopædia Britannica*), which has remained the ranking contribution in English. As one of the founders of the Medical History Club of Washington, Doctor Baker was a frequent contributor to its meetings. To these meetings, his wide knowledge and his kindly presence lent a peculiar charm, and even before his presidency (1915-16), he was asked to contribute a paper every year. He attended nearly every meeting and usually made highly original comments in the discussion. Since the death of the late Dr. Robert Fletcher, he was probably the most erudite physician in Washington. Among his contributions to medical history were *The Two Sylviiuses* (1900) and *The Relation of Vesalius to Anatomical Illustration* (1915), both read before the Johns Hopkins Medical Society, a paper on the old Paris Medical Faculty (1913), the above mentioned *History of Anatomy* (1913); two papers on Scarpa (1915); and the *History of Body Snatching* (1916), still unpublished. Doctor Baker left a valuable collection of books on anatomy, all having the well known signs of constant use and study. These have been donated by his widow to the Library of the Surgeon General's Office and the Medical Library of McGill University, Montreal.

Doctor Baker was a man of goodly height and presence. His fine head was remarkably like that of some of the great anatomists of the past, notably Quain and Sir Richard Owen. He had a lively sense of humor and his pleasant, affable, quizzical ways endeared him to all. He was a man of character, who maintained his views of things, sometimes in opposition to his fellows, but he was everywhere beloved and had no enemies. As a teacher of anatomy, he early saw that didactic lecturing has little value, and that the proper place for instruction is the dissecting room. His lectures, at Georgetown, therefore, were humanistic, historical, morphological, of ample scope, set off by demonstrations on the cadaver, which he performed himself. Latterly, he inclined more and more to Mall's views of inductive, as opposed to didactic, teaching, while his lectures acquired more of the historic flavor, through a splendid set of lantern slides, selected from the older illustrated books with rare discrimination. These slides, which he used with skillful effect at the Vesalian quadricentennial meetings in the Army Medical School (Washington) and the Johns Hopkins Hospital, were not even regarded by him as his exclusive property but were freely and generously lent to others. They were remarkably effective in his lectures to art schools, covering Choulant's material and going beyond it. In the classroom, Doctor Baker had few equals. He was always a friend of young men, sometimes even fighting their battles in his impetuous way. As the rector of Georgetown University said at his funeral, each

of his pupils carried away with him something of the scholar and gentleman who taught them. In the medical societies and history clubs, the effect of his pleasant old fashioned manner was the same; his comments on papers read were always of quaint, original quality.

Doctor Baker took the present war very seriously to heart. Familiar as he was with the German masters of his subject, and imbued with the earlier Germanic ideals of the romantic period, the defection of Germany from the vanguard of civilization affected him gravely. In his early manhood, he became intimate with Walt Whitman and John Burroughs—all three in fact having been in the government service together, and remaining lifelong friends. As a friend and familiar of our greatest poet, his views of the infinite variety and impartiality of nature and of the solidarity of human interests were those of all "liberators of the human spirit," of whom Walt Whitman was assuredly one. When the present war broke out, Baker saw, and even stated, that the Prussian idea is that of a narrow, selfish clansmanship, something very different from the multifiform, humanistic Germany of the past, and that such arrogant clansmanship, with its monstrous, maladroit ambition to reduce all nature to a dreary monotone and all mankind to a mechanical pattern, invariably leads to factional, sectional, racial, and national hatreds, and so is the true breeder and perpetuator of wars—

"The children born of thee are sword and fire,  
Red ruin and the breaking up of laws."

Few realize how many have broken their spirits over this war. In 1861, Doctor Baker was one of those who responded to the first call. The service flag of his family now numbers no less than five stars; he would have been an honor to any country, and dying as he did of heart failure, it is perhaps no exaggeration to say that, as with Brunton, Gaskell, Minot, and so many others, he himself was a martyr to the present cause. Those of us who were his pupils and whom he honored with his friendship can only express our deep sympathy with his family and the sense of an irreparable loss.

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# Medicine and Surgery in the Army and Navy

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## THE CARREL-DAKIN TREATMENT OF INFECTED WOUNDS.

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The price a nation pays in wounded and dead in time of war is often appalling. Opposition to any measure whose object and aim it is to lessen the horrors that follow in the wake of war is unthinkable and intolerable. At a time like the present, when the nation is calling keenly upon all its resources, German propaganda and the mutterings of babbling pacifists are scarcely more harmful than the teachings and influences which hinder and hamper the utilization of lifesaving measures whose worth and value have been so unmistakably demonstrated as those of the Carrel-Dakin treatment of infected wounds.

The object of this preliminary report is, first, to add another word in support of the evidence which has already established the unequalled success of this means of treating infected wounds, and to point out the selfevident fact that the daily use of the Dakin solution in the treatment of such wounds, in many parts of the country, is relegating to their proper places, the idle and baseless criticisms which unfortunately found their way into print, and which had their origin in minds unfamiliar with what they attempted to write. Secondly, to reassure those whose confidence in the Dakin treatment has been shaken or shattered by the harmful and hurtful opinions of those who know but little of the real merits of the treatment; to urge that the intelligent application of an accurately made solution, according to Dakin, instilled into properly prepared wounds, as directed by Carrel and Dehelly, will prove no more disappointing to those who thus will use it than it did to us.

It is strange that men who have borne reputations for truth and have ostensibly aided in the solution and settlement of mooted questions in medicine should now throw to the winds all regard for those virtues, and rush into print with condemnation of something, regarding which they possess so little real knowledge—abundant proof of which is contained in every line written.

First hand knowledge of the Dakin treatment of infected wounds is attained only after time, pains, and patience have been exercised in the personal use of the treatment. Only from knowledge thus acquired do we get defenders of and pleaders for this method of treating infected wounds; from such knowledge do we obtain the daily increase in the number of men who are ready eagerly to join in protest against those hostile and bitter expressions which have already done much harm.

Many criticisms of this treatment, doubtless, had their origin, as we know a few did, in the perfunctory use of solutions which were not Dakin's, and by employing a technic which is not Carrel's.

One of the severest criticisms lodged against this treatment grew out of less than a single day's time spent on the part of one "investigator" in observing the treatment in action. Some of these reports have sprung from sources out of which better things might be expected. Coming from "educators" of the profession, greater influence for good or bad is wielded than when coming from less notable members of the profession. We should, therefore, deem it a privilege—indeed a pleasure—to protest till all such criticisms are crowded well into the limelight of ridicule where they ultimately find a haven so befitting them.

The making of Dakin's solution is not "complicated and time-consuming," nor is it "an expensive plan of treatment on our medical service." One man can, with time to spare, supply ample fluid for use in hundreds of wounds as we have demonstrated. At Camp Cody one young man supplies all the solution required for treating a large number of all kinds of wounds, including empyemas, which require unusually large quantities of the fluid, and does this at odd moments when not engaged in his regular dispensary work.

### MAIN PRINCIPLES OF THE TREATMENT.

It is indispensable that the wound, first of all, should receive adequate surgical treatment and preparation for the instillation of the fluid; it should be opened thoroughly, every nook and corner being exposed to view and within range of the fluid through the properly placed distributing tubes. Perforation of the tubes is important and directions in this step should be implicitly followed; they should be placed in sufficient number, and in correct relation to the wound surface, so that all parts of the wound may be bathed thoroughly with the solution at each and every instillation. The skin must be protected by pads treated with petrolatum. At each change of the dressings, the tubes should be examined to see that they are not blocked and that all parts of the wound are receiving the solution.

The presence of unsuspected or hidden foci of infection, foreign bodies—bullets, particles of clothing, overlooked sponges, or gauze strips in the wound, as happened in one of our cases—or any hindrance of whatever kind that may prevent perfect and complete ablation, continually or intermittently, of all parts of the wound, will result in failure to sterilize the wound.

If concentration of the fluid is maintained and instilled properly into the wound, and all other details looked after, the bacterial count will promptly fall. Should the count remain high, after a few days' treatment, thorough inspection of the wound and apparatus generally should be made. These steps will lay bare many unsuspected reasons for lack of wound disinfection and prolonged suppuration. It has appeared to me that the surgeon often fails to fully appreciate the condition of the wound; that long drawn out suppurative processes are taken frequently as a matter of course, and are left to time and good fortune to rectify. It is therefore imper-



ative that good surgery go hand in hand with a Dakin treatment; one is indispensable to the other. Failure to understand this point often has led to rejection of the treatment, as being useless.

In a general way it may be said that the size and character of the wound will largely determine the kind and number of the tubes to be used. They must occupy a definite position on and in every wound, and means of thus maintaining the proper positions of the tubes must be observed. "Reading" and hearsay evidence will not afford the required knowledge, which is to be had only by personal contact with the treatment. The obstruction of a single tube, the use of a drop counter with several tubes, displacement of a dressing, or any error that may prevent proper instillation of the fluid will lead to disappointment. The drop by drop method is possible or desirable only with one tube containing no holes but open at both ends, or with a single tube perforated in the usual manner and covered by *tissu espong*. The manner of instilling the fluid into the wound intermittently differs in all respects from the continuous instillation. Principles of this kind are often entirely overlooked, if they are ever appreciated.

Besides having noted the utter lack of appreciation of the importance of properly preparing the wound to receive the solution, we have noticed also that instead of the tubes recommended by Carrel, large, ungainly drainage tubes, perforated here and there by awkwardly placed holes made by scissors, have been used. In one instance of this kind the fluid in use had not been titrated and its origin or source was unknown; the skin was receiving no protection, and the whole technique constituted a perfect jumble of ill advised and erroneous steps. Under these chaotic conditions a fluid, supposed to be Dakin's, at odd intervals—when not forgotten—was injected into the wounds. And from this interpretation and understanding of the Carrel method we read opinions from time to time as to its efficacy in the treatment of infected wounds!

These statements are not made to be facetious or to belittle the efforts of others, but only because these things actually have been witnessed in operation, and to point out how utterly wide of the mark one may actually be led by mere reading without knowing, or looking without seeing.

#### PERSONAL EXPERIENCE WITH THE TREATMENT.

Our opportunities for putting the Carrel treatment to conclusive tests have been very satisfactory. Empyemas, compound fractures, amputation stumps that became infected, large and extensive phlegmons of the trunk and extremities, gunshot wounds, acute suppurative bone lesions—all have yielded to the treatment, with but a single exception.

This exception was in the empyemas, reference to which will be made later. Explanations of failure to sterilize wounds were invariably forthcoming upon carefully inspecting the apparatus in use or the condition of the wound. Almost without exception a tube was found blocked or dislodged, the dressing deranged, the fluid was above or below the required figure, or a little further surgery was needed in the wound. Following a correction of

the error rapid progress toward wound disinfection was established. Infected hands and fingers resulting in deep palmar abscesses and tendon implications have never yielded to treatment in previous years as they have done since the beginning of this treatment.

The most serious of all infected wounds we met with was a compound comminuted Pott's fracture. The fourth day after the injury the patient, a civilian, fifty years of age, was in a serious condition. His temperature was high, his pulse rapid; the skin sallow and muddy, hot and dry; there was a pronounced delirium and the patient appeared septic and very sick. The wound presented an appearance with which all surgeons are more or less familiar: there was a large opening on the inner side of the ankle through which some two inches of the tibia protruded; the wound contained many ounces of a bloody or dark colored, foul smelling fluid; the leg up to the popliteal space was discolored, tense and tight. Several pieces of loose bone were lying about in the wound.

The treatment of this almost hopeless condition was begun by ignoring the fractures—an important feature in treating most compound fractures. The foot was further everted, the wound opened up in all directions, the loose fragments of bone were removed, as well as all dead tissue. The calf tissues were well opened up, and into this most extensive and septic wound Dakin's tubes were liberally placed and the treatment started. The temperature fell, the pulse likewise; the delirium disappeared, sleep was restored, pain ceased, the general condition improved in every way. The wound, which at first was most offensive, gave out no further odor; the drainage diminished daily; the hard and tense feel which was so noticeable at first in all the soft parts around the wound disappeared; granulations sprung promptly into notice; the limb could be handled without causing pain to the patient. Optimism and good cheer best describe the mood of the patient. This case is recited somewhat in detail because it represents a fair problem by which the efficiency of this treatment can be judged. It has been my fortune to have had some experience, in former years, with similar instances, but it is putting it in the fairest sort of a way to say that I never have seen any treatment which equaled the one which here is outlined.

Empyemas offer greater difficulties to us than do many other suppurative conditions. Explanations for this are clear when we consider the impossibility of determining the extent and dimensions of many suppurative pleural cavities. There may be encysted pus pockets not found at the operations, or undetected and unknown parts of a single cavity may remain unexplored. It has been frequently our experience to find many partitions in the chest cavity dividing the pus collection into more than one pocket, many of which are not recognized and which of course, remain unopened and therefore impossible of irrigation.

Failure to sterilize such a wound as has just been described should not be charged against any particular method of wound disinfection, but against procrastination on the part of the internist in mak-

ing the diagnosis until extensive and irreparable damage has been done, and to the inability of surgeons to render by operation such conditions accessible to proper and efficient treatment. Digressing a moment from the issue, may we not suggest that in a given series of cases of pleural suppurations, if the diagnosis were made very early—before great pathologic changes have occurred—would not the surgical therapy be a simple matter? Would surgeons ever need to think of a Schede or an Estlander operation? Could they not under these conditions empty the first small quantity of pus, as a rule, from a single cavity, whose complete obliteration would assuredly occur from the prompt expansion of a lung not yet greatly crippled or fixed by adhesions?

It has been stated by the internist that the condition in the pleural cavity here described and often found by the surgeon may be brought about within a day or two; that the compressed and collapsed lung, firmly bound down by adhesions and bands which also partition the pleural cavities into many pus pockets are not due to procrastination on their part, but are due to the seriousness and virulence of the infection. From these contentions we will not dissent, but must call attention to the fact that such widespread pathologic changes do not occur in so short a time in any other cavity or tissue in the human body.

Possibly, when we cease to consider such impossible conditions as unresolved pneumonias and regard such supposed findings as lung abscesses, tuberculosis, pleural suppurations, or whatever they may be, pleural empyemas will come into their own, which is an early diagnosis always, leading inevitably to a line of prompt treatment much more simple and effective than we now possess. This is the route we followed when we discovered the safe and certain treatment in kidney surgery, in gall-bladder surgery, and in the cure of peritonitis which, regardless of its origin, carries with it a frightful mortality when not dealt with early, and unquestionably is the explanation for a notable increase in the percentage of cures effected even in malignant disease today.

A neutral hypochlorite of soda solution, made according to Dakin, kills alike bacteria *in vitro* and *in vivo*. It is so easily demonstrated by the simplest kind of experiment that any one who so desires can carry it to quick and satisfactory conclusion. Wounds can be so completely sterilized that ultimate closure by suture is a final and feasible step, and can be much earlier carried into execution than has ever been done before in the management of septic wounds. This treatment can, and no doubt will, eliminate the pus service from our hospitals. The declarations made in this connection by the authors of this treatment seem, to those who do not understand, a little extreme; but such is not the case. The statement is a modest one, full of truth, and possible of verification in the hands of any medical man who knows the work and will follow the rules that govern the use of the treatment.

#### ECONOMIC FEATURE OF THE TREATMENT.

The economic feature of the Dakin treatment is one of its important points. By lessening the mor-

bidity and mortality, it diminishes, by a figure close to fifty per cent., the convalescent period, thus necessitating less care and attention while in the hospital, fewer dressings, and all other items essential to the care of the sick. The economic value of the Carrel-Dakin method needs no further argument.

To witness the change of a single dressing in the treatment of an infected wound is all that is needed to be convinced that it is the simplest, most effective, least time consuming, and the most practical procedure of all methods. Bandages are not used, thus eliminating one of the most difficult parts of wound dressings; the patient is not removed to the dressing room, but is dressed in his own bed. The wooden clothespins which hold the dressings on the wound are let loose, and the large outside pads fall away from the wound much in the manner that one opens a book. The gauze from around the tubes is removed; the tubes are changed or inspected; the wound is sought in its most unclean localities for smears, then washed with the neutral soap; tubes are then replaced, surrounded by gauze as before, and the pads fixed on the outside by refastening the clothespins.

A point not generally touched upon, and which I here wish to emphasize is this: The patient, the most concerned of all, will furnish good proof of the progress that is being made. When all is going well he is optimistic, suffers little, and often has no pain. He enjoys the dressings, is pleased with the way his wound looks; he eats well, sleeps well, takes on weight, and his every word and action bespeak his true condition. Contrast this with the condition of the patient who, by other or older methods of treatment, is not doing well: he sleeps poorly, has no appetite, and is disturbed by having his dressings done. The handling of his wound is exceedingly painful, and so much so that he often begs the surgeon not to touch him, preferring to leave it untouched regardless of consequences. He often despairs of improvement and becomes decidedly indifferent as to the outcome. This picture is not at all strange to the surgeon, who at this moment can recall many such cases, but is one which I have not seen in the treatment of any wound which had timely and efficient treatment with the Dakin solution.

Bacterial counting during wound repair is necessary. A wound clinically clean, as Carrel has pointed out and as surgeons generally well know, is not necessarily so bacteriologically. Daily diminution in the number of microbes in a wound is proof positive that success is assured and that correct reading of the bacterial chart points clearly to the day at which closure of the wound by suture may safely be made.

#### EMPLOYMENT OF TREATMENT.

The Carrel-Dakin treatment is involved in no mystery. It is easily learned and can be put to practical use by any physician who will take the pains and time to learn a few essentials. It is not learned by "reading" or "following" the literature, and an opinion thus acquired justifies in no sense an expression about it, be it good or bad. Personal daily use of it in all kinds of unclean wounds for a definite length of time is the only procedure that will



justify an opinion; this alone will entitle one to speak upon its merits or demerits.

Satisfactory management of practically all suppurating wounds has always been a sad chapter in surgery; it has been shunned by the "clean" operating surgeon, and seen by him—when seen at all—in the most casual way. The newest intern or the laziest one, usually draws this as his first hospital prize, and struggles with it as best he can, often without help, advice, or suggestion. The patient frequently swims in his own pus for days, runs a high temperature, spends sleepless nights, dreads the dressings, hates the hospital, and feels no great love for the attending surgeon. Besides contaminating everything and everybody, he becomes an eyesore to all, and a burden to himself!

When we were granted the request to take the Carrel-Dakin course at the War Demonstration Hospital in New York, we felt, at the end of the first day's work that the two weeks' time spent there would be a complete loss, especially after some of the ablest men of the city warned us that all that was worth getting could be had in two hours. Major Stewart, who gave us the first talk on the treatment, in the course of the work made claims which, to us, were startling, and made us all feel that right at that moment, we, too, had opinions worthy of expression on the treatment. We were plainly told by that young man that pus in our hospitals was our own fault, or would be; that the pus service could practically be eliminated from the hospital; and that of these things we would all likely become convinced before leaving the work. We did, not only of all that was said there, but of more since trying it out ourselves.

Pus wards and pus service are odious terms which have long darkened the pages of surgical history, and little has been done until the present in eradicating this stigma. The management under which this chapter in surgical literature bids fair now to become a forgotten one is meeting with that same ugly opposition which has always met great and beneficent changes. Most questions, however, are satisfactorily settled by time, study, sober and serious thinking, and by minds and intellects that are honest, able, and farseeing.

It is also true, as our critic says, that there exists a "small corps of enthusiasts of the type that is easily carried away by new and startling methods"; but while these men may, at times, prematurely and hurriedly acclaim the merits of new departures and discoveries which are insufficiently tried, they, at least, are alert, aggressive, and are never opinionated and steeped in methods of stereotyped thought to the extent of wholly missing the issue until it is about time to replace it with even better things.

**Empyema in Military Camps.**—Eugene W. Rockey (*Military Surgeon*, October, 1918) concludes as to treatment that: *Pneumococcus empyema* was treated successfully by rib resection and simple drainage. From the progress of the yet incomplete cases Rockey states it is felt that the most efficient method of treating *streptococcus empyema* at Camp Lewis has been by thoracotomy with constant negative pressure.

**The Foot Problem in the Army.**—Tom S. Mebane (*Military Surgeon*, October, 1918) states that the following is a synopsis of the course of training at Camp Beauregard of enlisted men, to fit them to act as company noncommissioned foot officers and regimental chiropodists: 1. Anatomy and physiology of the foot. 2. Arch trouble; pathological conditions of longitudinal and anterior arches, with causes and treatment. 3. Foot deformities involving the forefoot; bunions; hammer toes, etc. 4. Foot exercises and general management of weak feet. 5. The army shoe construction, care, repair, orthopedic modifications. 6. Shoe fitting. 7. Care of feet; care of socks. 8. Asepsis; technic in chiropody. 9. Corns and calluses; nature, cause, prevention, treatment. 10. Ingrown nails, irritations, blisters, excoriations. 11. Trench foot; rarer causes of foot trouble; circulatory, nervous, skin diseases. 12. Brief consideration of sprains. 13. Demonstration of the use of adhesive plaster; felt; straps, etc. 14. Prevention of foot trouble. 15. General review. At the termination of the course the men were given an examination, and a letter sent to their commanding officers stating the nature of the men's work. If a man successfully completed the course, he was certified as able to do the following, subject to the direction of his commanding officer: 1. To measure the feet of the enlisted men for shoes and to see that they received those shoes. 2. To give the foot strengthening exercises and see that the corrected shoes ordered by the orthopedic surgeon are worn. 3. To treat minor foot conditions, as corns, calluses, irritations, etc. 4. To give first aid foot treatment in the field.

#### MEDICAL NEWS FROM WASHINGTON.

*Additional Demands upon Medical and Hospital Corps.—Noted Specialists in Medicine and Surgery Conduct Lecture Course.—Health Conditions in Navy.—Changes Among Medical Personnel.—Release of Officers Following Decline of Influenza Epidemic.*

WASHINGTON, D. C., November 11, 1918.

With the approach of peace additional demands will be made upon the hospital facilities of the army and navy as well as upon the personnel of the medical and hospital corps. Now, more than at any other time since the war began, will occur the slackening up and relaxation that inevitably come with the release of tension under which soldiers, sailors, and marines have been for the past year and a half. Men that heretofore have refused all medical treatment, now that the strain is over, to a large extent, will apply for attention. Not only that, but the demand for hospital facilities on the other side will become increasingly greater as the forces are withdrawn from the front. It is believed by the medical authorities that there should be no let up in the activities of their branches of the services or in the organization and training of additional medical personnel.

\* \* \* \* \*

A lecture course of unusual interest, because of the prominence of the faculty, is being conducted for the benefit of naval medical officers and nurses at the naval training station, Great Lakes, Ill. The course consists of a lecture every few days through-

out the fall, winter, and spring, upon subjects directly pertaining to the duties of the physician, surgeon, and nurse. Among the lecturers will be some of the most noted specialists in medicine and surgery in the middle west, and the class will consist of several hundred medical officers and nurses.

\* \* \* \* \*

With the exception of the third, sixth, and twelfth naval districts, health conditions in the naval establishment ashore have reverted to normal. In the third district, which includes New York city and vicinity, the epidemic of influenza was slow in developing and correspondingly is somewhat delayed in recession. The sixth district includes the immense recruit depot of the marine corps at Paris Island, S. C., and the epidemic has been kept alive by the influx of new recruits. At Mare Island, Cal., in the twelfth district, the epidemic is still raging.

\* \* \* \* \*

If the recent assumption of duties of the surgeon general of the army by Major General Merritte W. Ireland is to result in changes of duties of high ranking medical officers at Washington and elsewhere, it is understood that they will be effected only after mature deliberation, if they are made to any extent. General Ireland proposes to proceed without violence in his administration of the affairs of the army medical department, and so far only the necessary routine orders have been issued.

\* \* \* \* \*

The most important change lately made among the army medical personnel is the assignment of Colonel Winford Smith, formerly superintendent of Johns Hopkins Hospital at Baltimore, as head of the hospital division of the Surgeon General's Office, as successor to Major General Robert E. Noble, who recently went to France to succeed General Ireland as head of the medical department of the American expeditionary forces. Since the departure of General Ireland and until the arrival of General Noble, Colonel Walter D. McCaw, Medical Corps, has been performing those duties.

\* \* \* \* \*

Surgeon General Rupert Blue, of the Public Health Service, has sent a letter to Rear Admiral William C. Braisted, Surgeon General of the navy, in which he states:

"The medical officer in charge of service operations in the District of Columbia reports that the need for medical relief for influenza sufferers has passed. He was, therefore, enabled on November 1st to release the corps of officers detailed by you for this work.

"It has been reported to me, both personally and officially, that the work of your officers deserves the highest praise. Their unflagging devotion to the work and the spirit of willingness to serve without regard to hours or personal comfort was in keeping with the high traditions of the Navy Medical Corps.

"I congratulate you upon having this splendid body of officers and assure you of the deep appreciation that I feel for the services which they have rendered."

**New Army Hospital Facilities.**—Hospital facilities to care for 19,200 men have been procured by the hospital division of the Medical Corps during the past month, according to a statement issued from the Office of the Surgeon General on October 29th. This brings the hospital facilities, outside of camps and cantonments, up to 50,000, or about one third of the estimated need of the army for the coming eighteen months, says the *Army and Navy Journal* for November 9, 1918. The new hospitals were secured at a lower average cost per bed than had previously been obtained. This is the result of several gifts of splendid groups of buildings by patriotic communities and individuals. Under the new policy of the Medical Department efforts are made to secure existing buildings for hospitals, thereby increasing more rapidly the desired facilities and at the same time avoiding the erection of new buildings at a time when labor and materials are very scarce. To make the new buildings ready for army hospital purposes alterations costing approximately \$995,000 will have to be made.

The largest hospital secured during the past four weeks was the St. Louis Sanitarium. This is one of the finest buildings of its class in the country and will provide facilities for the caring for 3,000 patients. In point of size and equipment the Ohio State Hospital for the Criminal Insane is the next largest secured. It is located at Lima and is regarded as among the finest types of State hospitals in America. There are facilities for 2,500 patients. The use of the buildings is a gift from the State.

Three other hospitals, each of 1,000 or more beds were secured in Ohio, in Cleveland, Columbus, and Cincinnati. The Cleveland Hospital was built as a model factory and its owners, Richmond Brothers, turned it over as their contribution to the war. Adjacent are the several buildings of the Deutscher Turnverein, turned over as a contribution of the society to the government. Accommodations for 1,000 beds are provided by these gifts. At Columbus the buildings of the State School for the Deaf are a contribution of the State. Beds for 1,500 soldiers are provided by this gift. Through the Board of Education, the East End High School at Hyde Park, Cincinnati, was secured. Here alterations costing about \$100,000 will have to be made to convert the classrooms into wards. About 2,000 men will be treated in this hospital.

The completely appointed hospital built by Henry Ford for his employees at Detroit, which has a capacity of 2,000 beds, has been turned over by him, rent free. The nine buildings in Exposition Park, Rochester, N. Y., were accepted rent free for hospital purposes. It will be necessary to spend \$175,000 to make necessary alterations. The Norfolk, Mass., State Hospital, recently built for the cure of drug addicts, and which has accommodations for 700 beds, was turned over rent free by the State of Massachusetts. The large armory in Boston has been rented for hospital purposes, and after alterations, which will cost about \$60,000, will be ready to accommodate 1,200 patients. The Westchester, N. Y., Alms House which will accommodate 2,000 patients and the West Baden, Ind., Hotel with 1,200 beds have also been taken.



# Editorial Notes and Comments

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### IS INFLUENZA DUE TO A FILTERABLE VIRUS?

In an endeavor to determine whether the present epidemic of influenza is due to a filterable virus, Rosenau introduced the filtrate of the washings from the nose and throat in two cases of influenza into the noses of nine volunteers, all of them enlisted men in the United States Navy. From the account published in the *Official Bulletin* it appears that "the influenza cases selected were typical, with definite history of recent exposure. One was in the second day of the disease and the other in the fourth day. The nose and throat of each patient was washed and gargled with seventy-five cubic centimetres of sterile normal saline solution. Throat swabbings and sputum were added to the separately collected washings. Each was shaken with beads in a sterile bottle and filtered through a Mandler diatomaceous earth filter by means of a water vacuum pump. One filter had a positive pressure value of nine pounds and the other twelve pounds. Cultures were made from the clear filtrates for control.

"The filtrates were then carried to Deer Island, where about 0.5 cubic centimetre was introduced into the nose of each of the volunteers, five receiving the filtrate from one patient and four from the other. Three and one half hours had elapsed from the time of obtaining the nasal washings to the time of the instillation. The control cultures were negative for bacterial growth and none of the nine volunteers showed symptoms of influenza during ten days of isolation."

In contrast to this is a cabled newspaper dispatch from Paris to the effect that Nicolle has proved the germ of influenza to be ultramicroscopic.

The extremely high degree of infectivity which characterizes influenza, the frequent occurrence of epidemics in summer, the finding of Pfeiffer's bacillus in conditions other than influenza, and the frequent absence of this organism in cases of typical influenza, make it more than likely that the disease is caused by a microorganism not yet identified, and possibly by one so small as to constitute a filterable virus. Further developments will be awaited with interest.

### THE COMMITTEE OF FOURTEEN AND ITS FIGHT FOR A CLEAN CITY.

It is scarcely possible to do more than call attention to such a report as that of the work of the Committee of Fourteen in its fight in New York city against the social evil. It is a story which must be read in its entirety. [J. P. Peters: *The Story of the Committee of Fourteen of New York, Social Hygiene*, July, 1918.] It is not alone a story of social battle in the interests of good citizenship and a clean city; it is likewise a chapter of history which should lie close to medical interest and as a background to medical activity. This is particularly so as the medical profession comes more and more fully to accept the fact that its stronghold for public service lies in prophylaxis. And this prophylaxis, in turn, as recent events have brought home to us, must be most vigorously undertaken in the field of venereal disease. Here medical activity and social effort come closely into harmony of aim and endeavor; at least it should be most emphatically so.

This report has been made with a recognition of the fact, at the start, that liquor traffic and prostitution are indissolubly bound, and have been so in this history of political profiteering in New York State and city, which is here set down. The story

begins, chiefly, back in 1896 when the Raines law was passed and went into effect in order that the Republican Party for the sake of revenue and greater power might obtain control of the liquor traffic of the city of New York. The results of the actual working out of the law were unforeseen. In the first place it abolished the discretion which had before been wholesomely exercised by the excise commissioners in regard to the opening of saloons. The issuance of licenses now became formal and automatic. The provisions of the law were such that a strict control might have been secured over the liquor traffic, but it was exercised not for control but for revenue, and, moreover, its automatic character in the infliction of penalties for its infringement made of it a shield for its violation. The excise commissioner's first duty became the obtaining of revenue. Therefore, in the first place, a lax interpretation was allowed in order that the number of saloons might increase; furthermore a distinction between hotels and saloons incorporated in the law was destined to work untold evil. Hotels had the great pecuniary advantage that liquor could be sold within them at all times, which the saloon could not. The features which constituted a hotel, adopted from the State law, were just those which could be turned to the saloon keeper's further account financially. If to secure a hotel license, which meant increased revenue for himself as well as for the State, he must have the required number of bedrooms, with a diningroom and kitchen, these also would be used for profit. The result was a burgeoning forth of prostitution throughout the city, in localities hitherto under the control of respectable citizens as well as in spots more favorable for the flagrancy with which this business was carried on. Seduction was the chief of these evil fruits of the Raines law.

The difficulties which the Committee of Fourteen, at first the Committee of Fifteen—both composed of citizens whose desire was a clean city—had to meet were due to the laxity of justice which followed upon this train of evils. Rather it fostered them, as it had in the first place been instrumental in creating them. The evading and shifting of direct responsibility on the part of those who were prosecuted merely increased the revenue through fines imposed without eventually removing the objectionable saloon or hotel. It continued its business under conditions just different enough to be merely nominal and it was too much trouble or was not deemed profitable on the part of the prosecutors to continue the prosecution.

The tale of the efforts of the committees working really to eradicate the evils is the record of a hard

and determined fight to unearth such abuses, follow them up, persist until those in authority in city and State must yield and cooperate, even if, like the unjust judge in the Bible, only because of their importunity. So broad and reasonable has been the policy of the Committee of Fourteen that it has secured the sympathy and support of all forms of organization, even of the brewers and liquor associations in New York city, though at first indirectly the Raines law hotels and other places where liquor was sold had been under their control.

The present work of the committee has passed beyond that of the original and long continued struggle to awaken the public authorities of both city and State to a sense of responsibility, to a knowledge of the evil results following their former policy and partly, at least, to the conception of control of liquor traffic as a thing in itself of utmost importance for the establishment and maintaining of clean and wholesome conditions and not for revenue, with an utter disregard or a wilful fostering of the evils which follow in its train. Now the work can be carried on with more broadly constructive plans to provide opportunities for the healthful discharge of impulse and activity in channels of clean living and social and recreational pursuits. Various permanent reforms in the courts stand out also as results of the committee's activities. The gathering of soldiers and sailors due to the war has given to the work a still broader field of effort and opportunity.

#### THE TORONTO MILITARY BASE HOSPITAL.

The week ending November 2d may be said to have been a "hot" one in Toronto. The epidemic of influenza had about reached the crest (the deaths daily running somewhat over one hundred—seventy-seven men having died in a month in the Toronto Military Base Hospital) when a coroner's jury began inquiry into the death of one of the Royal Air Force men in that institution. For some time past complaints had been pouring into the office of the chief magistrate of the city, Mayor Church, and to his activity and wholehearted interest in the welfare of the soldier, particularly as regards hospital accommodation and medical care, must be ascribed the bringing of the Toronto Military Base Hospital into the limelight. This institution, which is the old Toronto General Hospital, renovated and refitted two and a half to three years ago, did not begin to meet the requirements of the soldiers in this military district; especially during the active stages of the epidemic. A hospital building which would be considered overcrowded with



400 patients, was required during the epidemic to accommodate 700 or more.

At the inquest mentioned Major General John T. Fotheringham, C. M. G., director general of the Army Medical Service in Canada, was summoned from Ottawa to give evidence; also General Carleton Jones, who formerly occupied that position but is now in charge of hospitalization in Canada. General Fotheringham stood by the institution and characterized the adverse criticism in certain sections of the public press, which he claimed was particularly directed against the Army Medical Service, as "dirty, stinking, putrid treatment." The press, which claims to be not thinskin, grandiloquently waved this aspersion aside; but they were not so pachydermatous as they would have the reading public believe, for demands were made for Doctor Fotheringham's resignation, or, failing that, his instant dismissal. Later on, when General Jones came before the jury, and his evidence as to the fitness of the hospital for its purposes was not considered satisfactory, his head also was demanded. All this before the jury had inspected the institution and before that body had given its findings—a clear attempt on the part of the public press to force the issue. It appears General Jones had been in Toronto but had not personally inspected the institution, making his report thereon from information gathered from the Army Department of Medical Service for the Toronto military district. In that respect General Jones was lax, but surely both he and General Fotheringham are entitled to their personal opinions of the institution as well as any one else.

General Fotheringham is one of the most high minded, most eminent and upright members of the medical profession in Canada. The government of Canada will make a very great mistake if it pays heed to the hysterical calls of the press for General Fotheringham's dismissal.

According to the press the jury which inspected this institution found 285 patients in residence. Not a single patient treated in tents died. Sixty-eight per cent. of the pneumonia patients and ninety-seven per cent. of the influenza patients recovered; and the jury heard many patients speak in praise of the treatment.

In comparison with other places and institutions, the Toronto Military Base Hospital, whether fit or not for occupation by soldiers, gives a very satisfactory mortality rate—only thirty-two and one half per cent. for pneumonia; which in the Boston hospitals is understood to have reached sixty per cent., and in Philadelphia as high as ninety per cent.

## AN AMERICAN CHEMICAL RESEARCH INSTITUTE.

After such a political and commercial cataclysm as was precipitated by the murder of the Austrian archduke, months will be required for the definite formulation of the terms of peace, but the drastic and detailed provisions of the armistice leave no doubt that peace has come. There was therefore nothing premature in the discussion by the New York Branch of the American Chemical Society of plans for the foundation of an institute for the promotion of systematic research with a view to providing for the manufacture of new and improved medicinal agents by American manufacturers.

The discussion which took place at the Chemists Club on November 8th was participated in by Dr. John J. Abel, of the Johns Hopkins University Medical School, who sent a paper, not being able to attend in person, and by Dr. P. A. Levene, of the Rockefeller Institute for Medical Research; Dr. C. L. Alsberg, chief of the Bureau of Chemistry of the United States Department of Agriculture; Dr. A. S. Loevenhart, of the American University Experiment Station, at Washington, D. C.; Dr. F. R. Eldred, of Eli Lilly & Co., of Indianapolis; Dr. D. W. Jayne, of the Barrett Company, of Philadelphia, and Dr. Edward R. Weidlein, acting director of the Mellon Institute for Industrial Research of Pittsburgh. A perusal of those names will give some index of the broad field covered in the discussion and of the wide vision of Dr. Charles N. Herty, president of the local branch of the society, who has undertaken the agitation for the establishment of an institute which will do for medicinal products what is being done in other fields of chemical technology by the Mellon Institute of Pittsburgh. The proposed institute will, it is hoped, link up the research worker and the manufacturer in a manner which will be mutually helpful. There is a sort of prejudice in the minds of many medical men against all manufacturers of medicines. Because some of them have pursued questionable methods there is a disposition to condemn all. This is most unfortunate for much of the improvement in our materia medica is due to the work of farsighted manufacturers.

The organization of the proposed institute of chemical research in medicine could do a great deal toward coordinating the work of biologists, chemists, pharmacologists and of manufacturers for the good of medicine at large. Incidentally, it is to be hoped that it will be possible also to protect the American market against that exploitation by foreign manufacturers to which it has been subjected in the past.

## LITERATURE AND SECONDARY PERSONALITY.

There are some extremely interesting contributions to the problems of secondary personality in literature which are not valued at their proper worth perhaps, and often are quite unrecognized as belonging in this category. The question as to where his best thoughts come from has been the perennial mystery for the poet and the literary man. Apparently, not from the "him" that he knows, for he was utterly unaware of their presence within him until they flowed from his pen. Often he is at least as much surprised and delighted as are others with his thoughts when they come. He knows that he cannot force them, for often, when he tries very hard, he fails utterly; at other times, when he least expects it, there is an incessant flow, giving him a poem or a story so easily that there seems almost no effort involved.

The ancient poets realized this so well and recognized how little the selves they knew had to do with the poetry they wrote that they appealed to the Muse when starting their work, feeling that it was something quite outside of themselves, by favor of divinity, which represented their best auxiliary. The modern poet talks of inspiration, which is only Latin for "blowing in," as if another being stood beside him and blew into him his best thoughts, and even his expressions. He is quite sure that there is something besides the ordinary "he" that he is, needed to clarify his vision and enable him to express it.

Even the minor poet has something of this feeling, though it is said that one of the reasons why there is no really great poetry in our day is that men have neither the time nor the peace of mind to wait for the promptings of the inner voice which represents poetic inspiration. The war has given them the time, at least, and, while its alarms might seem to be disturbing enough to prevent proper introspection, it is in the peaceful intervals that the poets' work has been done, and war seems only to have stirred up very thoroughly all the inner thinking and thus made the soldier-poet all the readier for the deepest inspiration that his other self can give him.

The recent life of Joel Chandler Harris furnishes some striking material with regard to the entire subject of the writer's inspiration. He recognized very well his own state of mind in this connection. He spoke of "my inner—my inner—oh, well! my inner spezerinktum (he evidently did not want to use the word consciousness); I can't think of another word. It isn't 'self' and it

isn't—oh, yes! it is 'the other fellow' who does all my literary work while I get the reputation, being really nothing but a cornfield journalist." Years later, writing to his daughters who were at school and just beginning to try what they could do with the pen—very probably in answer to some questions of theirs as to how he did his writing—he was even more explicit. He said: "As for myself—I never have but the vaguest ideas of what I am going to write; but when I take my pen in hand the mist clears away and the 'other fellow' takes charge. You know all of us have two entities or personalities. That is why you see and hear people 'talking to themselves.' They are talking to the 'other fellow.' I have often asked my 'other fellow' where he gets all his information, and how he can remember, in the nick of time, things that I have forgotten long ago; but he never satisfies my curiosity. He is simply a spectator of my folly until I seize a pen, and then he comes forward and takes charge."

What Joel Chandler Harris thus described so clearly is, of course, nothing new; on the contrary, it is one of the oldest experiences recorded in the literature of mankind. We have invented other terms for the phenomenon, and we talk about the "other self" and the "secondary personality," but preceding ages discussed the phenomenon under the terms "intellectual memory" and "intuition," without any question of dividing the personality. It was only the curious freaks of memory which occur in hysterical subjects that led to the idea of a multiple personality, and it must not be forgotten that their tendency to put themselves in the limelight and to make themselves remarkable, interesting cases has always vitiated the significance of observations made with regard to them. They not only deceive other people, but they begin by deceiving themselves. The study of the normal in this matter of secondary personality would bring what is often supposed to be a new development directly in touch with the oldest psychology that men evolved.

## INFLUENZA SITUATION IMPROVING.

The influenza situation continues to improve, the number of new cases reported in this city and in practically all the cities on the Eastern Seaboard declining from day to day. Although New York escaped with a smaller number of cases and deaths in proportion than other cities, the epidemic caused 15,000 deaths in one month. Never before have so many deaths occurred in a corresponding period. But even at this, the record made is very much better than that of most of the other cities in the coun-



try. During the height of the epidemic the total death rate per thousand of population was 100 in Boston, 109 in Washington, 148 in Baltimore, 158 in Philadelphia, and only sixty in New York. The favorable record made by New York as contrasted with that of other cities is the best evidence that the Board of Health handled this unusual situation wisely. In discussing the matter at a recent meeting, the commissioner of health, Dr. Royal S. Copeland, said the results achieved by the Board of Health in keeping down the mortality in this epidemic was due to the cumulative effect of the efficient administration of the office by his predecessors during the past fifteen years, and not solely to the wise manner in which the epidemic had been handled by the present authorities. The persistent efforts of his predecessors to educate the people in matters affecting their health and to enforce adequate sanitary regulations in the building and management of tenement houses has borne fruit in the present epidemic. The commissioner had been subjected to every form of abuse, invective, and threat for the failure to follow the advice of self constituted mentors. He had sought and profited by the advice of experts in sanitation; he had kept the schools open because every one of the million school children was under some kind of intelligent supervision during attendance at school. He had kept the theatres open because they had large, airy, well ventilated auditoriums. He had closed a number of the smaller moving picture houses which he found to be ill ventilated. The wisdom of the steps taken have been amply demonstrated by the low death rate registered in the city.

## News Items.

**General Gorgas Decorated.**—Major General William C. Gorgas, M.C., who up to the time of his retirement on October 3d was Surgeon General of the United States Army, has been made a Grand Officer of the Order of the Crown of Italy in recognition of his distinguished services on behalf of military sanitation. The ceremony of presentation took place in the office of the surgeon general, the presentation being made by Major General Emilio Guglielmotti, military attaché of the Italian Embassy.

**Medical Association of the Greater City of New York.**—A regular meeting of the society will be held in the New York Academy of Medicine building, Monday evening, November 18th, at 8:30 p.m., under the presidency of Dr. Edward E. Cornwall, of Brooklyn. Dr. Henry L. Shively will read a paper on End Results in the Tuberculin Treatment of Tuberculosis. Dr. Joseph E. Winters will read a paper on the Food Factor in the Causation of Health and Disease. Among those who will discuss these two papers are Dr. Thomas S. Southworth, Dr. Graham Lusk, Dr. Warren Coleman, Dr. R. Cole Newton, Dr. Elias H. Bartley, and Dr. Alfred F. Hess.

**The Alvarenga Prize.**—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize will be made on July 14, 1919, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the secretary of the college on or before May 1, 1919. For full particulars regarding conditions of competition address Dr. Francis R. Packard, 19 South Twenty-second street, Philadelphia, Pa. No prize was awarded in 1918.

**Personal.**—Dr. Cary Eggleston has been made assistant professor of pharmacology at Cornell University Medical College, New York.

**Influenza Quarantine Lifted at Camp Mills.**—The quarantine against Spanish influenza placed on Camp Mills, Mineola, October 21, 1918, was lifted on Wednesday, November 13th.

**Siberia Needs Medical Supplies.**—Dispatches from Siberia state that there is great need for medical and surgical supplies in that country. An epidemic of typhus fever has appeared in Nikolaivitch. The hospitals there are practically destitute of medical supplies.

**Dr. Etienne Burnet at the Academy of Medicine.**—Dr. Etienne Burnet, of the Pasteur Institute, Paris, a surgeon in the French Army, and a member of the mission of French scholars to the United States, delivered a lecture at the New York Academy of Medicine, Friday evening, November 15th, on Pasteur as a Representative of the French Scientific Spirit. The lecture was given in English.

**National Committee for the Prevention of Blindness.**—Colonel James Bordley, U. S. Army, of Baltimore, will be the chief speaker at the annual meeting of the National Committee for the Prevention of Blindness, which will be held at the New York Academy of Medicine, Tuesday, November 26th, at 8:30 p. m. His subject will be The Government and Red Cross Work for Blinded Soldiers. All who are interested are invited to attend.

**A Red Cross Medical Intelligence Bureau.**—A medical intelligence bureau has been opened at 6 Rue du Mont Thabour, Paris, France, by the American Red Cross. Authors of articles on war, medicine, and surgery are requested to send two reprints of such articles to the above address. The bureau has undertaken to supply medical books and periodicals to medical officers in the field and in the evacuation hospitals and to furnish them with abstracts of original articles in which they would be interested.

**General Richard Retires.**—Brigadier General Charles Richard, M.C., who had been acting surgeon general before the return of General Ireland from France, retired from age on November 10th. General Richard was born in Ohio on September 10, 1854. He entered the army as an assistant surgeon on June 3, 1879, and reached the grade of colonel on February 19, 1910. He was appointed a brigadier general in the National Army shortly after the United States entered the war. In length of service he was the senior officer in the corps.

**Reorganization of the Army.**—Plans are being perfected for the reorganization of the regular army. The President has authority to discharge both men and officers from the army as may be deemed expedient. Just what will be done will depend upon the number of troops required to police the conquered nations and restore law and order there and in Russia. The enlistments in the army have been for the period of the emergency, not for the duration of the war, consequently the President can retain men in active service so long as he deems it necessary, even after the final confirmation of the peace treaty.

**Medical Society Meetings.**—During the coming week meetings of medical societies will be held in New York as follows:

**Monday, November 18th.**—New York Academy of Medicine (Section in Ophthalmology); Medical Association of the Greater City of New York; Psychiatric Society of Ward's Island; Yorkville Medical Society.

**Tuesday, November 19th.**—New York Academy of Medicine (Section in Medicine); Federation of Medico Economic Leagues of New York.

**Wednesday, November 20th.**—New York Academy of Medicine (Section in Genitourinary Diseases); Medico-legal Society; Northwestern Medical and Surgical Society of New York; Women's Medical Association of New York City; Alumni Association of City Hospital.

**Thursday, November 21st.**—New York Celtic Society; New York Academy of Medicine (stated meeting).

**Friday, November 22d.**—Academy of Pathological Science; Audubon Medical Society; New York Clinical Society; Brooklyn Society of Internal Medicine.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### STROPHANTHUS AND ITS ACTIVE PRINCIPLES VERSUS DIGITALIS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 697.)

That the strophanthins, including ouabain, may with safety and advantage be administered intravenously, providing preparations of definitely known and constant power are used and the dose employed is relatively moderate, seems strongly suggested by recent clinical observations. In a preceding issue stress was laid on the view, sponsored particularly by Vaquez and his coworkers, that digitalis and the strophanthins act in a qualitatively somewhat different manner, the former acting most saliently on the conductive properties of the heart, and being therefore especially useful in certain disturbances of cardiac rhythm and increased cardiac rate, while the strophanthins show particular power to improve directly the contractility and, perhaps, the tonicity of the organ, and are in consequence of unusual service in reinforcing the contractions of many weakened hearts with normal rhythm—on which digitalis seems to have relatively little hold—as well as in cases where, after temporary effectiveness, digitalis has lost its value. As with digitalis, however, the use of the strophanthins appears to demand relative caution where the myocardium is seriously degenerated, and unable to respond as usual to the stimulus which their administration in ordinary doses entails.

In addition to the general indications for successive or simultaneous use of digitalis by mouth and the strophanthins by intravenous injection already mentioned, Vaquez and Lutembacher, 1918, have called attention to certain special conditions in which ouabain—prepared by the Arnaud method—has proved, in their experience, superior in many ways to digitalis.

Among these are included a group of cases of mitral disease, chiefly stenosis, in which occurs a particular type of pain. This pain is located along the scapula in its upper part, an area which corresponds to the auricle and is considered by Vaquez to be due to distention of this chamber of the heart. Pain of this type is met with frequently, and may be so pronounced as to prevent sleep. It is accompanied by paroxysms of tachycardia which are forerunners of the complete arrhythmia ultimately to become established, and are in the nature of an expression of distress on the part of the affected auricle. Apparently all these manifestations are dependent upon the inability of the auricle to accomplish the excess of work imposed upon it through the presence of the valvular disorder. In these instances, as in cases of ventricular weakness, Vasquez finds digitalis ineffectual. Intravenous administration of ouabain, on the other hand, proved of great service, causing the auricular distress to disappear. After

this result had been secured, the customary treatment with digitalis was resumed.

Another group of cases in which an important difference between the effects of digitalis and those of ouabain was clinically noticed was that of subjects in whom, in conjunction with mitral lesions and manifestations of weakened heart action, there occurs a periodical slowing of the pulse rate or merely a partial heart block which is due, in all likelihood, to disease of the auriculoventricular conducting bundle.

Digitalis, as is well known, tends, in humans as well as in lower animals, to reduce conduction through this bundle, and therefore to slow the ventricular heart rate. Heretofore this effect has been thought to be exerted always through the vagal inhibitory mechanism, in its distribution to the auriculoventricular bundle, but recently Cushing has brought out evidence to the effect that under certain conditions, as in the ill nourished mammalian heart and in the human heart in auricular fibrillation, the reduced conduction is due to a direct action of the drug on the conducting fibres. Clinically the tendency to a prejudicial action on the part of digitalis in many cases of partial heart block is considered well substantiated, and even a fatal termination has been ascribed to its use in at least one instance.

Vaquez and Lutembacher state that they have been struck by the manner in which, in certain patients with mitral lesions, digitalis, instead of exerting a favorable effect, has been followed by extrasystolic disturbances or by abnormal slowing of the heart rate with complete or incomplete auriculoventricular dissociation. In many instances there occurred at the same time general discomfort, dizziness and even epileptiform seizures, the combination of the symptoms constituting an actual exemplification of the Stokes-Adams syndrome. Pulse tracings yielded unmistakable evidence of the baneful effect of the French official digitalin solution in patients suffering from disturbed cardiac conductivity. It is therefore advised that the administration of digitalis be discontinued as soon as an abnormal reduction in the heart rate and a few of the symptoms mentioned above appear.

The point of chief interest is that among cases of this type, ouabain proved to be, in the hands of Vaquez, the remedy of choice. Thus, in one case the French digitalin solution, in the relatively small dose of eight to ten drops, caused a slowing of the pulse rate to forty and immediate aggravation of the patient's symptoms, with irregularity of rhythm and Stokes-Adams manifestations. When, on the other hand, intravenous ouabain treatment was begun, almost immediate improvement took place, with a rapid increase in the urinary output, and after three injections of ouabain had been given, the tracings showed a regular heart rhythm without slowing of the rate.

(To be continued.)



**Scopolamine-Morphine Amnesia in Labor.**

W. R. Livingston (*American Journal of Obstetrics*, October, 1918) reports 275 cases of delivery under scopolamine-pantopon amnesia by the Gauss method. There was no maternal mortality nor any immediate mortality among the newborn. One child in the series was stillborn and one died on the eighth day. Among the disadvantages of the method are its rather exacting requirements. Its best results will be obtained in properly equipped hospitals. Quiet must be secured, and this means a separate delivery room, well isolated, either by position or padding. A skilled attendant must be in constant attendance with each patient during the whole of the delivery and for two hours subsequently. The dose of the drugs is still a matter to be decided for each individual patient; the physician must therefore be present or within call throughout the amnesia. The method is not generally suitable in cases in which delivery is expected within two hours. Among the advantages to the mother are: Heart lesions are saved the danger of muscular effort and exhaustion; borderline pelvic contractions are allowed the full test of labor with a minimum of exhaustion; the mother knows throughout pregnancy that labor will be practically free from suffering; the cervix dilates with less trauma, and in first labors more rapidly; use of high forceps is relatively infrequent; afterpains are absent or of lessened severity; breast engorgement is less; there is absence of shock postpartum, together with absence of muscular soreness and exhaustion; convalescence is more rapid. In regard to the child, the advantages are that more babies are born alive and that they have a better start in life because of the better mental and physical condition of the mother and the relative absence, in the milk, of the toxins produced by prolonged suffering and physical exertion.

**Industrial Aniline Poisoning in Massachusetts.**

—Thomas F. Harrington (*Boston Medical and Surgical Journal*, October 17, 1918) says that the first aid treatment in cases of aniline poisoning consists in the removal of the worker to fresh air, keeping him awake, and if possible oxygen inhalations, pulmotor, and heart stimulants, especially black coffee and camphorated oil. Sponging with acetic acid (or vinegar) or ammonium acetate is helpful. Warm saline solutions should be given by hypodermoclysis, by rectal injections, and by direct venous transfusion if the pulse is not too weak. The preventive measures include the following: Adequate ventilation; the removal of dust and fumes; the substitution of closed nitration method for the more open one commonly employed; wet or vacuum sweeping in place of dry sweeping; adequate washing facilities; protection of the skin—gloves, long sleeves, and special work clothes—against skin absorption; respirators; prohibition against eating in workrooms where aniline is manufactured, used, or stored; and, lastly, instruction to workmen as to the danger and early signs of aniline poisoning. Even when all these protective measures are carefully carried out the necessity of periodical blood examinations and constant medical supervision promises the surest protection to workers.

**Treatment of Anthrax.**—John B. Ludy and Eugene Rice (*Journal A. M. A.*, October 5, 1918) record their observations and treatment in three cases of anthrax in one of our army camps, and emphasize the necessity of reviewing the symptomatology of the disease so as to be able to recognize it as early as possible and to ensure the most favorable chances of successful treatment. The treatment should begin as soon as the diagnosis is established clinically and smears and cultures have been secured from the lesion. The first step is to inject from thirty to fifty mils of antianthrax serum into the tissues about the lesion to infiltrate them thoroughly. A large needle should be used for this purpose. The entire lesion should next be dissected out, at least half an inch outside of its borders, with a nose cautery. The base should also be cauterized. The wound should then be dressed daily with a solution of three parts of phenol, seven parts of camphor, forty parts of glycerin, and one hundred and eighty parts of alcohol. Seventy-five mils of antianthrax serum should be administered intramuscularly, and a similar dose, diluted with fifty mils of physiological saline solution, should be given intravenously. Serum treatment should then be repeated every eight hours, according to circumstances, and should be continued until temperature and pulse are normal. By this treatment two of the patients were saved.

**Treatment of Seborrheic Eruptions.**—H. W. Barber and H. C. Semon (*British Medical Journal*, September 7, 1918) believe that the main factor in the causation of seborrheic eruptions is a metabolic dyscrasia, and the various external influences which play a part are merely the excitants. The metabolic disorder is such as to lead to the development of a decided degree of acidosis, and it may be either congenital or acquired. It is very largely aggravated by the ingestion of an excess of carbohydrates and proteins and by the want of an adequate abundance of fresh vegetables. The treatment, therefore, should be as much systemic as local, and many cases can even be cured by systemic treatment alone. For the purpose of combating the acidosis the following mixture proves most efficient:

Sodium bicarbonate	.....4.0 (dr. i);
Potassium citrate	.....2.0 (gr. xxx);
Calcium lactate	.....0.3 (gr. v);
Magnesium carbonate	.....0.3 (gr. v);
Chloroform water	.....30.0 (oz. i).

This mixture is given in daily amounts varying up to 275 mils, according to the amount required in the individual case to render the urine definitely alkaline, at which point it should be kept for some time. Along with the alkaline internal treatment there should be an alkaline local application, for which the following serves admirably:

Calamine	.....2.0 (gr. xxx);
Lime water	.....8.0 (dr. ij);
Peanut or olive oil to make	.....30.0 (oz. i).

This application is to be renewed at least twice daily until the erythema and congestion of the skin disappear, when the parts should be covered with Lassar's paste on lint. The diet should also be prescribed to contain an abundance of fresh vegetables and fruits, a reduced carbohydrate allowance, and a very low proportion of meat.

**Treatment of Goitre.**—Leigh F. Watson (*Texas Medical Journal*, September, 1918) uses quinine and urea injections into the thyroid gland. These injections are preceded by injections of sterile salt solution and sterile water, in order to raise the patient's threshold to stimuli. The strength of the quinine and urea solution depends upon the type of the goitre and the character of the symptoms. Only one injection is given at a treatment, which is repeated at two to six day intervals. Ten to twenty injections are usually required to produce marked improvement. The first injections are usually given at the upper pole; when the thrill over the superior thyroid has diminished the lower pole is injected; finally, the central portion. A few minims of the concentrated quinine and urea solution are given at a treatment. The toxic cases should be watched carefully, and at the first sign of an acute exacerbation of hyperthyroidism treatment should be stopped, a hypodermic of morphine, atropine, and digitalin should be given, and ice bags applied over the thyroid and heart. Prophylactically, syrup of the iodide of iron, in five to fifteen minim doses, once a day for one week in every month, may be given to children who live in goitre districts.

**Treatment for Simple Goitre.**—H. R. Harrower (*Dominion Medical Monthly*, September, 1918) in determining the character of the thyroid enlargement finds it best to give experimental thyroid gland feeding. For three or four days the patient receives increasing doses of desiccated thyroid gland: on the first day three one quarter grain doses; on the second day three one half grain doses; on the third day five or six one half grain doses and, if necessary, on the fourth day three or four one grain doses. Occasionally the pulse, temperature, and temperament are sufficiently affected on the second or third day to convince one that the patient is not definitely hypothyroid, because of the discovered susceptibility to the thyroid that has been administered. If a patient can take four grains of dried thyroids, U. S. P., with no evidence of thyroidism it is safe to presume that the goitre is not accompanied by increased endocrine function of the gland. An early or insignificant hyperthyroidism having been ruled out and a careful search for foci having been made, a series of cleansing enemata are given at night and, after evacuation, the patient is ordered to inject four ounces of plain cotton seed oil or olive oil. This is repeated three nights in succession and is continued once a week thereafter during the treatment. Three and a half pints of a two percent. glucose solution are warmed to blood heat and a tube of one of the standard cultures of *Bacillus bulgaricus* is added. It is then placed in a fireless cooker for twenty-four hours, cooled, and the patient is directed to drink one and a half quarts daily, between meals. Intestinal antiseptics may be prescribed in addition. From twenty to 100 grains of alkali are given daily. Finally one and a half grain of dried thyroids, U. S. P., should be given daily for several months. If the goitre does not respond to this treatment within several months it must be regarded as an adenoma, and surgical treatment should be instituted.

**Catheterization in Obstetrics.**—Virginius Harrison (*Virginia Medical Monthly*, July, 1918) warns against the practice of instructing the nurse to use the catheter in a given number of hours after delivery. Obstetrical catheterization is more dangerous than any other use of this instrument, owing to the presence of the lochia, bathing the vulva and mouth of the urethra with a fluid containing the germs from the cervix, vagina, and vulva, recently expressed from their deep habitats in these structures. In addition, the urethra and even the bladder may have been bruised, with corresponding reduction of resistance to infection. Nothing need be done until distention, discomfort, or both, occur; all means other than the catheter should then be tried, and the catheter used only as a final resort. If pituitary extract has been used, the bladder will surely empty itself as soon as distention occurs. Otherwise, the patient should be put on the pan and left alone a while; next, warm sterile water may be poured over the vulva; again, one may try sitting the patient almost straight on the pan; if not successful, one should wait a little longer and try again. A little lochia on the catheter renders it unfit for use. Two catheters should always be prepared for this reason. A good light and good position of the patient are necessary for proper use of the catheter by the nurse.

**Antigangrenous Serotherapy with a Polyvalent Serum.**—H. Vincent and G. Stodel (*Presse médicale*, August 15, 1918) emphasize the fact that gas gangrene is due, not to a single germ, but to a variety of anaerobic organisms, some of which act specifically, the others as satellites. To be effectual, therefore, a curative serum must be prepared with all these organisms. Again, experiments with the tetanus bacillus, the vibrio of sepsis, and in hospital gangrene have shown that the injection of several organisms in admixture with the specific agent of these affections imparts a high degree of virulence to the combination. The investigations of the authors demonstrated that the same holds good in the case of the bacterial agents of gas gangrene. Hence to secure as active a serum as possible it is preferable to inject a mixture of these germs into a single horse rather than to use a mixture of serums from different horses, each immunized against a single organism. Finally, the gas gangrene lesions being due both to bacterial pullulation in the muscular and cellular tissues and to necrosis of living cells due to soluble poisons, the serum used clinically should be both antibacterial and antitoxic. The material used by the authors for antitoxic immunization consists of a culture on agar of numerous virulent species or strains of bacteria, including the *Bacillus perfringens*, vibrio of sepsis, *Bacillus cedematis*, *Bacillus bellonensis*, *Bacillus sporogenes*, etc. The emulsion of these organisms is allowed to macerate in the incubator, the culture then setting free gas and becoming richer in endotoxins and exotoxins. The resulting second culture is injected in horses in ascending amounts. The serum thus obtained led to recovery in severe cases of gas gangrene and in a few of those treated permitted of conservation of the affected limb without amputation or disarticulation.



**Psychological Treatment of Stricture of the Male Urethra.**—Albert C. Geyser (*American Medicine*, August, 1918) reports the use of the largest calibre steel sound which is capable of passing through the smallest stricture present. This is attached to a teletherm high frequency apparatus, the other pole being attached to a piece of flexible tin, one inch wide, and applied smoothly to the entire outside of the organ surrounding the sound. The current is turned on gradually, the amount being limited to the sensation of the patient and not to the reading of the hot wire meter. The temperature of the enclosed tissue will reach 104° F. in a few minutes. After twenty minutes the high frequency current is turned off and the galvanic current is substituted, the negative pole in the urethra, using the same sound without removing. This current is turned on until the milliamperage meter shows a reading of not less than seven or more than ten milliamperes. This current is allowed to act for twenty minutes, then gradually is reduced to zero. The electrodes are removed and the treatment is at an end. The procedure is repeated once a week, gradually increasing the size of the sounds. The author cautions against dilatation, as it neither absorbs nor removes superfluous fibrous tissue, and adds that strictures that have been dilated may again contract; also that strictures that have been absorbed by electrolytic action neither recontract nor reform.

**Radical Cure of Genital Prolapse in Women.**—Salva Mercadé (*Bulletin de l'Académie de médecine*, August 20, 1918) thinks it peculiar that while there is general agreement that prolapse always begins at the anterior vaginal wall and that cystocele precedes the descent of the posterior wall and uterus, surgeons regularly operate on the posterior wall, hoping, by a posterior colpoperineorrhaphy or by suture of the levator muscles behind the vagina, to close the outlet sufficiently to obviate all trouble. The chief aim should actually be to establish a firm support for the bladder—the first organ to be pushed down by the intraabdominal pressure. Anterior colporrhaphy, as ordinarily practised, is an insufficient procedure, and for vaginal cystocele the author recommends suture of the levator muscles and urogenital floor in front of the vagina. He begins by bringing into prominence the anterior vaginal wall through accentuation of the cystocele by traction on the cervix with Museux forceps. An ordinary lozenge shaped anterior colporrhaphy is then performed, the vaginal flap dissected and excised, and next, the bladder carefully separated from the vagina and uterus. This requires liberation of the posterior aspect of the bladder, careful dissection of each lip of the vagina in its entire anteroposterior extent, and liberation of each lateral surface of the bladder until the vesicolateral vessels come into view. The cord formed laterally within the ischio-pubic ramus by the inner border of the trogenital floor and above by the inner margin of the levator muscle is then identified and four chronic gut sutures are passed like a U to unite the two levatores in the midline, thus forming an actual platform for the bladder, which is now pushed above it. Finally, the urogenital floor is likewise sutured, and

the vaginal margins united in an anteroposterior direction. No vaginal packing is used, merely a daily vaginal injection being given. The patient is not artificially constipated but allowed to go to stool at any time. A purge is ordered on the third day and the sutures removed on the tenth. Perfect results were obtained in six marked cases of prolapse.

**Vaccination against Dysentery by the Oral Route.**—Besredka (*Presse médicale*, August 15, 1918) reports experimental work showing that when rabbits are caused to ingest killed cultures of the dysentery bacillus, the same clinical and pathological manifestations are produced as result from the living virus. According to the weight of the animal and the dose of bacilli ingested, all forms of dysentery can be induced, from mild involvement with evanescent lesions to a grave form with bloody stools, terminating in death. A very light attack of dysentery, induced by ingestion of heated bacilli, suffices to render the animal refractory to infection by living and virulent bacilli. The immunity thus caused is such that the animal is enabled to withstand, by intravenous inoculation, a dose of the virus which kills the control in twenty-four hours. Besredka believes the procedure worthy of trial in man both for prophylactic and curative purposes.

**Prevention of Gas Pains.**—L. A. Emge (*Journal A. M. A.*, September 14, 1918) says that voices of protest have been raised from time to time against the practice of preoperative purgation, citing the statements of a number of prominent surgeons in confirmation, and points out that in spite of these utterances the practice is dying hard, like most other medical traditions. That preoperative purgation is not at all necessary and that its omission is rather beneficial than harmful have been shown repeatedly in emergency operations. Such operations have disproved that it is more difficult to pack off an unpurged bowel than a purged one, and show quite the opposite to be the truth, for the purged bowel is often distended with gas and is decidedly congested. Postoperative peritonitis, while rare, would seem to be favored by the practice of purgation, for the danger of organisms passing through the intestinal wall is enhanced when the intestine is congested and distended with gas. The movements of the purged intestine are also greatly inhibited, which leads to stasis and the retention of the contents with increased opportunity for gas formation. Further, the intestine is prone to irregular contractions after purgation, which are much more painful than regular peristalsis. These statements have been proved, not only by clinical observations in emergency cases, but also by careful and well controlled experiments on animals. In order to put the matter to still further test the incidence of gas pains was recorded in two series of fifty major abdominal operations, the one with, the other without, preoperative purgation. In the purged cases twenty-six per cent. of the patients had no gas pains and twenty-two per cent. had severe gas pains, while in the unpurged series only two per cent. had severe pains and sixty-six per cent. had none at all. In the patients who were not purged the only preparation consisted in giving a single enema to clear the lower bowel.

# Miscellany from Home and Foreign Journals

**The Pituitary Body and Polyuria.**—B. A. Houssay (*Endocrinology*, April-June, 1918), summarizes his observations published in 1915 as follows: He says that there occur in pituitary extracts both rencontractor and renodilator substances, one or the other predominating according to the circumstances, with the diuretic effects running parallel with the renovascular effects. From the pharmacological action of pituitary extract it is concluded that it is not permissible to deduce an insufficiency of the pituitary body from the successful use of the extracts in polyuria. Houssay does not agree with Cushing's claim that the cerebrospinal fluid has the same effects as pituitary extracts, as he demonstrated that the cerebrospinal fluid has not the diuretic nor the galactagogue actions which are the most specific tests of pituitary material; so that he does not believe that the active components of pituitary extracts pass to the cerebrospinal fluid. Operations for the removal of the pituitary gland produced oliguria in adult dogs and polyuria in puppies. These effects are due to trauma, and the intervention of the pituitary in the polyuria can be excluded, as the same results have been obtained when the whole gland was removed. In conclusion, the author adds that the cerebral basal zone can generate polyuria, and that it is not probable that the pituitary is a part of this zone, though the posterior lobe of the gland may be involved. He cannot accept the theory that polyuria is due to a diuretic hypersecretion of the pituitary gland.

**Recruits with Doubtful Heart Conditions.**—S. Russell Wells (*British Medical Journal*, September 7, 1918) discusses some of the observations made by a committee which investigated 10,000 recruits sent up because of the presence of doubtful heart conditions. Of the entire number 19.2 per cent. gave clear and unequivocal histories of acute rheumatic fever; 2.6 per cent. of chorea; 32 per cent. of "rheumatism" or the various joint and muscle pains and affections classed loosely as such by the layman; about forty per cent. of growing pains; and about thirty-five per cent. of tonsillitis. The correlation coefficients between these several conditions were calculated to find out whether or not they were sufficiently closely related to be regarded as the same disease. From these results it was concluded that there was some slight support for the view that chorea and acute rheumatic fever were the same disease, but there was none at all to favor the view that acute rheumatic fever was related to tonsillitis, growing pains, or "rheumatism," as defined. On the other hand two other diseases investigated in this connection—diphtheria and scarlet fever—did show some definite correlation, though the precise nature of the relationship was not evident. Exactly two per cent. of the cases gave a history of syphilis, while approximately six per cent. gave a history of gonorrhea. This was the same relation between these two diseases as has been recognized generally and it indicates that the proportion of men with syphilis was about correct, though the evidence was obtained from histories only. Muscular strain

was also investigated in its relation to heart conditions and about twenty-seven per cent. of the men were found to have been subject to cardiac strain. It was pointed out that the factor of strain had to be considered in relation to the general habits of life in each individual case, rather than merely on an occupational basis. Thus the blacksmith who had trained himself for years to do many thousands of foot pounds of work per hour was not likely to have his heart strained by running up an incline, rising thirty feet vertically, in a period of half a minute, while a clerk would probably suffer severe strain from such a feat. On the other hand the clerk's occupation should not necessarily place him in the class not subject to strain, for he might well overtax his heart's relatively small capacity by long bicycle rides, etc., on his holiday.

**Stammering and Its Solution.**—Elmer L. Kenyon (*Laryngoscope*, September, 1918) states that stammering is a serious disorder distinguished by emotional disturbance, accompanied by a distressing spasmodic abnormality of action of the peripheral organs of speech. While lay efforts at teaching in such a condition cannot be entirely depended upon, because of the narrowness of the desired knowledge, medical efforts sometimes also fail for the same reason. Only through the combined efforts of physicians, especially educated and trained for the undertaking, and of well educated laymen can the problem be completely solved. The treatment rests on the principle of educated selfcontrol. The correct application of this principle is directed toward conscious control of the peripheral speech mechanism and the direct control of the emotional and nervous disturbance.

**Signs of Death in Military Practice.**—Icard (*Presse médicale*, August 8, 1918) points out that in the fluorescein test the coloration of the eye is a feature of only accessory importance. The main indication, to which attention should especially be directed, is the golden yellow or orange coloration of the skin and mucous membranes. This sign is never wanting and becomes manifest even from the use of a minimal amount of fluorescein, an amount insufficient to color the eyes. No procedure intended to demonstrate persistence of the blood circulation can give any result if it is applied at the very moment at which a subject in a state of apparent death exhibits complete arrest of the circulation; the circulation may, indeed, become reestablished after the moment at which the use of the test has been discontinued. That which is required to avoid all sources of error is a means of permanent, automatic control, an actual recording apparatus, by which the test can be applied as long as is required without the necessity of repeating the test at intervals. Injection of fluorescein answers all these requirements; information as to the persistence of life or actuality of death is available at any moment at a mere glance. Restoration of the circulation cannot fail to escape the attention even of mere privates detailed to handle the cadaver, the peculiar color of the skin revealing the condition at once.



**Anesthesia at the Front.**—W. B. Howell (*American Journal of Surgery*, October, 1918) says that there are in the Canadian Army Medical Corps in England and France not more than four or five specialists in anesthesia. The anesthetic is frequently given by the most recently joined officer, with results to the patient which it is not necessary to specify. The more one sees of the real soldier the more one feels that nothing is too good for him. To increase his comfort and safety Howell would like to see private enterprise supply modern gas apparatus to all the Canadian hospitals. This cannot be expected from the government on account of the expense. A specialist in anesthesia might be detailed to go from hospital to hospital to teach the proper method of using gas and oxygen and to make suggestions as to the organization of a proper anesthetic service in each hospital. If the younger medical officers were kept on anesthetic duty continuously for three months and their work properly supervised there would not be so many of the wounded dreading the anesthetic more than the operation. Every expert anesthetist sent overseas means the saving of a certain number of soldiers' lives and the prevention of an immense amount of suffering and discomfort.

**Experimental Scurvy of the Guinea-pig in Relation to the Diet.**—Barnett Cohen and Lafayette B. Mendel (*Journal of Biological Chemistry*, September, 1918) produced scurvy experimentally at will in the guinea-pig with suitably chosen diets, such as exclusive feeding of cereal grains, like oats and barley. Germinated oats and barley did not produce the disease, which is in accord with the reports of Fürst and others. Scurvy was also induced on a diet of soy bean flour, supplemented by fat soluble and water soluble vitamins in the form of dried brewer's yeast, fresh Jersey milk, five per cent. butter fat, sodium chloride, and calcium lactose. Apparently the fat soluble and water soluble vitamins, which are so important in the nutrition of some species, are not the primary factors concerned in the scurvy of the guinea-pig. It is an interesting fact that this same food mixture has proved to be entirely adequate to promote normal growth in rats. Animals given small amounts of raw milk developed scurvy, while larger quantities caused the symptoms to disappear. Experiments were tried in which roughage in the form of sawdust, shredded filter paper, and hay were added to the diet, and in every instance the animals developed scurvy. This is at variance with the argument of McCollum and Pitz, that scurvy is due to unsatisfactory physical factors in the diet, so that roughage appears to play but an accessory part, if any at all, in the prevention of the disease. Mendel and Cohen do not consider constipation a causative factor in scurvy, though of course it may aggravate the symptoms. Five c. c. of orange juice, the classic remedy in curing scurvy, preserved animals in good health indefinitely when given daily, even when they were on a scurvy producing diet. Fresh and dried cabbage, and fresh carrots were effective antiscorbutic agents, while highly purified lactose did not appear to have any effect on the course of the disease, which is contrary to the findings of some workers.

**Multiple Disseminated Epitheliomatosis in Workers Manipulating Tar.**—G. Thibierge (*Bulletin de l'Académie de médecine*, August 20, 1918) reports two cases of this condition and discusses its pathogenesis. Tar and mineral oils, when brought in contact with the skin, exhibit a strong tendency to occlude the orifices of the skin glands. This is sometimes followed by irritative follicular or osteofollicular lesions of the acne type, and may result in multiple tumors, the reaction of the epithelium leading to the formation of flattened or exuberant horny formations, at times assuming the appearance of the cornu cutaneum. These tumors are for the most part benign, always remain small, and may ulcerate, later healing spontaneously. Some, however, pass into large ulcers and require surgical treatment; they may even become generalized and cause death. The lesions develop on the exposed surfaces, particularly the forearms and face. They may, however, occur on the covered parts, exposed to accidental contact of the noxious materials, these being carried there by the hands of the worker, or impregnating the clothes, in which they may perhaps be fixed by the perspiration. Thus may be explained the frequent appearance of the lesions on the scrotum. Heavy oils and even very pure, refined oils may bring on the condition, which, however, occurs only in workers who have been exposed a number of years. Lack of cleanliness is a favoring influence. Indeed, from the industrial standpoint the disease appears to be an avoidable one, proper care of the skin being the main factor of safety.

**Prognosis in Trench Nephritis.**—S. C. Dyke (*Lancet*, September 7, 1918) records the ultimate outcome in fifty cases of trench nephritis which could be traced for periods up to a year after their discharge from hospital. One only of the fifty patients died, death being due to scarlet fever. The prognosis as to life is therefore very good. Of the surviving forty-nine patients sixty per cent. have been returned to full duty in complete health, while the remainder have either been discharged from the army as unfit or have recovered only enough to undertake light duties. Age seems to be an important factor in ultimate prognosis, about two and a half times as many under thirty-five years old becoming fit for full duty as among those over that age. Arteriosclerosis develops in about half of those who do not recover completely, but it is not a common immediate result of the disease, developing usually at some time between the third and ninth month after the onset. A past history of renal disease materially diminishes the likelihood of complete recovery of health. In sixty per cent. of the patients all edema had disappeared by the end of the second week of illness, and of thirty-nine patients in which it disappeared before the end of the first month twenty-eight became fully fit. The presence of edema after the end of the first month is an indication that complete recovery will not follow. The albuminuria usually disappears near the end of the first, or during the second month, though it may persist during the third month and the patient make a complete recovery. Its continuance after the third month makes the prognosis unfavorable.

**Alkalinity of the Blood and Acidosis in Shock.**

—Marquis, Clogne, and Didier (*Presse médicale*, August 5, 1918) found, in observations on fourteen cases of traumatic shock, that the alkalinity of the blood averaged 2.79 per thousand. As the normal blood alkalinity is 3.145 per thousand, there manifestly exists in shock a hypoalkalinity of the blood. In no case did the urine of shock patients show the characteristic elimination products of acidosis such as are found in diabetic coma. The intensity of the hypoalkalinity of the blood in shock is held by the authors to be of some practical significance. All the patients who presented an alkalinity of about three per thousand recovered, while all those with an alkalinity of about 2.60 per thousand succumbed. The existence of the hypoalkalinity in shock justifies the application of Wright's procedure of intravenous sodium bicarbonate injection in these cases.

**Face Masks.**—Brewster C. Doust and Arthur Bates Lyon (*Journal A. M. A.*, October 12, 1918) conducted a series of experiments with face masks made of varying thicknesses of gauze and of buttercloth, to determine their efficiency in preventing the projection of infectious material from the mouth. They found that during ordinary or loud speech infectious material is seldom projected to a distance as great as four feet, while during coughing the projection may amount to at least ten feet, which therefore measures the radius of the danger zone about a coughing person. Masks made of gauze, either coarse or medium, of two to ten layers in thickness, do not prevent the projection of infective material, and such masks are worthless in preventing the dissemination of respiratory infections. On the other hand masks made of only three layers of buttercloth were found to prevent the projection of infective matter during both speaking and coughing and were still thin enough to be comfortable to the wearer.

**Diabetes Insipidus.**—Ketil Motzfeldt (*Endocrinology*, April-June, 1918) believes that this condition is merely a symptomatic evidence of disordered pituitary function, and that it is due to a deficit in secretion. A study of the older diabetes insipidus literature reveals a number of cases where the pituitary origin is pretty well established, and on the basis of this investigation the following clinical picture is outlined: There seem to be two fairly distinct types—the obese and indolent; and the lean, infantile type. These show such features as obesity, high carbohydrate tolerance, sexual underdevelopment, scanty growth of hair in armpits and on pubes, lassitude, dryness of skin, and slightly subnormal temperature. Some of these signs, which point toward the pituitary body, are usually present in cases of primary polyuria. Motzfeldt thinks that the only remedy which has the power to check polyuria and concentrate the urine is the extract of the posterior lobe of the hypophysis. A subcutaneous injection with an ampule of some of the commercial preparations will usually reach its maximum effect in four to five hours, but, unfortunately, is not lasting. Intravenous injection is unsafe, as it may lead to collapse. Treatment by mouth, although not so efficacious, has the advantage of causing no discomfort, is not dangerous, even in large doses,

and can be carried on indefinitely. When possible, fresh material from the abattoir should be used. One of Motzfeldt's cases is cited which had been treated for two years with intermittent pituitary feeding. The patient took from two to seven fresh pituitary bodies from cattle every evening. The urine output was checked during the night, usually decreasing from nearly 2,500 c. c. to about 300 c. c. The general health improved, drowsiness and adiposity disappeared, and the menses were reestablished. An interesting point is that after two years on this regime one hypophysis will now have the same effect as was obtained by seven glands at the beginning of treatment.

**A Test for Blood in the Urine, Feces, and Pathologic Fluids.**—Thévenon and Rolland (*Presse médicale*, August 15, 1918) describe a new test based on the violet color developing from pyramidon in the presence of oxidizers. In addition to hydrogen peroxide solution, two reagents are used, the first consisting of a solution of 2.5 grams of pyramidon in fifty mls of alcohol, and the second, a dilution of one ml of glacial acetic acid with two mls of water. In testing urine for blood, an equal volume of pyramidon reagent and six to eight drops of the diluted acetic acid are added to three or four mls of unfiltered urine. After shaking, five or six drops of hydrogen peroxide solution are added. Where much blood is present, an intense violet color appears at once; where there is less, or merely a trace, a bluish violet appears within fifteen minutes, increases to a maximum, then passes off. To detect blood in feces, a little fecal matter is triturated with three or four mls of distilled water; the fluid is decanted, three or four mls of pyramidon reagent, six to eight drops of diluted acetic acid, and six drops of hydrogen peroxide added, and the mixture shaken. In positive tests a violet blue color develops. The same technique is employed for cerebrospinal or pleural fluids, etc. In comparative tests with the Meyer reagent the pyramidon reaction gave like results in all instances and proved equally sensitive. The solutions are easily prepared and keep far longer than the Meyer reagent.

**Kidney Function in One Hundred Cases of Hypertension.**—W. C. Rappleye (*Boston Medical and Surgical Journal*, October 3, 1918) has made a study of the blood urea nitrogen, elimination of phenolsulphonaphthalein, and urine analysis in 100 cases of elevated blood pressure, using the figure of 150-155 millimetres systolic pressure as the low value for selection. With but four or five exceptions, the patients were in apparently good physical condition and active; none showed any edema, dyspnea, fever or other compromising conditions. In this group of patients it may be said that seventy per cent. showed blood urea nitrogen values below 16.0 milligrams per 100 cubic centimetres—whether considering the whole group or only those showing a systolic value of over 170 millimetres or a diastolic figure of over 100 millimetres—and sixty-six per cent. showed a dye excretion of forty per cent, or higher; sixteen per cent. showed a value of forty per cent. A slightly lower percentage was found in those patients showing a higher blood pressure



(systolic of 170 millimetres or over, diastolic of 100 millimetres or over). Twenty-eight per cent. showed both a urea nitrogen of 16.0 milligrams or over and a dye excretion of forty per cent. or less. Ninety per cent. of the cases showing a urea nitrogen of 16.0 milligrams or over had a dye excretion of forty per cent. or less. Twenty-four of the cases showed a blood pressure over 160 millimetres, a urea nitrogen below 15.0 milligrams and a phthalein over fifty per cent. The presence of albuminuria and cylindruria in the type of case studied here does not allow a prediction that the renal efficiency is impaired, if we choose to judge the efficiency by the features to which reference has been made.

**Epidemic of Fifty Cases of Influenza.**—C. J. Martin (*British Medical Journal*, September 14, 1918) made his investigations in a series of fifty cases developing in the personnel of a military hospital and rapidly affecting practically everyone in that personnel. Blood cultures during the acute stage of the disease were negative. The sputum in the early stages was generally negative bacteriologically, so far as the etiological agent was concerned, but as the sputum became mucopurulent it was usually possible to demonstrate by smears and by cultures the presence in it of few to enormous numbers of *Bacillæ influenzae*, sometimes almost in pure culture. In some cases these organisms were found to persist in the tracheal mucus for as long as two weeks after the temperature had become normal.

**Sodium Bromide in Röntgenography.**—E. H. Weld (*Journal A. M. A.*, October 5, 1918) says that many of the substances used for injection into the bladder and ureters to cast a shadow for röntgenography have more or less marked irritant actions when retained in the renal pelvis; many act as foreign bodies, causing multiple focal necroses in the kidney; and thorium nitrate, which is the least objectionable on these counts, presents decided chemical difficulties in its preparation and is very costly. Potassium iodide, which is bland and casts a good shadow, is quite expensive and must be used in concentrated solution. The ideal substance is one which is nontoxic, nonirritating, easily soluble in the urine, easily prepared, readily sterilized, keeps well, and is reasonably cheap. Such conditions seem to be met quite satisfactorily by sodium bromide in twenty-five per cent. solution, and even in twelve per cent. solution where cystograms are sought. So far, however, there are no experiments to show what the effects of this solution are when retained for considerable periods of time in the renal pelvis.

**Diphtheria Carriers.**—Frank R. Keefer, Stanton A. Friedberg, and Joseph D. Aronson (*Journal A. M. A.*, October 12, 1918) investigated 686 diphtheria carriers and 461 cases of clinical diphtheria, with special reference to the carrier state. They divide carriers into primary transient, primary chronic, and secondary, the primary carriers being those who have not had clinical diphtheria. They point out that the carrier state can be determined by cultures alone; that a single negative culture has but little value; and that the value of nasal cultures is not properly appreciated. A positive culture from the throat does not necessarily mean that the

infection is located in the throat, and careful search is often required to discover the actual site of the infection. Cultures from chronic carriers should be tested for virulence, which will often be found to be high. In practically every case the carrier state is maintained by some underlying pathological condition in the affected tissues. The vast majority of carriers harbor the organisms in the tonsils; a few in the nose alone; and a small group in both nose and tonsils. The results of local antiseptic treatment are decidedly problematical because the organisms are located deep in the tissues. Persistent carriers with the bacilli located in the tonsils can be cured with certainty only by enucleation of the tonsils. Among the nasal carriers the most persistent ones are those with chronic inflammatory or atrophic processes, and in such cases it is almost impossible to be certain when the carrier state has been ended. In the treatment of the carrier state one of the most important measures is the removal or cure of foci of inflammation in the nose or throat. No chronic carrier should be discharged until consistently negative cultures have been returned over a long period of time.

**Pain in Dyspeptics.**—F. Ramond (*Paris médicale*, August 31, 1918) thinks most dyspeptics experience gastric pain at some time or other. He classifies pain among dyspeptics into two major groups—the radiating pains and the nonradiating or purely gastric pains. The former may be either anterior, lateral, or posterior. As a group, they are not precise in their indications, merely directing the physician's attention to the stomach, or even occurring in the absence of gastric disease. The nonradiating pains are sometimes largely dependent upon irritation of the solar plexus, which increases the sensitiveness of the stomach, or may be due to diminished secretion of the protecting gastric mucus or to precipitation of this mucus by excess hydrochloric acidity. The main factor of nonradiating pain, however, is inflammation of the mucous membrane. The condition ranges from a prolongation of the normal hyperemia of the submucous capillaries during digestion to an actual acute or chronic gastritis. Whether merely congested or inflamed, the mucous membrane is sensitive to the least irritation by the acid and pepsin of the gastric juice. Nonradiating pains are subdivided into those that are induced by palpation and those that are spontaneous. The former occur at the most easily palpable points of the stomach—in recumbency—viz., below the ensiform, below the left costal margin, along the external margin of the left rectus muscle, two fingerbreadths above the umbilicus, at Chauffard's choledochopancreatic point, and below the left costal margin. The first three of these points relate to the upper or peptic portion of the stomach and the last two to the lower or mucous portion. Tenderness at the former points indicates gastritis chiefly of the upper portion; at the latter, of the lower portion. Among the spontaneous pains or burning sensations, the site of the pain varies in different periods of the process of digestion, according to the location of the food in the stomach at the time and, consequently, the section of the mucosa exposed to irritation by the gastric juice.

# Proceedings of National and Local Societies

## MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK

*Stated Meeting, Held April 15, 1918.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn,  
in the Chair.

(Concluded from page 839.)

**Some Clinical Types of Nephritis.**—Dr. TAsKER HOWARD, of Brooklyn, reported the results of a study of sixty-eight cases of nephritis which he found could be divided into at least three entirely distinct diseases, each differing in symptomatology, course, treatment, and termination. This referred to glomerulonephritis, the pure nephrosis of Mueller, and the arteriosclerotic kidney, any two of which might be, and not in frequently were, combined in the same patient. True nephrosis was comparatively rare. Of the sixty-eight cases but five came under this category. Its main clinical characteristic was renal edema with marked retention of chlorides and water, and its chief histological change was degeneration of the tubules. The urine in the stage of edema was of high specific gravity and loaded with albumin. The phthalein output was good except as it was influenced by the edema. A contracted kidney might develop with polyuria and hypostenuria. One of the series presented the picture of eclamptic attacks probably due to cerebral edema. These patients were particularly susceptible to infections. Diffuse glomerulonephritis was always due to infection. The most characteristic lesions were the inflammatory changes going on to complete destruction of the glomeruli scattered here and there throughout the entire organ. Clinically the most constant feature was hypertension with cardiac hypertrophy. The urine was likely to show more or less blood from time to time, in contrast to the urine of nephrosis or arteriosclerosis. The kidneys eliminated water well, salt with some difficulty, and nitrogenous crystalloids with more and more difficulty. As a result of the accumulation of nitrogenous waste products in the blood, the symptoms of uremia, anorexia, weakness, twitching, and drowsiness developed, with coma and death following. The phthalein output varied inversely with the nitrogen retention. With the difficulty in excreting the nitrogenous waste products, there developed *pari passu* a compensatory polyuria, the so called hypostenuria. Constant variations from the normal day and night excretion of urine were extremely significant. The mixed form combined findings of the two types just described. The early acute stage of a glomerulonephritis frequently presented this picture.

Benign or essential hypertonia was not a kidney disease at all, but was classed here because it usually presented some kidney pathology and because it was so often confused with nephritis. The kidney in such cases was likely to show patches of degeneration due to narrowing or obliteration of the vessels supplying these patches. The glomeruli involved were as a rule entirely destroyed. Evidences of inflammation were lacking; indeed, there

might be no kidney changes whatever. Clinically, the essential feature of this disease was arterial hypertension with cardiac hypertrophy. There might be no other finding. The urine might contain a little albumin and a few casts, and there might be enough damage to kidney function to cause a slight polyuria and fixation of the specific gravity. Nitrogen retention was moderate, never amounting to enough to cause uremia, unless, as sometimes happened, there had been superadded an actual nephritis. From a practical standpoint it should be remembered that in about ten or fifteen per cent. of patients with apparently benign hypertonia symptoms of actual nephritis ultimately developed. In simple hypertensive cases the phthalein output remained good until the heart failed, the retinal changes were those of arteriosclerosis only, and uremia was absent. The danger lay in the possibility of apoplexy or heart failure.

The combination form consists in the addition of the inflammatory changes of glomerulonephritis to the degenerative changes of a widespread arteriolar sclerosis. The important point lay in remembering that what seemed to be a simple arteriosclerosis might turn out to be a malignant glomerulonephritis.

The sixty-eight cases studied were as follows:

	No. of Cases Studied.	Average Age.	Youngest.	Oldest.
Chronic glomerulonephritis.	33	47	17	64
Nephrosis .....	5	30	22	43
Mixed form .....	11	38	17	45
Benign hypertension .....	18	59	42	86
Passive congestion .....	1			

Many of the patients studied were in an early stage of the disease, which had tended to lower the average pressure. A high diastolic pressure had been considered as pointing to nephritis rather than arteriosclerosis, but in this series patients were encountered with apparently simple hypertonias who registered diastolic pressures of 130-140 and 150. Aside from the kidney function the phthalein output was most influenced to slow excretion by edema. Demonstration of the lack of nitrogen retention indicated the true condition. Study of the amount and specific gravity of two or four hours day and night specimens as a whole assisted in differentiating glomerulonephritis from simple hypertension. Some degree of nitrogen retention was invariably found in nephritis cases affecting first the uric acid. The same was true of arteriosclerosis. In one of the five nephrosis cases there was also a uric acid retention of five mg. Urea was a very variable factor and might be influenced by treatment. A high urea percentage was dangerous but a comparatively low reading did not indicate freedom from danger. Albuminuria retinitis was found in fifteen of the thirty-eight nephritics examined (including the mixed form) and in no other condition. Twelve exhibited retinal hemorrhages and ten papilledema. The only changes in nineteen simple hypertension cases were those of arteriosclerosis. The nephrosis cases were all negative. The hemoglobin in twenty-six



nephritis cases (including the mixed form) was seventy-one per cent. In eight arteriosclerotics it was seventy-four per cent. In five nephrosis patients it was sixty-five per cent. Convulsions occurred in seven of the cases with nephrosis, in one with arteriosclerosis, and in one with nephrosis and edema. Twenty-two of the patients died. Of these, fifteen had nephritis, five arteriosclerosis, one nephrosis, and one passive congestion. Of the nine who were studied histologically six had chronic glomerulonephritis (including the combination forms), two arteriosclerosis, and one a kidney with passive congestion.

Dr. AUSTIN W. HOLLIS said that he had watched a great many of these interesting cases, and the study of the chemical and blood findings had helped a great deal in their treatment. Two of them he had treated by Edebohls' method of decapsulation five or six years ago with apparently complete cure. Of course, a long rest and other supplementary treatment was carried out also. He had been much interested in cases of nephritis occurring in young adults running over a long period of time with considerable amounts of albumin and showing no clinical symptoms of any kind, and finally developing into a chronic type of nephritis. Other cases had cleared up entirely. By the blood and chemical tests and the urine studies more definite prognosis in certain classes of cases could now be made, though as yet the significance of these findings could hardly compare with the clinical findings and the symptoms in individual cases. There were times, however, in which the blood findings, without any clinical symptoms, were most valuable. Cases of hypertonia with apparently good function of the kidney formed a class that was greatly helped by the study of the chemistry of the blood and urine.

Dr. L. F. FRISSELL said that during the past few years at St. Luke's Hospital he had been studying the kidney functional tests in twelve selected cases with especial reference to their prognostic value. Sixty-nine of these cases had terminated fatally and some 1,500 observations, from the earliest record to the time of death, had been carefully charted. All of the tests practically agreed in the majority of the cases. In the two weeks before death, the incidence of very high retention products was marked. Previous to that time, for perhaps a year, the readings showed moderate retention and moderately low indices for phthalein. One point in regard to the value of the use of the nitrogen retention, the uric acid and creatinin tests alone, was frequently overlooked; i. e., their dependence upon the diet.

Dr. ALBERT A. EPSTEIN expressed gratification that Doctor Howard had emphasized the importance of the chemical study of nephritis, for that was perhaps the most helpful phase of the subject from the viewpoint of prognosis and treatment; yet there were certain limitations in the chemistry of nephritis which should be recognized. For example, in studying the blood and the urine, as Doctor Frissell said, the diet should be taken into consideration. Other factors also influenced the findings in the blood, and these might lead one into error unless they were recognized.

### *Stated Meeting, Held May 20, 1918.*

The President, Dr. EDWARD E. CORNWALL, of Brooklyn, in the Chair.

**Health and Sanitation in the Shipyards.**—Lieutenant Colonel PHILIP S. DOANE, M. C., U. S. A., medical director of the United States Shipping Board, explained that to maintain the 500,000 troops in the service in France at the present time, and with the possibility of this quota being tripled or quadrupled very shortly, it was necessary that the ocean be bridged. It was roughly estimated that fourteen tons of supplies a day were required for every soldier placed on foreign soil, an enormous amount of shipping to maintain a winning army in France. The shipbuilding programme required an army of industrial workers employed in shipyards scattered over 7,000 miles of coast line, many of them situated in undeveloped country, lacking public utilities or medical or hospital facilities. The old yards had increased the number of machine shops and all other constructive buildings. Most of the new yards were situated in or near cities or towns and had city facilities to aid in the care of the shipbuilder. The problem confronting the Department of Health and Sanitation of the United States Shipping Board, Emergency Fleet Corporation, was to secure such conditions in shipyards and their environments as to enable the workers to be maintained in a healthy, vigorous condition so essential to speedy construction of ships. The work might be divided into: 1, Medical and surgical; 2, sanitary engineering; 3, general service; and 4, co-operation with federal, State, and local health authorities. Medical standards had been established whereby minimum requirements were made of each yard. Those employing under one thousand men had a first aid attendant for each shift, and two or more doctors on call. The first aid attendant was required to have taken a regular course in first aid and passed an examination satisfactory to the attending physician. Yards employing over one thousand men had a resident physician on full time; he usually assumed charge of all sanitary work in addition to his medical duties. Yards employing up to two thousand men had first aid stations. A yard employing from two to five thousand men had a dispensary and one first aid station for each additional two thousand men employed. The first aid station was furnished with modern equipment, while the dispensary had an increased equipment with addition of two or more beds. Arrangements were made with local hospitals for the care of injured employees. Yards employing over ten thousand men without the nearby hospital facilities had their own hospital, constructed according to plans and specifications outlined by the army, with suitable modifications. The Department of Health and Sanitation had made a very careful study of hospital construction, securing much information from public health services, the War Department and a number of large industries. Ambulances were maintained in those yards not having their own hospital facilities. Preparations had been made in all yards for establishing first aid stations beside the shipways this summer; they would consist of tents or temporary structures with tubs, iceboxes, and other apparatus

for the care of heat prostration and sun stroke. The surgical care of injuries was given special attention. All employees were made to report for dressing with the slightest injury; consequently, the monthly reports of minor injuries show a percentage often running as high as fifty per cent. of the men employed. The use of dichloramine-T and chlorosane was being generally introduced into the yards. In cooperation with the Surgeon General of the Army, the Surgeon General of the Navy, the Public Health Service, and the Committee of National Defense, a prophylactic campaign was being carried on both in the shipyards and the cities and towns surrounding them against venereal disease, because the efficiency of the shipworker had been markedly interfered with in many cases. All members of crews sailing on ships controlled by the United States Shipping Board were given medical care while in service. This was another large undertaking and one which would rapidly increase as the ships were launched. The Marine Hospital Service would care for the seamen after their return to port, and was increasing its hospital facilities almost fifty per cent. in order to fulfill all requirements for the increased merchant marine. Not all vessels would carry ship surgeons, and the first mate or captain would be instructed in first aid and the ordinary care of the sick and have at his disposal a suitable medicine chest with other supplies for this work.

Sanitation in the shipyards was very carefully looked after. It was a prime necessity that the water supply be pure, for the shipworker drank enormous quantities; his work was of a strenuous character and he perspired freely. Yards sufficiently near cities obtained connections with the pipe mains. Where the yards must provide their own water supply, careful investigation was made and the most economical and safe resource or proper purification was recommended. Distribution of water by means of bucket and common drinking cup was condemned. Water supply for industrial use and fire protection was essential, and was usually obtained from a different and frequently polluted source.

As regards general service, the worker in the shipyard desired to appear as a clean member of Uncle Sam's Army. Accordingly, the installation of wash room facilities was being urged as well as dressing rooms with sanitary lockers. The employees were responsible for the cleanliness of rooms and grounds. Garbage, principally refuse from restaurants and lunchrooms, was kept in covered metal containers. Yards having stables provided flytight manure pits, with the manure removed twice a week. To insure against fly breeding, the department recommended that manure be sprinkled with a solution of powdered hellbore. The eradication of mosquitoes had also been provided for.

The sleeping quarters provided not less than 500 cubic feet of air space, fifty square feet of floor space and five square feet of window opening for each occupant. Sleeping rooms, when possible, were of a size for not more than two occupants and equipped with single beds. Vigilance was exercised that employees of restaurants were not affected with any venereal disease, tuberculosis, yel-

low fever, typhoid fever, dysentery, or any other infectious or contagious disease. Adequate provision for refrigerating meats, milk, and other food was essential. Installation of mechanical dishwashing was recommended. Meats, where possible, were government inspected; milk, pasteurized. Fly screening was essential to protect food. In addition to restaurants, lunch rooms selling coffee and soup were provided for employees who brought their lunches. Restaurants and lunch rooms were preferably located immediately outside of the yard to afford employees the privilege of smoking, which was not permitted in the yard. Before employment, workmen were examined by physicians to determine their fitness for employment and freedom from tuberculosis, venereal disease, or any contagious or infectious disease. Vaccination against smallpox was recommended, and if possible, anti-typhoid vaccination, the latter at the option of the employee. The great aim of the Department of Health and Sanitation of the United States Shipping Board, Emergency Fleet Corporation, was to keep the enemy disease and sickness out of the yards. The ships must be constructed with the greatest possible speed, the men must be kept well, strong, and efficient, and in a state of mind to enable them to carry on their enthusiastic and patriotic duty. The task was great. Splendid assistance had been given by cooperating national, State and civic health bodies; by the patriotic force of coworkers; and by remarkably well qualified physicians in and about the shipyards. The shipbuilder would be kept well, and he was going to turn out ships at the rate of 100 per month before the year was over.

**Medical Services at Hog Island.**—Dr. J. JAY REILLY, chief surgeon at Hog Island shipyards, illustrated his address with numerous pictures, the first showing the condition of Hog Island on September 13, 1917, when the 846 acres of land a little below Philadelphia formed a desolate waste, without roads, drainage, facilities of access, or accommodations of any kind. Other pictures showed the stages of progress and equipment of what would be, when completed, the largest shipyard in the world, as big as any five now existing in the United States, and covering twenty-five acres of ground. There were fifty shipways, operated in groups of five each, directed by a central organization. These shipways extend for over a mile along the river front. Besides this, there are seven outfitting piers, each 1,000 feet in length, occupying about the same extent of water front. This layout made it possible to build fifty ships and to outfit twenty-eight at the same time.

The Hog Island plant was what was known as a fabricating plant, the material for the ships being purchased throughout the United States in something like 35,000 different plants. This was assembled at Hog Island. To handle this material was a system of yard tracks totalling seventy-five miles, together with store houses, and workshops for such work as could be done at a distance, emergency work, etc. Water pipes had been laid and a sewerage system established capable of taking care of 30,000 people. Besides this, barracks for taking care of about 6,000 men had been built on



the island, with provision for supplying 10,000 meals a day at a cost of thirty cents a meal. In addition there were facilities for the transport of such workmen as came from a distance. A well equipped fire system had been established with up to date apparatus located at strategic points on the island and ninety firemen on duty. All this and other important details had been accomplished in less than six months, and there had been utilized in this development men of all nationalities and all occupations, the force being as high as 26,000 men on some days. At present, the force amounted to approximately 21,000 men.

Doctor REILLY also detailed at some length the measures employed in securing the most suitable and satisfactory food, and the care taken in preparing it; the measures for securing proper cleanliness and sanitation; the first aid work and the emergency hospital, and had laid much emphasis on the value of the work done in the dental clinic. A department had also been established for the transfusion of tested blood, and in the few instances in which this had been employed some remarkable results had been obtained. Every man engaged in the work was required to undergo a physical examination, and while no effort was made to attain the army or navy standards the men were required to be free from infectious conditions, must have both eyes, both arms, and be free from hernia, etc. Their preexisting conditions were studied with a view to safeguarding the government as much as possible, in accordance with the employer's liability and compensation laws of Pennsylvania. As a result of the various measures instituted for the cleanliness and health of the men, Doctor Reilly said that at Hog Island there had been few or no cases of smallpox, measles, meningitis, mumps, etc.

**Plans for Housing Shipyard Employees.**—Mr. OWEN BRAINARD said that at the time the great war plants were instituted the questions of labor and the concentration and shifting of the centres of labor produced at once exceedingly grave housing problems. In this particular Hog Island situation, remote from any line of rail communication, the housing at once of from 15,000 to 25,000 men was a large undertaking. Some of the men were lodged in the nearby city of Philadelphia. Then, barracks at the yard provided for several thousand men. The third solution was the building of workmen's hotels within walking distance of the plant. Here there was one bed for one room, one room for one man, and at least one window for one room and with a transom over the door. The rooms were painted, floor, ceiling, and walls. There had been considerable discussion as to the number of cubic feet of air for each man, but that had been settled by the arrangements for ventilation. The speaker reviewed the regulations adopted by the Department of Labor and accepted by the Emergency Fleet Corporation and by other governmental boards stating the requirements for government housing. These regulations were formulated by volunteer consultants, consisting of architects, sanitary engineers, housing specialists, town planning specialists, and representatives of the National Housing Association. They provided that each house be equipped

with full bathroom; that houses be in rows; bedrooms not to be less than eighty square feet in floor area, and each house to have one room not less than ten feet by twelve feet. Minimum ceiling height was established at eight feet and maximum at nine feet. The window head was to be placed near the ceiling, as any space above was more or less stagnant. Houses of one and a half story were permitted with the requirement that the space between the ceiling and the roof should be ventilated. A closet in every bedroom was required. Water closets were required to be placed in a compartment forming three sides of a quadrangle. Under Class IV were included such buildings, outside of actual houses and dormitories, as might be needed for the life of a community centre. These were built as part of the housing scheme where the adjacent already existing town did not conveniently provide them. In this class were included not only schools, churches, and recreation buildings, but shops, bakeries, laundries, and central kitchens. They compared very favorably in construction with permanent small houses of the cottage and bungalow type in this country, and were even better than many of these. Cooking by gas was recommended, as gas was as cheap as coal and the saving in labor of the housewife was very large. Family life as far as possible should be separated from lodgers.

**War Housing in England.**—Mr. G. TRAFFORD HEWITT, member of the British Garden Cities and Town Planning Association, pointed out that the significant thing about the vast governmental housing undertakings of Great Britain did not lie either in the technic of the operation or the result, but in the fact that good housing was now recognized as the most important factor in producing the very best workmen and the very highest efficiency. War had explained the fact that the philosophy or the science of housing, as applied on so vast a scale by Germany, was really inspired by her profound analysis of what would be necessary, first to prepare for war, and second to conduct a war. Germany foresaw what England had to learn—that a modern army was dependent upon the industries at home; that war demanded more from industry than did peace; that the meeting of those demands which meant national life or death depended upon obtaining the utmost in skill and energy from the workers who supplied the soldiers; that workmen could not put forth those qualities except under living conditions which constantly renewed and thus maintained the highest vitality. Peace had enunciated this economic principle with a voice which had been drowned to a whisper. War shouted the message aloud and made it heard above all other cries, and England had listened so well that in addition to the plans which had already been executed, under financial and industrial pressure which only added to their extraordinary character, she was looking far ahead into the future and making ready to provide new living conditions to replace the old. She was now far seeing enough to understand that the essential principle of her national existence could not be left to the speculative builder.

The British Garden Cities and Town Planning Association had been doing great missionary work

in spreading the gospel of good housing and after long up hill work it was the means of gaining recognition from the British Government in the passing of the town planning act, which regulated the subdivisions of real estate on practical town planning and garden city lines, and also enabled private companies following these methods to obtain loans from the government at a low rate of interest. When war broke out, the government was able to make use of the experience of this organization, and call in the best town planners, architects, engineers, etc., to aid in solving the housing problem.

The most important housing operation of the British Government was undoubtedly the Well Hall Estate, at Eltham, Kent, situated about a mile from the great government arsenal at Woolwich, but this was only one of the housing schemes of the government. The development consisted entirely of dwellings for workmen of permanent construction. There were four types of houses of from two or four rooms with bath, the rentals being very low. At Eastriggs, quite different from Well Hall, the buildings were of four classes: 1, Semidetached family huts; 2, groups of three blocks of four cottages each; 3, large completed cottages and staff houses in which about one hundred single men or women could be lodged; 4, shops, schools, churches, recreation buildings, and other accessories of a small town. One outstanding feature of these governmental housing schemes had been the great attention paid to the social life and welfare of the community in general. At Eastriggs the clubs of the men and women had been a great factor in stabilizing industrial conditions about this factory, and the same held good at other munition plants. The central hall with its stage was constantly in use for entertainments of various sorts and for dancing. The first floor in general served as a club for the men, while the second floor was a club for the women. All the buildings at Gretna, such as cottages, school, police station, churches, cinema house, institute, shops, post office, public hall, and hospital, of a permanent character, were so located on the plan of the town as to form a nucleus of the future town which would probably develop.

Major THOMAS DARLINGTON, M. R. C., U. S. A., said that it was superfluous to attempt to add anything to what had been said concerning the wonderful work being done at the present time to conserve the life and health of the workmen. His own experience in such matters dated back to 1884 and 1885, when he was surgeon to the aqueduct work in this city and along the Hudson River. He recalled one shanty which contained eighty men in the day and eighty other men at night, and there were only two windows to it, one at each end. At night, the night men took the place of the day shift. If a man was sick, he lay in a narrow bed in which another man was obliged to sleep, or on the floor. On one occasion, ten cases of pneumonia were taken in one day from a single shanty. Any one who had heard Colonel Doane, and then listened to the practical side presented by Doctor Reilly, the housing plans by Mr. Brainard, and seen the wonderful pictures shown by Mr. Hewitt—would realize that it was a far cry from those days to the present.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Surgical Treatment. A Practical Treatise on the Therapy of Surgical Diseases for the Use of Practitioners and Students of Surgery.* By JAMES PETER WARBASSE, M. D., Fellow of the American College of Surgeons, American Medical Association, American Academy of Medicine, New York Academy of Medicine; Formerly Attending Surgeon to the Methodist Episcopal Hospital, Brooklyn, New York. In Three Volumes, with 2,400 Illustrations. Volume I. Philadelphia and London: W. B. Saunders Company, 1918.

This is the first of three volumes, the whole forming a series whose object is to present as simply as possible, surgical treatment to the student and practitioner. Necessarily, therefore, the first part of the volume deals fully with the subject of asepsis, antiseptics, and the preparation and sterilization of surgical material, and with the general preparation of the common antiseptics with their strengths and indicated uses. The business of the anesthetist is described fully. The scope of local anesthesia is indicated and the technic of spinal anesthesia is given. In connection with this preliminary part of the volume the floor plan of an operating pavilion is diagrammed and surgical knots and stitches are described. The topics exhaustively treated in the book are three: 1, aneurysms; 2, fractures; 3, operations on bones and joints. Doctor Warbasse condemns the use of nonabsorbable foreign material in the local fixation of fractures. He says: "Metal in contact with bone causes rarefaction and absorption of the bone. It is an unsurgical and makeshift expedient." He describes very fully the technic of bone grafting in fracture cases. The volume would be noteworthy even if the author had been compelled by space to limit his subject to fractures.

*Bacteriology, Blood Work, and Animal Parasitology. Including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes.* By E. R. STITT, A. B., Ph. G., M. D., Medical Director, U. S. Navy; Commanding Officer and Head of Department of Preventive Medicine, U. S. Naval Medical School; Graduate, London School of Tropical Medicine; Professor of Tropical Medicine, Georgetown University; Professor of Tropical Medicine, George Washington University, etc. Fifth Edition, Revised and Enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. Pp. xv-559. (Price, \$2.00.)

When the reader opens this book he finds on the inside covers a complete diagnostic table of the common communicable diseases under the following headings: Cause, incubation period, source of infection, mode of transmission, period of communicability, laboratory diagnosis, salient clinical features, and the method of control, and on the following page is a recapitulation of the method of blood counting on the Turk ruling. Everything in the book is arranged so as to be of immediate service. Keys are given at the head of each division of bacteria with their cultural differentiations and the organisms are thus easily separated culturally. Running through the bulk of the contents the



following up to date headings are noticed: Agglutination of meningococci and pneumococci, the Dreyer method for the interpretation of the agglutination reactions of typhoid and paratyphoid, a practical method of making Dakin's solution, Mosenthal's nephritic test diet for renal functioning, Schick test for diphtheria immunity, Petroff's method for culturing tubercle bacilli, Wolff and Junghan's test for gastric carcinoma, Bronfenbrenner's modification of Abderhalden's technic, Lange's colloidal gold for general paresis, Fontana's spirochete staining technic, etc. There are complete chapters on preparation of media, methods of staining, and chemical blood examinations. The treatment of the subject of parasitology is especially able. The last chapter discusses important diseases of as yet unknown etiology. An appendix contains the preparation of tissues for microscopical work, various methods of chemical analyses, and a table of anatomical and physiological normals.

*Surgical Applied Anatomy.* By SIR FREDERICK TREVES, Bart., G. C. V. O., C. B., LL.D., F. R. C. S., Eng., Sergeant Surgeon to H. M. the King; Consulting Surgeon to the London Hospital, etc. Illustrated. Seventh Edition. Philadelphia and New York: Lea & Febiger, 1918. Pp. x-702..

This seventh edition differs but little in essentials from previous editions. Sir Frederick Treves, it appeared, had anticipated even the emergencies of present war surgery. In the direction of orthopedic anatomy, knowledge necessary for the treatment of stiffened joints and disabled limbs, there has been, however, considerable addition. Science, especially medical science, is rather unbending; even to her classics she is eternally adding fragments. In this case it does seem a "wasteful and ridiculous excess." This classic was originally printed with the object of encouraging the survival of the fittest among anatomical facts and offering, on the one hand, a precise basis to practical procedures that involve more especially anatomical knowledge, and, on the other hand, of enduing dull items of anatomical fact with interest borrowed from medical and surgical experience. The writer especially advised its use by students preparing for final examinations in surgery, and by practitioners whose memory of their dissecting room work was growing a little grey.

*Gynecology.* By WILLIAM P. GRAVES, A. B., M. D., F. A. C. S., Professor of Gynecology at Harvard Medical School; Surgeon in Chief to the Free Hospital for Women, Brookline, Mass.; Consulting Physician to the Boston Lying-In Hospital. Illustrated. Second Edition, Thoroughly Revised. Philadelphia and London: W. B. Saunders Company, 1918. Pp. 885. (Price, \$7.75.)

A medical student said to his professor the other day, "I have Graves's book on gynecology. Will that do?" and the professor replied, "Oh, yes, it's the standard textbook. Is yours the new edition?"

This really sums up what we have to say about Doctor Graves's book. It contains, however, the following new sections: Gynecology and the internal secretions; ovarian organotherapy; ovarian transplantation; radium treatment of cancer; and the use of radium in nonmalignant gynecological diseases. There is a short section bearing on the relationship of gynecology to the sex impulse based chiefly on the Freudian theories regarding infantile sexuality.

In the third part of the book a number of new operations are described and illustrated. In addition to the ordinary operations of gynecology there are new operations on the abdominal wall, the kidney, the ureters, the bladder, and the rectum. The Mayo operation for varicose veins is also included. The very excellent illustrations—and there are five hundred of them—were made by Doctor Graves himself.

## Births, Marriages, and Deaths.

### Died.

- ADAMS.—In Schenectady, N. Y., on Tuesday, October 15th, Dr. Wesley M. Adams.
- BACKUS.—In Stockton, Cal., on Sunday, October 27th, Dr. William James Backus, aged thirty-nine years.
- BAYLIES.—In Burlington, Vt., on Wednesday, October 23d, Dr. Frederick W. Baylies, aged forty-seven years.
- BOWMAN.—In Brooklyn, N. Y., on Wednesday, October 23d, Dr. John Molyneux Bowman, aged sixty-one years.
- BRECHT.—In Buffalo, N. Y., on Tuesday, October 29th, Dr. Frank E. L. Brecht, aged seventy-three years.
- BROWN.—In Battle Creek, Mich., on Sunday, October 27th, Dr. John C. Brown, aged sixty-five years.
- BURDICK.—In Maryland, N. Y., on Monday, October 21st, Dr. Lewis W. Burdick, aged thirty-seven years.
- CASE.—In Windsor Heights, Conn., on Sunday, October 27th, Dr. Erastus E. Case, aged seventy-one years.
- CONGDON.—In Cuba, N. Y., on Friday, October 18th, Dr. William Orson Congdon, aged sixty-four years.
- CONWAY.—In Albany, N. Y., on Friday, November 1st, Dr. William F. Conway, aged thirty-one years.
- CUNNINGHAM.—In France, on Monday, October 21st, Dr. Bertram Cunningham, of Sag Harbor, N. Y., aged twenty-eight years.
- DOODS.—In Oakland, Cal., on Sunday, October 27th, Dr. Thomas Garfield Doods, aged thirty-three years.
- EGBERT.—In Custer City, Pa., on Wednesday, October 30th, Dr. Rufus A. Egbert, aged sixty-nine years.
- FAULKNER.—In Elizabethtown, N. Y., on Thursday, October 24th, Dr. Clarence S. Faulkner, aged thirty-three years.
- GUTHRIE.—In Malden, N. Y., on Thursday, October 31st, Dr. Edward M. Guthrie, aged thirty years.
- HERR.—In Okmulgee, Okla., on Tuesday, October 8th, Dr. A. Harry Herr, aged thirty-one years.
- KELLOGG.—In Mohawk, N. Y., on Sunday, October 27th, Dr. Charles M. Kellogg, aged forty-two years.
- KELLY.—In Oakland, Cal., on Wednesday, October 23d, Dr. Alexander Simpson Kelly, aged thirty-nine years.
- KYTE.—In Jersey City, N. J., on Sunday, October 20th, Dr. Calvin F. Kyte, aged sixty-eight years.
- LENT.—In Middletown, N. Y., on Sunday, October 27th, Dr. Isaac H. Lent, aged seventy-two years.
- MACDONALD.—In New York, N. Y., on Saturday, November 9th, Dr. John Henry MacDonald.
- MALLORY.—In Oberlin, Ohio, on Saturday, October 19th, Dr. William Mallory, aged thirty-eight years.
- MATTHEWS.—In Cooperstown, N. Y., on Wednesday, October 23d, Dr. Louis B. Matthews, aged thirty years.
- MCGIBBON.—In Chateaugay, N. Y., on Monday, October 21st, Dr. Walter J. McGibbon, aged thirty-two years.
- M McNULTY.—In Glen Lyon, Pa., on Monday, October 28th, Dr. Patrick J. McNulty, aged forty-five years.
- PRICE.—In Easton, Md., on Monday, September 30th, Dr. Joseph H. Price, aged seventy-two years.
- PUTNAM.—In Boston, Mass., on Monday, November 4th, Dr. James Jackson Putnam, aged seventy-two years.
- SLEIGHT.—In Mount Vernon, N. Y., on Wednesday, November 6th, Dr. Elizabeth Cowan Sleight, aged sixty years.
- SORGATZ.—At Fort Bliss, El Paso, Texas, on Thursday, October 10th, Captain F. B. Sorgatz, Medical Corps, U. S. A., of Oklahoma City, Okla., aged thirty-six years.
- SPURGEON.—In Seattle, Wash., on Tuesday, October 29th, Dr. Glenn Charles Spurgeon, aged forty-five years.
- WILSON.—In Denver, Colo., on Saturday, October 26th, Dr. John E. Wilson, aged thirty-nine years.

# New York Medical Journal

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## Original Communications

### NASAL COMPLICATIONS OF EPIDEMIC INFLUENZA.\*

BY GEORGE W. MACKENZIE, M. D.,  
Philadelphia.

Influenza, like all of the acute infectious fevers that are air borne, is with us at all times. It manifests itself sporadically and in a relatively mild form most of the time, and recurs epidemically in a severe form at wide but not necessarily regular intervals.

The infecting organism is the *Bacillus influenzae*, a gram negative short rod resembling the bacillus of Koch-Weeks, which is responsible for the more common form of epidemic conjunctivitis, and the bacillus of Bordet-Gengou, which is responsible for whooping cough. While the *Bacillus influenzae* produces the most variable symptoms, it must be borne in mind that it has usually associated with it the pneumococcus (1). An attack of true influenza is usually ushered in by malaise, headache, bone and muscle pains, and fever, often accompanied with chills. Preceding the respiratory symptoms there often occurs disturbance of the digestive system—vomiting and purging—perhaps less often there are symptoms referable to the nervous system but at times so pronounced as to lead to actual neuritis, diffuse or local, with herpes zoster. A pronounced case of this latter combination was witnessed by the writer, where the fifth, seventh, and eighth nerves of the one side were involved. Herpes of the external auditory canal and tympanic membrane, an almost pathognomonic sign of influenza, was present in this case and aided in the diagnosis. Occasionally the infection is confined to the upper respiratory tract and its adnexa and does not extend lower. This limitation of the infection, however, occurs less frequently during epidemics than between them.

Our knowledge of the frequency and character of the nasal complications of epidemic influenza is meagre at present compared with what it will be a year hence, and the reason is evident to any one who will consider the fact that practically all of our knowledge of the anatomy and pathology of sinus diseases dates from the works of Zuckerkandl and Hajek several years after our last world epidemic of influenza (1889-1890). As an evidence of our present day lack of knowledge of the subject, let us

consider the contradictory reports of R. W. Allen, C. H. Benham, Will Walter, and of the writer.

Allen studied the bacteriology in 103 cases of nasal and postnasal catarrh occurring during the period of 1909 to 1911 inclusive, with the following results:

<i>Bacillus influenzae</i> .....	43 per cent.
<i>Pneumococcus</i> .....	66 per cent.
<i>Streptococcus</i> .....	41 per cent.
<i>Micrococcus catarrhalis</i> .....	66 per cent.
<i>Micrococcus paratetragenus</i> .....	52 per cent.
<i>Bacillus septus</i> .....	26 per cent.
<i>Bacillus of Friedlander</i> .....	5 per cent.

The following are C. H. Benham's figures (2) for common colds during the period of 1905 to 1908, inclusive:

<i>Bacillus influenzae</i> .....	16 per cent.
<i>Pneumococcus</i> .....	5 per cent.
<i>Streptococcus</i> .....	26 per cent.
<i>Micrococcus catarrhalis</i> .....	58 per cent.
<i>Micrococcus paratetragenus</i> .....	52 per cent.
<i>Bacillus septus</i> .....	74 per cent.
<i>Bacillus of Friedlander</i> .....	11 per cent.

Dr. Will Walter's figures for 1908 to 1909 in 100 cases of rhinitis (3) are:

<i>Bacillus influenzae</i> .....	2 per cent.
<i>Pneumococcus</i> .....	7 per cent.
<i>Streptococcus</i> .....	5 per cent.
<i>Micrococcus catarrhalis</i> .....	20 per cent.
<i>Micrococcus paratetragenus</i> .....	12 per cent.
<i>Bacillus septus</i> .....	35 per cent.
<i>Bacillus of Friedlander</i> .....	7 per cent.

The writer's figures<sup>1</sup> for the last six years in 111 cases of accessory sinus and mastoid diseases, all of which were due to the extension of infection from the primary nasal cavity are as follows:

Gram negative bacillus .....	6 per cent.
Gram positive diplococcus .....	6 per cent.
<i>Streptococcus</i> .....	9 per cent.
<i>Staphylococcus</i> .....	81 per cent.
Gram positive bacillus (but not diphtheria) .....	10 per cent.
Klebs Loeffler bacillus .....	1 per cent.
Yeast bacillus .....	1 per cent.

Granting that the laboratory findings of a gram negative bacillus were in all instances the *Bacillus influenzae*, the percentage—six per cent.—is comparatively low. It was interesting to note that in comparing the film with the cultural findings, the gram negative organisms were recovered from the cultures far less frequently than they were found in the film, which matches up with Allen's claim that "the results of examination with smears of

\*Read before the Philadelphia County Medical Society, October 23, 1918.

<sup>1</sup>The writer is not responsible for the description of these organisms. He is merely quoting from the reports as they were forwarded to him from time to time from the Philadelphia Clinical Laboratory.



secretion are not always confirmed by the results of plating experiments; for instance, a smear may show vast numbers of what appear to be *Bacilli influenzae*, while a plate prepared from the same secretion may after even three days' incubation fail to show a single colony of that bacterium; confirmation, therefore, is lacking regarding the identity of the bacillus seen in the smear."

The wide discrepancies in the bacterial findings from the nose and throat in disease, especially with reference to the *Bacillus influenzae*, may in part be explained by a difference in the period of time covered by these four investigators—Allen's 1909-11, Benham's 1905-09, Walter's 1908-09, the writer's 1911-18; by a difference in the countries and climates—Great Britain and America; by a difference in the technic in securing the secretion; by a difference in the laboratory technic in isolating the microorganisms; by a difference in the character of the infectious agents responsible for colds in the head, which have a tendency to vary from year to year; for instance, during the last few years in Philadelphia, the vast majority of the so called grippy colds, with accessory sinus and ear complications, have been due to the staphylococcus, either pure and simple, or mixed with other organisms. In all probability the next few years will see the pendulum swing away from the staphylococcus as the prevalent organism responsible for nose, throat, and middle ear infections and toward the *Bacillus influenzae*, while later on as the virulency of the *Bacillus influenzae* wanes, one of the other organisms, aided by a sudden piling up of virulency will supersede it again.

As to the probable character of the intranasal complications prone to follow this present epidemic of influenza, we have little to guide us, for the reason, as previously stated, that our knowledge of the pathology of sinus disease dates from a period too remote (four or five years) from the last epidemic. Furthermore, in those cases of sinus disease occurring since then, the *Bacillus influenzae* has been recovered in a comparatively small proportion of the total number of cases seen, and in this small number the strain has been relatively mild compared with that which is found during an epidemic. It is quite possible that some influenza infections have escaped recognition on account of the difficulty in securing a growth of the *Bacillus influenzae*, the more so in the cases of mixed infections. It is reasonable to expect that the number of sinus suppurations will increase perceptibly as a result of the present epidemic of influenza, and furthermore, that the severity of the attacks will be increased as compared with the attacks of the few preceding years from the same organism, for the reason that the present strain is more virulent. Notwithstanding this rather unfavorable prognostication, it is more apparent than real since the predisposing causes of sinus disease are less common now than formerly. I refer to obstructive conditions of the nose, more especially septal deflections. During the last ten years rhinologists have been fairly busy—but not too busy, correcting septal deflections, thereby permitting of better ventilation of the accessory sinuses. Without a doubt septal deflection is one of

the most important predisposing causes of sinus disease. Should one be unfortunate enough to develop sinus disease in spite of a corrected deflection, he stands a much better chance of spontaneous recovery and more promptly than the other fellow who still carries his deflection. This is a concurrence of opinion from all authoritative rhinologists. Deflections of the septum, especially the high ones, from the mechanical standpoint, bear a causal relationship to accessory sinus disease, as much so and after a similar manner as do enlarged adenoids to middle ear inflammation. Some one may object on the ground that the adenoid tissue lodges more or less constantly pathogenic organisms. The answer to this is, so does the space behind the deviation.

The reply to the question of what is best to be done to guard against the intranasal complications of epidemic influenza is: 1. Treat the systemic condition for a sufficient length of time to assure as far as possible a complete recovery from the disease, which should include rest and avoidance of too early exposure to unfavorable weather conditions. 2. Avoid the use of local applications to the nose and throat, for the reason that there is no antiseptic strong enough to destroy a virulent strain of the *Bacillus influenzae* which would not at the same time injure the mucous membrane to such an extent as to actually impair the resistance it possessed before its use. 3. Breathe through the nose and not through the mouth, and by breathing through the nose is meant both sides simultaneously. If this is not possible, then the nose should be put into a condition whereby it is possible; for all authorities agree that the mouth breather is decidedly more prone to respiratory disorders than nasal breathers. In further support of the function of the nose in preventing respiratory diseases, one needs but to study the condition of the nose in health, when he will find an abundance of bacteria in the vestibule, fewer in the inferior meatus, and practically none in the middle meatus and accessory sinuses. 4. Avoid the use of alcohol, for alcohol increases the susceptibility of the one who uses it, to diseases generally and to influenza and pneumonia especially. I feel that with this opportunity afforded me, silence on so vitally important a matter would be equivalent to shirking a responsibility. There is an abundance of irrefutable evidence against the use of alcohol to anyone who is willing to take the trouble to look it up, while none can be produced in favor of its use.

The intranasal complication of influenza narrows down to affections of the accessory sinuses; in other words, inflammation of the mucous membrane lining them. The intensity of sinusitis may vary from the mildest form barely recognizable accompanied by a mucoid discharge to the severest form causing suppuration and extensive destruction, not only of the lining mucous membrane, but also of the bone, with extension to neighboring and oftentimes vital structures. The intensity of the inflammatory process is determined by the following factors: the virulency of the infecting organism, the relative susceptibility of the subject to the particular infecting organism, and his general resistance (vitality) to withstand any and all noxious influences. This last is a very important factor in sickness too often

overlooked. It is the one which is the especial prey of alcohol. In the ordinary course of events an acute attack of influenza causes a rhinitis along with inflammation of other parts of the respiratory tract. Occasionally the infection is so intensive that the sinuses are involved more or less from the start. In those cases which terminate fatally after a few days it is a question as to just how extensively and intensively the sinuses are involved. This is a rich field for investigation. Again, in those cases in which death ensues promptly of cerebral complications, it is quite possible that suppuration of one or more of the sinuses has played an important part. Sinus disease arising early in the course of influenza is rarely seen by the rhinologist. It is rather those of later development that he sees and has an opportunity to study. We have every reason to believe that the number of cases of sinus disease of later onset far exceeds those arising during the acute stage, since this is the rule with all other infections of the nose.

Nasal accessory sinus disease, at least the frank forms, usually develop after the initial rhinitis has begun to subside. It manifests itself as flare up in the cold, is often accompanied by a rise in temperature, localized sense of fullness, or pain and tenderness to pressure. There may or may not be a unilateral discharge, anteriorly in the case of involvement of one or more of the anterior set of sinuses (frontal, maxillary, or anterior ethmoidal), posteriorly in the case of involvement of one or more of the posterior set of sinuses (posterior ethmoidal or sphenoidal). In those cases of sinus involvement with pain and localized tenderness without discharge, the absence of discharge may be due to lack of drainage from occlusion of the natural ostium. The occlusion may have resulted from a temporary, inflammatory swelling of the mucous membrane about the ostium; in which event, the local application of cocaine to the adjacent parts will shrink the mucous membrane sufficiently to make the ostium patulous, resulting in temporary drainage and relief of pressure and pain.

The treatment of sinus diseases due to influenza is conducted after the same manner as the treatment of sinus diseases from any other infection. From the rhinologist's viewpoint, a sinus disease, if acute, is treated conservatively by establishing and maintaining drainage. From the standpoint of treatment, he as a rule pays but little attention to the nature of the infecting organisms. The objection might be raised that a knowledge of the nature of the infecting organism is important and should be ascertained in all cases, in order to decide better upon the character of the vaccine to be used. Theoretically, this objection may seem to be well founded, but the experience of the average rhinologist is that those cases in which vaccines have appeared to operate the most satisfactorily have been the acute inflammations which are prone to get well without them. In the more chronic conditions they have been a dismal failure. Let it be understood that I do not wish to condemn the bacteriological study of suppuration or that I would have vaccines discontinued altogether in the treatment of sinus disease, but I do insist that the results thus far observed in the treatment of obstinate suppurations

have been far better from surgery alone than from vaccines alone.

The subject of the diagnosis and treatment of accessory sinus diseases is one of considerable importance and quite technical. It is a rather new science, our knowledge of which is already considerable, but only fragmentary compared with what it promises to be a few years hence, which is my apology for the earlier confession that "our knowledge of the frequency and character of the nasal complications of epidemic influenza is meagre."

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## SURGICAL PATHOLOGY OF THE PRESENT INFLUENZA EPIDEMIC.

By J. W. KENNEDY, M. D.,  
Philadelphia.

The present influenza epidemic is characterized by its wide distribution, great prostration, high mortality, and its difference in course of pathological extensions.

That it is a mixed infection there is little doubt, conforming, however, to the dominance of influenza bacillus, pneumococcus, and streptococcus. The pathologists and bacteriologists are in accord on this point. It is my opinion that the difference in the virulence and pathology of the present epidemic is determined and indicated through the mode of extension of the pathological conditions by the streptococcus.

If you will study the pathology of those conditions in which the streptococcus is the infecting source, you will be impressed by the following facts:

In the first place, the streptococcus is not a mucous membrane infection, in that it has no tendency to confine its pathological extensions to these membranes. Surgically we see this typified in the puerperal infections which we assign to the ravages of the streptococcus. The puerperal infections are particularly fatal on account of the diffuse and infiltrating modes of extension of the pathological conditions which are little influenced by either serous or mucous membrane; therefore, this type of infection does not confine itself to a particular structure which is limited by mucous or serous membrane, but infiltrates the structure throughout with little tendency to become localized. This is the reason the puerperal infections are little amenable to amputation surgery (removal of pathological condition).

The surgical complications following this epidemic have all the earmarks of the puerperal or streptococcus infections. One remarkable feature in this epidemic has been that we have not had the usual great number of operations for appendiceal or gallbladder conditions which uniformly follow or accompany the ordinary influenza epidemic which is a mucous membrane condition, the appendiceal and gallbladder lesions simply being extensions of the mucous membrane infection. Another important point is that we have not had the usual number of operations for empyema which follow the ordinary pneumonias. In the cases where it has



been necessary to open the chest cavity we have not found the pus collection at its usual location or in the usual amount. The usual pus collection is low down and posterior in the ordinary pneumonias, such as one might expect from the infection of the pleura. So again we find in this epidemic the infection has not extended or confined itself to the serous membrane of the pleura but has more deeply infiltrated the lung tissue. Never before have I opened the chest cavity following a pneumonia as high as the third rib, and never before have I opened the chest as far anteriorly as the nipple line. So again we find the extensions of the pathology in this epidemic have not conformed to the governing or controlling rule of the mucous or serous membrane lesions. The abscesses opened in chest cavities seem to be small and honeycombed, thus again conforming to the rule of an infiltrating infection not confined or limited to the normal membranes.

The surgery of the lung in this present epidemic will not be followed by the brilliant results obtained in the ordinary empyema following a classical pneumonia, as the accumulations of pus are small and multiple, indicating the mode of infection, and little accessible to surgical drainage. The infection throughout the structure of the particular viscus not limited by the ordinary barriers of serous and mucous membrane has been the determining factor in this merciless epidemic.

The pathologists will probably tell us that there is not the usual consolidation within the vesicles and small air chambers which is typical of the classical pneumonia, but that the extension is infiltrating and has not confined itself to the bronchi and their extensions. Now the hemorrhages which have accompanied this epidemic are further typical of the extensions of the infection beyond the mucous membrane to the deeper structures of the alimentary canal. Great muscular weakness, the frequent heart collapse, and diffuse hemorrhage into the tissues are further evidence of an unlimited and infiltrating infection. We find it a strong working factor in surgery that those lesions which strike between the mucous and serous membranes have a frightful mortality. This is brought before the medical profession in this epidemic as I have not seen it before. It is a matter of record in this epidemic that in those camps or institutions where it was necessary to congregate large numbers of persons the mortality was high, just as it was in the puerperal epidemics which occurred in the early history of that fatal infection, the mortality being much higher in hospitals than in homes.

The metastases following the present epidemic have been most typical of a streptococcus infection in the formation of multiple abscesses in the muscular and connective tissues which is another indication of the route of infection and a further evidence that the infection is not confined or influenced by either serous or mucous membrane. Again these multiple muscular lesions are an indication that the infection travels by or through the lymphatics of bloodvessels and not by the normal membrane.

We thus again see the similarity to the puerperal infection which is a wound infection and extends in unlimited direction through the lymphatics and blood-

vessels. It is most probable that the combination of the influenza and streptococcus infections explains in force the wide distribution and the great mortality: the Pfeiffer bacillus responsible for the wide distribution and contagion and the streptococcus for the high mortality, infiltrating involvement, and metastatic conditions. The pneumococcus is present but I doubt if it is an influencing or a determining factor in mortality. The appalling death rate of the prematurely delivered woman during this epidemic points so strongly to the great puerperal epidemics that we are forced to the conclusion of a similar etiology. The full term pregnancy has been accompanied by a mortality peculiar to this epidemic, but fortunately not with the exceedingly high mortality of the premature delivery or miscarriage. This, in my opinion, is not altogether due to the fact that the patients at full term have a higher point of resistance, but probably is due to the greater risk of infection through mechanical or operative means incident to the care of the premature case.

If the surgical finger ever had to be cleansed, it is most indicated during this epidemic. In my institution, the Joseph Price Hospital, God has been good to us during the epidemic as, so far, we have escaped surgical mortality. We have followed the most rigid West Point regulations in all sanitary rules; we have been unrelenting in every detail of sterilization, ventilation, and isolation. Short of such extravagant precaution surgery during this epidemic would have been accompanied by fatal and prohibitory complications.

241 NORTH EIGHTEENTH STREET.

## INFLUENZA.

### *Clinical Observations of the Present Epidemic in the U. S. Marine Hospital.*

By Z. I. SABSHIN, M. D.,

Stapleton, N. Y.

Acting Assistant Surgeon, U. S. Public Health Service, U. S. Marine Hospital.

It is, indeed, to be regretted, from the public health point of view, that we are not in a position to state definitely the nature of the etiological agent of the present epidemic. In spite of the fact that for prevention and cure stress must be particularly laid on the infective agent, we still face the ravages of this epidemic without a clear idea of the nature and method of control of the causative organism or organisms. Our own laboratory findings, as well as information from other laboratories, at present fail to give satisfaction. While the only term now heard is influenza, we observe a pneumonia epidemic, most probably independent of the influenza. We admit that a great number of the pneumonias observed are complications of influenza, but we have seen in our wards too great a number of old fashioned lobar pneumonias to escape the observation of a separate epidemic. Notably the present epidemic is caused by a variety of microorganisms. The pulmonary lesions produced by the *Diplococcus pneumoniae* are more or less typical and identical, although during life it is hardly possible to detect

the differences in the lesions caused by various bacteria. Clinically, however, we observe in this epidemic definite groups of systemic disorders, to the extent that we may say with certainty that we deal with a variety either in the infectious agents themselves or their virulence, as we have met the exact clinical pictures in various patients, with the only possible exception, to our mind, of race—namely, there was a proportionally greater number of fatalities in our colored patients. We shall, therefore, give here an account of our clinical notes, regardless of the direct or indirect causative agents. We have met four distinct groups as follows:

1. Mild or abortive cases.
2. Ordinary cases.
3. Malignant or toxic cases.
4. Irregular or protracted cases.

The daily observations in the wards, the charts, and records, not only make this classification characteristic, but suggest an idea that we deal with four clinical entities. Roughly, the distribution of the cases at present is as follows: thirty per cent. of the first group, forty per cent. of the second, twelve

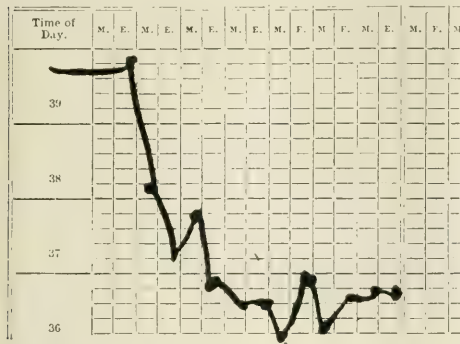


CHART I.

per cent. of the third, and eighteen per cent. of the fourth group.

*Mild or abortive cases.*—The patient is usually young. He generally has a fever of about 38° to 40° C. (see Charts I and II) and complains of headache, backache, or general aching of bones and joints. A number of patients give a history of not being at all well for a few days. The complaint may be limited to the fever only, or to a chilly sensation.

The physical examination elicits a flushed face, dry lips, coated tongue and sometimes slight congestion of pharynx. There is a slight acceleration of the pulse, and in a few cases a systolic blow may be present. A considerable number of patients give some pulmonary signs: most commonly harsh vesicular breathing over one or both upper lobes, or distal breath sounds over one or both lower lobes. In very few patients were there musical râles in the axillæ, and in one patient crepitant râles over apices were found. Loss of appetite is common. Constipation predominates, and only few complain of too loose bowels. The reflexes are mostly normal, but some give sluggish reactions. These patients re-

cover rapidly. The temperature drops in twenty-four to forty-eight hours after admission, and they are discharged in good condition within three to five days.

*Ordinary cases.*—This group subdivides itself into those that have recovered, with no definite signs of

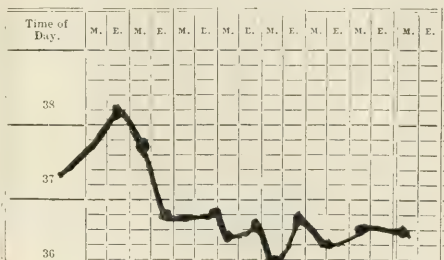


CHART II.

pneumonia; those that recovered or died with signs of bronchopneumonia; and thirdly into those that recovered or died with signs of lobar pneumonia. We use the term lobar simply from the physical viewpoint, as we have found the areas of one or more lobes giving dullness, bronchial breathing, associated with shallow painful respiration, disregarding the question whether the infection is primary, or the lobe became involved by the spread of the infection from the lobule or lobules. We do include in this group a number of old fashioned lobar pneumonias, running the typical course, and the description of which is unnecessary, being a well known picture.

The patients of this group vary in age, but in our experience not many were above forty years. They come in, or are brought in with a temperature of about the same as the previous group, or sometimes lower. They complain of headache, pain in the neck, or general malaise with a cold in the chest, cough, weakness, and loss of appetite. A great number give a history of a preceding chill; but it is characteristic of this epidemic that we do not get the history and findings of the well known acute coryza, caused by the *Micrococcus catarrhalis*.

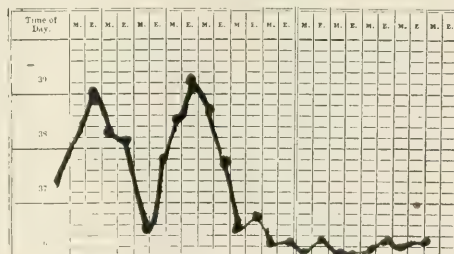


CHART III.

There is no sneezing, no clear irritating secretion from the nose in the early stage, and no turbid discharge later. Neither is the voice that of the ordinary coryza, with the stuffed-up nose, but either normal or husky.





lent expectoration is present in almost all of them. The patient moans, holding one hand over the chest and the other hand ready, near the cup, to spit or vomit. Notably these pangs come in paroxysms, about four to five during the day, each lasting five

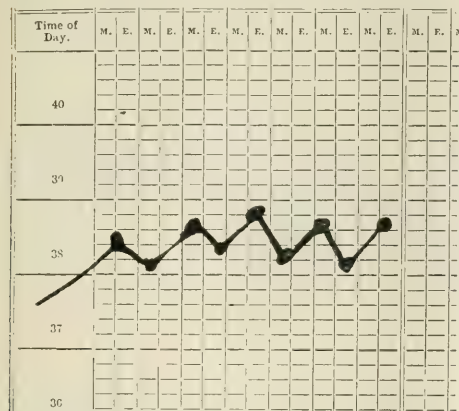


CHART VI.

to ten minutes, with wrenching and vomiting, mostly in the mornings. The face is wrinkled, the eyes are kept closed, the tongue is dry, and the patient bends over and sometimes doubles up, or prefers to be in a half sitting posture. One of these patients had an attack of hiccough, lasting twenty minutes. There is a profound prostration. Physical examination gives a rather indefinite picture of a bronchopneumonia, with a prostration out of proportion to the findings, which we consider a characteristic feature. The moaning is very loud and disturbing. One of our first patients was suspected of exag-

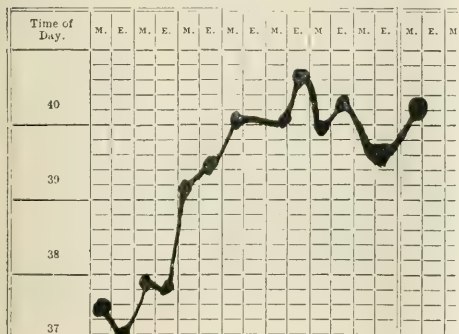


CHART VII.

geration or malingery, but the cases following have all demonstrated the very same expressions of pangs, caused by some toxic condition of the vasomotor and respiratory centres. There is a low blood pressure, and the patient sinks into a condition of collapse. The features are shrunken, the voice very husky or lost, extremities cyanosed,

clammy perspiration all over the body, and with consciousness retained mostly up to the end, the patient dies in from three to seven days, from asphyxia, asthenia, or pulmonary edema. Few last longer, and not over four per cent. very slowly recover.

*The irregular or protracted cases.*—This group is admitted with about the same complaints as the ordinary group. The subjects are almost all young persons. The temperature is continuously above normal with a variety of fluctuations (see Charts IX, X, and XI). Some run a fever for a few days with a sudden drop, as if by crisis, but with an immediate rise, then again fluctuating variously. Occasionally during the course there is a hectic temperature for a few days. Finally there is a slow decline, the process lasting three to five weeks.

The physical findings vary greatly, and are irregular; the same applies to the subjective symptoms and general dispositions of the patients. Some go through an irregular course with the only findings of a mild bronchitis. These cases resemble

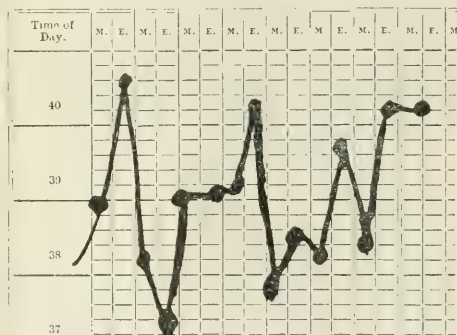


CHART VIII.

clinically a mild course of typhoid fever. Some show signs of pneumonia, localized or scattered, and the clinical picture is that of a typhopneumonia, but with a negative Widal and negative blood culture for the *Bacillus typhosus*. Others run a course very much the same as a miliary tuberculosis. One patient had all the signs and symptoms of a tuberculous bronchopneumonia, with a positive sputum, followed by recovery. Another patient of this group gave a positive sputum for tuberculosis, followed by numerous negative tests, and was discharged in good shape. The x ray in another patient shows mottled areas scattered over both sides of the lungs, and a shadow over the left base, suggestive of a thickened pleura, or fluid. The needle gives neither pus nor fluid, but the sputum finally shows the tubercle bacillus. The patient takes his nourishment fairly well, but is rather indifferent, and remains in bed most of the time, running an irregular fever.

So we note that while the onset and the premonitory symptoms are about the same, this group on the one hand gives cases obscurely protracted, clinically resembling bronchopneumonia, or typhopneumonia, almost all recovering, and on the other hand cases





Special senses: Blepharitis marginalis was noted in a few cases; conjunctivitis in about half a dozen; and in one the pneumococcus was found. Otitis media was present in about ten per cent. of the cases, and a number had a purulent discharge. The condition usually subsided with the general dis-

show the trachea to be a point of selection for the *Bacillus influenzae*.

Instead of mentioning bronchopneumonia as a complication, we shall state here that the stethoscope proved to be the best and most reliable means of diagnosing this condition, whatever the criti-



CHART XI.

ease; only one patient left the hospital with impaired hearing and a slight discharge.

Gastrointestinal tract: Foul odor from the mouth was noticed in a few cases. Vomiting was a grave condition in all malignant and some of the ordinary patients. The vomitus was of an acid reaction, occasionally bloodstained, and consisted of a yellowish or greenish fluid. Hiccough was present in one of the malignant cases. Constipation was very obstinate in three cases, diarrhea in two, and blood in the feces in only one.

Bronchopulmonary tract: Epistaxis was present in about seven to eight per cent. of our cases, mostly at the onset. One patient of the ordinary group had a pulmonary hemorrhage, leaving the hospital

cism may be. To diagnose by judging by the appearance of the patient, and even by percussing, would surely mislead in this epidemic. I found one woman with scattered areas of consolidation over both sides, and very weak, whose private doctor told her that same day to leave bed, simply because he did not use his ears. If patiently used, the stethoscope will elicit a pneumonia in proper time.

Genitourinary tract: In one of the protracted cases we had a retention of urine, and the patient had to be catheterized for two days. Several of our patients had an exacerbation of gonorrhea, i. e., they had been cured from this disease several months, and have set up a urethral discharge in

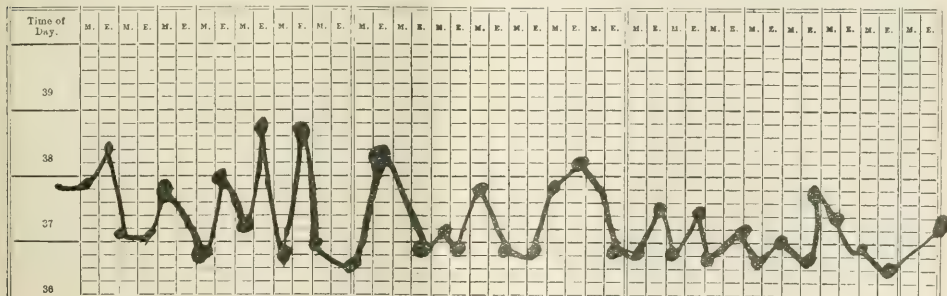


CHART XI (Continued).

with no evidence of pulmonary or gastric disease. Loss of voice was common in all malignant and some of the other cases. The husky voice is typical and associated with pain in the chest, the patient always pointing to his upper chest. The local laryngeal findings were not severe enough to account for the hoarseness or total loss of voice. It is rather a toxic condition of the nervous control of the larynx, or a tracheitis, as laboratory reports

three to five days after the attack of the influenza.

Nervous system: Delirium was common in the ordinary group, being the delirium mostly of a low, muttering nature. Fighting snakes and catching flies is a common story. One of the protracted cases had a delirium resembling a uremic coma, with a locked jaw, so that this patient had to be fed through his nose for two days. This patient recovered. In the malignant cases the delirium



was a kind of drowsy restlessness. Three patients had supraorbital neuralgia, and one had a neuritis of the lower extremities.

*Surgical complications.*—Beside otitis media, mentioned above, we had one case with an alveolar abscess and abundant pus. Another patient had all signs and symptoms of a cholecystitis, but his condition still does not warrant a laparotomy. In another patient with symptoms of a septicemia, pus developed in the forearm and in the groin and axilla on the opposite side. He died before drainage was rendered.

#### PROGNOSIS.

Our records show more than 450 cases with a mortality of between fourteen and fifteen per cent. Our treatment was mostly symptomatic, with trials of all the well known measures, but I must frankly admit that we cannot point to any one as being definitely good. Atropine seems to prevent a great number of pulmonary edemas.

Generally, the picture may change within twenty-four hours from a favorable to an extremely unfavorable one. Leaving the bed too early has sent a good many to the grave. At least four days in bed after the temperature has become normal is an absolutely necessary measure.

The favorable points, as we have noticed them, are older age, a slow onset, and a fluctuating temperature. The grave signs are constant temperature, even not very high, vomiting, and partial or total loss of voice. Delirium is not of importance as far as prognosis is concerned. Colored patients have given a proportionally higher number of mortalities.

#### SUMMARY.

1. Apparently we have had two epidemics; influenza and pneumonia.
2. There is one group of cases, very toxic, the physical, and particularly the chemical, nature of which we do not know.
3. We face a problem of tuberculosis in connection with this epidemic.

### PROPHYLAXIS OF SPANISH INFLUENZA.

BY BERNARD FRANKEL, M. D.,  
New York.

Although its name suggests to the laity some new outlandish disease, we find Spanish influenza to be distinguished only by the greater virulence of its infection from the ordinary grippe which has become almost endemic with us and has been especially prevalent here during the fall, winter, and spring seasons of the past few years.

I have made a careful study of its various manifestations for the past ten years, and as early as 1909 observed in a child a very interesting case of influenza ushered in by the typical eruption and invasion of scarlet fever. My diagnosis of influenza in that case was confirmed by Dr. L. Emmet Holt who saw the case with me, and I described it in detail later, in my article on pseudoscarlatina (1). Later I observed and described gastrointestinal, nervous (2) and pulmonary (3) forms and about a year ago also the exanthematos and other forms of influenza (4).

In the last named article I pointed out the pseudo-measles, pseudoscarlatina, pneumonic and pseudo-tuberculous forms among others, and also the fact that instead of the Pfeiffer bacilli, streptococci were the real causative agents of influenza—in severe cases probably the *Streptococcus hemolyticus*.

As prophylactic measures I urged quarantining every case of influenza and keeping even mild cases at rest in a warm, well ventilated room at a distance from open windows and drafts of cold outside air in order to prevent complications (4). This recommendation was in direct contrast to the then very popular slogan of "wide open windows in grippe" which was promulgated by the medical authorities and which induced grippe patients to seek the proximity of wide open windows to ward off pneumonia, with the result of bringing on that very complication. In my article, *Influenza versus Tuberculosis*, I pointed out the fallacy of this open air treatment of grippe and asserted most emphatically that influenza is the disease most adversely affected by exposure.

In view of the rapid spread all over the world of the present influenza epidemic I deem it my duty to elucidate in greater detail a fact of great prophylactic importance which I mentioned in a previous article (3). I refer here to what I then termed "latent grippe" by which I meant a stage sometimes preceding and sometimes following an acute attack of influenza and characterized by rather vague symptoms, such as loss of appetite, exaggerated sensitiveness to cold—the patient feeling comfortable only in a warm room, a feeling of general weakness or asthenia accompanied by very profuse perspiration upon the slightest exertion and also in bed at night (3).

According to my observations this latent stage of influenza, which, if not properly treated, may last for weeks, marks the period of the patient's greatest susceptibility to the infection and also the period of greatest danger of relapses or complications by pneumonia, for whereas during the acute attack of grippe most patients will remain in their rooms, very few if any would consider the vague symptoms of the latent stage as justifying the taking of the necessary precautions against exposure.

It seems to me, therefore, that it is the duty of the medical authorities and of the profession at large to impress upon the laity the importance of the proper prophylaxis during the latent stage of grippe. In addition to rest in a warm and well ventilated room I find quinine of great and almost specific value as a prophylactic measure in the latent stage of grippe; its use in doses of from ten to twenty and more grains daily for a few days will invariably abort an impending acute attack and frequently ward off dangerous complications if properly used in the early stages. Quinine seems to exert a great inhibitory influence upon the infective agents of influenza and is strongly indicated during the latent stage and also during the course of the disease and its convalescence which it hastens. In fact I feel justified in strongly urging its universal use by persons exposed to the contagion of influenza and by everybody during the prevalence of an influenza epidemic like the present. Such universal use of quinine both as a prophylactic and curative

agent would, I am convinced, contribute greatly to cutting short the course of such an epidemic. I have seen repeatedly impending attacks of Spanish influenza aborted by large doses of this drug aided by diaphoretics and mild laxatives—strong cathartics are contraindicated as likely to induce troublesome diarrhea and even symptoms of enterocolitis in some instances.

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1234 MADISON AVENUE.

## INFLUENZA AND SUPRARENAL GLANDS.

BY JOHANNES H. M. A. VON TILING, M. D.,  
Poughkeepsie, N. Y.

During the present epidemic of influenza I observed several cases which suggested a line of treatment that seemed to be of so much benefit that I feel justified in outlining it briefly.

I saw several patients who presented almost the classical symptoms of acute Addison's disease, extreme muscular weakness, tendency to syncope, insomnia, low diastolic pressure with high pulse pressure, and, in two instances, the unsolicited remark was made by a member of the patient's family that he was looking "so brown." In several instances we saw attacks of dizziness and faintness caused by the slightest exertion, as for instance turning the head or lifting an arm, and we saw sudden collapse with marked mottling of the skin and cyanosis followed by a feeling of chilliness and extreme weakness, and yet there did not appear to be any failure of the heart and no dilatation, but a slow regular pulse and apparently a good pulse pressure. In two patients, known to me for years, who are not at all of nervous temperament, the taking of the blood pressure alone brought on such attacks. These symptoms in one instance were so alarming that, frequently, I did not feel justified in taking the blood pressure in other similar cases.

The results of the administration of suprarenal gland substance, and especially of repeated injections of epinine and adrenalin chlorid solution, were such that I became convinced that the extreme weakness seen so often in cases of influenza during the attack and also in the period of recovery was caused not so much by a weakened heart muscle as by adrenalin deficiency. Another observation of interest in this connection was the fact that a number of patients complained of a distinct localized pain and soreness in the region of the kidneys, after the general backache and headache had disappeared, and this backache was frequently very promptly relieved by epinine. It gave the impression that the administration of suprarenal substance or epinine had taken a load from the suprarenal glands.

I am not in a position to scan medical literature for confirmation of the theory that adrenalin deficiency may be responsible for weakness and death in many cases of influenza, but the seriousness of the present epidemic and the striking results obtained by the treatment suggested above seem to me to be sufficient justification for these remarks.

DANGER OF THE MASK FOR PROTECTION  
AGAINST INFLUENZA.*A Better Device.*

BY J. C. MINOR, M. D.,  
Hot Springs, Ark.

The ultramicroorganism is unimpeded by the mask in its flight through the nasal passages, even by the six fold gauze, so forceful is the inhalation of air as compared with the exhaling through the mouth and nasal passages. The return of the air breathed in is arrested by the mask and thus a second shot is taken at rebreathing air vitiated not only by the microorganism of influenza, but it is necessary to rebreathe the normal output of the lung excretion in addition.

I am offering as a more sensible filter the inch gauze pledget folded to a cone shape and inserted into the nostril. Cut the gauze about one inch square, or carry in the pocket a one inch gauze roller bandage and with pocket scissors cut one inch of the gauze and fold it three times. Insert one of these pledgets in the nostril right and left whenever the mask would be indicated.

The public might be instructed by the family doctor to use this not unseemly precaution when at home or on duty or when traveling or shopping. The nostrils should not be stuffed. The pledget should rest lightly in each nostril as a miniature filter and must not impede breathing through the nose.

I do not approve of the mask nor do I believe that spraying the air passages with irritating lotions is of any value. On the contrary, the most soothing lotions to the sensitive areas of the nasal and throat passages should be used. The ideal lotion to my mind is made from the alkaline antiseptic tablets which have been familiarly known to the profession for years. There is no just reason why every one should not carry a supply of these inch gauze cuttings wrapped in tinfoil or paraffin paper at all times to be used frequently during the day or night.

The mask is impractical, because the entire population of a town cannot be coerced into using it. It is not generally used by the doctors. It is expensive; it is dangerous, because it is filthy; it cannot reasonably be rendered aseptic for using over again. Cotton is twenty-six cents a pound in the field. There are a hundred million of us.

"Kadu" Infection.—M. L. Kamath (*Madras Medical Journal*, January, 1918) draws attention to the dangers which await new comers even in the simple art of fishing. He gives three or four cases of infection through a prick with the scales of the kadu, which is a fresh water fish found in Malabar, four feet seven inches in length with a spine on either side the oral cavity, which it uses in attacking. Within a day or two violent cellulitis sets in with much redness, swelling, and pain in the fingers and palm. The cellulitis spreads up the forearm and sometimes goes on to suppuration, and, in cases brought too late, there is sloughing of tendons and erosion of bone necessitating amputation of phalanges or metacarpals. The pus has a peculiar, offensive stench. Recovery is slow.



## A WASSERMANN MODIFICATION.

BY MAX SHAWKEK, M. D.,  
Brooklyn,

Lieutenant, M. C., U. S. Navy; U. S. Naval Hospital.

For conducting the complement fixation tests in the diagnosis of syphilis, many modifications have been suggested in the last few years. Most of these are designed to simplify the technic or to overcome the natural antishoop amboceptor which occurs in variable quantities in human sera. Bauer, Hecht, Weinberg, and Gradwohl, however, have utilized this natural antishoop amboceptor against sheep cells. The last three of these workers also utilized the native complement present in human sera. Few serologists use hemolytic systems other than antishoop or antihuman. Detre and Brezovsky used an antihorse system, Browning and Mackenzie an antiox system. The use of human cells and active sera as recommended by Noguchi is rapidly gaining favor. The homohemolytic method lately suggested by him has been used in our laboratory with satisfaction, the only objection being the difficulty in obtaining good amboceptors. It so happens in the navy that systems utilizing human cells, or the cells of small animals such as can be conveniently carried on ships, are more practical than those requiring larger animals—as the sheep, horse, or ox. With this end in view we attempted the use of guineapig cells. Although literature from various sources credits guineapig cells with immunity to the natural hemolysins in human sera, we find

and given two or more subsequent washings with normal salt solution. Natural agglutinins have not been observed. The cells "handle" well and as we use them in a one per cent. suspension, the readings have much the appearance of an antihuman system. The patient's serum is used in doses of 0.1 c. c. to each tube and should be fresh, free from cells, and not hemolyzed. In testing a spinal fluid, 0.1 c. c. of a known negative serum must be used to furnish complement and amboceptor.

The titrations required in this modification are to determine the anticomplementary unit of the antigen used and the cell load which can conveniently be handled by the 0.1 c. c. of patient's serum used. The ice box fixation is used for the first step, four hours to overnight being the time allowed. One or two shakings of tubes is sufficient.

The technic is very simple and requires the following:

APPARATUS.	REAGENTS.	ANIMALS.
Leut. syringe, 10 c. c.	Salt solution, 9 per cent.	Guineapig.
Centrifuge tubes.		
Test tubes, 9 by 9 cm.	Sodium citrate solution, 2 per cent.	
Test tube racks.	Acetone insoluble antigen.	
Graduated pipettes.	Patient's serum (unknown).	
Water bath, 37 degrees.	Patient's serum (known positive).	
Icebox.	Patient's serum (known negative).	
Centrifuge.		
Glass stoppered flasks.		

The steps of the test are shown in Table A.

The titration of the cell dose is made by placing tubes as indicated in Table B, a one per cent. suspension of washed guineapig cells being employed.

TABLE A.

	Set for diagnosis.	First Step. Positive control.	Negative control.	Second Step.	Third Step.	Fourth Step.
Rear tube.	Unknown. Patients' serum . . . 0.1 c. c. Sodium chloride solution . . . 9 per cent. 1 c. c.	Known positive. Patients' serum . . . 0.1 c. c. Sodium chloride solution . . . 9 per cent. 1 c. c.	Known negative. Patients' serum . . . 0.1 c. c. Sodium chloride solution . . . 9 per cent. 1 c. c.			
Front tube.	Unknown. Patients' serum . . . 0.1 c. c. Acetone, insoluble antigen (1 per cent.) 1 c. c.	Known positive. Patients' serum . . . 0.1 c. c. Acetone, insoluble antigen (1 per cent.) 1 c. c.	Known negative. Patients' serum . . . 0.1 c. c. Acetone, insoluble antigen (1 per cent.) 1 c. c.	Shake and place in ice box 4 to 12 hours.	Add to each tube 1/2 of the maximum dose of guineapig cells (0.5 c. c. of pooled patients' serum; 0.5 c. c. of a 1 per cent. suspension being usual working unit).	Incubate at 37°.

(1 c. c. of a one per cent. antigen should represent one quarter the anticomplementary dose.)

that practically all human sera contain natural anti-guineapig cell hemolysins in fairly constant amounts. In two hundred tests we have found only two sera which would not hemolyze the cells in suspension used. Incidentally, these same sera were from patients receiving intensive treatment, and both were slightly anticomplementary in the controls. The classic Wassermann tests were used for controls in most cases.

In the proposed tests, besides the diluents, only three reagents are used, namely: patient's serum, which must be fresh; acetone insoluble antigen; and guineapig cell suspension. The patient's serum serves the triple capacity of complement, amboceptor, and reagent. Antigen is made after the method of Noguchi and used in strength of one fourth the anticomplementary unit. When active serum is used, the acetone insoluble antigen must be used to reduce the chances of false prototypic fixation. The cells are collected by cardiac puncture of an anesthetized guineapig. The blood is citrated

The dose of cell used is one half of the maximum suspension that is completely hemolyzed in fifteen minutes incubation at 37° C. We have found the maximum dose to be one c. c. of the one per cent. suspension in most cases; the working dose then being 0.5 c. c. of a one per cent. suspension. If any doubt exists concerning any one or several sera they should be titrated separately for the amboceptor content in the same manner as the average dose is determined, using pooled sera. Using the homohemolytic system of Noguchi, we have occasionally encountered a serum in which complement was absent. So far we have not encountered such in the system proposed. No doubt they will occur however and to handle this condition we propose to add 0.1 c. c. of a known negative serum and then titrate the cell load required. We have not tried to inactivate the unknown serums and then reactivate with known negative, but would expect a good working test by this method. This introduces a different proportion of amboceptor and complement however,

TABLE B.

First Step. Control.	Pooled sera .....	0.1 c. c.	Patients' sera .....	0.1 c. c.	Patients' sera .....	0.1 c. c.	Patients' sera .....	0.1 c. c.
	Guinea pig cells .....	0.5 c. c.	Guinea pig cells .....	1 c. c.	Guinea pig cells .....	1.5 c. c.	Guinea pig cells .....	2 c. c.
Second Step. Control.	Sodium chloride solution .....	1.5 c. c.	Sodium chloride solution .....	1.0 c. c.	Sodium chloride solution .....	0.5 c. c.	Sodium chloride solution .....	0.5 c. c.
	Guinea pig cells .....	0.5 c. c.	Guinea pig cells .....	1 c. c.	Guinea pig cells .....	1.5 c. c.	Guinea pig cells .....	2 c. c.
Second Step. First Step.	Sodium chloride solution .....	1.5 c. c.	Sodium chloride solution .....	1 c. c.	Sodium chloride solution .....	0.5 c. c.	Sodium chloride solution .....	0.5 c. c.

Incubate for 15 minutes at 37°.

TABLE C.

First Step. Control.	Pooled negative sera .....	0.1 c. c.	Pooled negative sera .....	0.1 c. c.	Pooled negative sera .....	0.1 c. c.	Pooled negative sera .....	0.1 c. c.
	Guinea pig cells .....	1 c. c.	Guinea pig cells .....	1 c. c.	Guinea pig cells .....	1 c. c.	Guinea pig cells .....	1 c. c.
Second Step. Control.	Antigen 1 per cent. ....	1 c. c.	Antigen 2 per cent. ....	1 c. c.	Antigen 4 per cent. ....	1 c. c.	Antigen 6 per cent. ....	1 c. c.
	Antigen 1 per cent. ....	1 c. c.	Antigen 2 per cent. ....	1 c. c.	Antigen 4 per cent. ....	1 c. c.	Antigen 6 per cent. ....	1 c. c.

Incubate for 15 minutes at 37°.

TABLE D.

Remarks.	SHAWEKER Acetone insoluble antigen.	NOGUCHI Homohemolytic Acetone insoluble antigen.	WASSERMANN Acetone insoluble antigen.	Cholesterol- insoluble antigen.
Previously positive; vigorous treatment.	Neg.	Neg.	Neg.	Neg.
Genital sore, early	Neg.	Neg.	Neg.	Neg.
Secondary eruption on body	Neg.	Neg.	Neg.	Neg.
No history	+++	+++	+++	+++
No history	Neg.	Neg.	Neg.	Neg.
Negative history	Neg.	Neg.	Neg.	Neg.
Positive history, old; "606" and mercury	Neg.	Neg.	Neg.	Neg.
Secondary eruption on body; no treatment	Neg.	Neg.	Neg.	Neg.
Secondary eruption; slight mercury	+++	+++	+++	+++
Positive history; vigorous treatment	+++	+++	+++	+++
Positive history; "606," mercury	Neg.	Neg.	Neg.	Neg.
Positive history; (accident)	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Genital lesion, early	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Positive history, five years' standing	Neg.	Neg.	Neg.	Neg.
Positive history; Wassermann (in Sept., 1917).	Neg.	Neg.	Neg.	Neg.
Secondary eruption; slight mercury	Neg.	Neg.	Neg.	Neg.
Slightly anticomplementary reaction	+++	+++	+++	+++
History negative. "Cold in head"	+++	+++	+++	+++
Poplar rash specific	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Positive history, eight years' standing	Neg.	Neg.	Neg.	Neg.
Positive history, nine years' standing (continuous treatment)	+++	+++	+++	+++
Negative history	Neg.	Neg.	Neg.	Neg.
Primary sore, six weeks' standing	Neg.	Neg.	Neg.	Neg.
Primary sore in April, 1918; no other symptoms.	+++	+++	+++	+++
Positive history since 1915; "606" and mercury	Neg.	Neg.	Neg.	Neg.
Foreign sailor; no history	+++	+++	+++	+++
Positive history, one year standing	+++	+++	+++	+++
Primary lesion eighteen months ago; "606" and mercury	+++	+++	+++	+++
Primary lesion one year ago; "606" and mercury; pot. iod.	Neg.	Neg.	Neg.	Neg.
Syphilis in July 1918; no treatment	+++	+++	+++	+++
Primary lesion, six weeks' standing; no treatment	+++	+++	+++	+++
Chancere one year ago; "606" three doses	Neg.	Neg.	Neg.	Neg.
Primary lesion eighteen months ago; mercury	Neg.	Neg.	Neg.	Neg.
Primary in 1914; Wassermann then	+++	+++	+++	+++
Genital sore 1916; mercury recently	+++	+++	+++	+++
Primary three weeks ago; Wassermann neg. then	Neg.	Neg.	Neg.	Neg.
Denies history (Wassermann, 10-10-17)	Neg.	Neg.	Neg.	Neg.
Negative history	+++	+++	+++	+++
Primary for four weeks; no treatment	No test.	No test.	No test.	No test.
Positive history 2½ years; Wassermann previously	Neg.	Neg.	Neg.	Neg.
Negative history; previous Wassermann neg.; much treatment.	+++	+++	+++	+++
Primary in August 1918; no treatment	(a) Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Positive history, ten years' standing; mercury	Neg.	Neg.	Neg.	Neg.
Sore for five weeks; Wassermann previously neg.	Neg.	Neg.	Neg.	Neg.
Sore six weeks ago; rash at present	Neg.	Neg.	Neg.	Neg.
Sore six months ago; no treatment	+++	+++	+++	+++
Chancere for one month; mercury	Neg.	Neg.	Neg.	Neg.
Multiple sores five years	Neg.	Neg.	Neg.	Neg.
Chancere one year ago	Neg.	Neg.	Neg.	Neg.
Chancere one month ago; rash now	+++	+++	+++	+++
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Chancere in June, 1918; Wassermann neg. in July	Neg.	Neg.	Neg.	Neg.
Sore, three weeks' standing	+++	+++	+++	+++



TABLE D—(Continued).

	SHAWKEER Acetone insoluble antigen.	NOGUCHI Homohemolytic Acetone insoluble antigen.	WASSERMANN Acetone insoluble antigen.	Cholester- inized antigen.
Sore, three weeks' standing	+++	++		
Chancre four months ago	++	++		
Sore since October 1, 1918	Neg.	Neg.		
Ache chest and back	Neg.	Neg.		
Positive history three years; treatment lately	Neg.	Neg.		
Rash over body; Wassermann in August	++	+++		
Sore three weeks ago	Neg.	Neg.		
Sore, two weeks' standing	+++	+++		
No history	Neg.	Neg.		
Positive history; virous treatment	Neg.	Neg.		
Positive history; Wassermann (July, 1914)	++++			
Positive history in 1913	Neg.	++		
Chancre fifteen months ago	+++	+++		
No history (M. Kahn, Ph. M., second class)	Neg.	Neg.		
No history (M. Kahn, Ph. M., second class)	+++	+++		
No history (M. Kahn, Ph. M., second class)	+++	+++		
No history (M. Kahn, Ph. M., second class)	+++	+++		
No history	Neg.	Neg.	Neg.	Neg.
Negative history (typhoid)	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
No history (spinal fluid)	Neg.	Neg.	Neg.	Neg.
No history (spinal fluid)	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Secondary lesions, macular	++	++	++	++
Secondary lesions, macular	+++	+++	+++	+++
Secondary lesions, macular	+++	+++	+++	+++
Old history; much treatment	Neg.	Neg.	Neg.	Neg.
Donor of antipneumonia serum	Neg.	Neg.	Neg.	Neg.
Surgical case (spinal fluid)	+++	+++		
No history (M. Kahn, Ph. M., second class)	+++	+++		
No history (M. Kahn, Ph. M., second class)	Neg.	Neg.		
No history (M. Kahn, Ph. M., second class)	Neg.	Neg.		
No history (M. Kahn, Ph. M., second class)	+++	+++		
No history (M. Kahn, Ph. M., second class)	+++	+++		
Genital sore in October	+++	+++	+++	+++
Genital sore in January; intensive treatment	Neg.	Neg.	Neg.	Neg.
Positive history one year ago; much treatment	Neg.	Neg.	Neg.	Neg.
No history	Neg.	Neg.	Neg.	+++
Genital sore one month ago; much treatment	+++	+++	+++	+++
Rash over body, pains in head; no treatment	Neg.	Neg.	Neg.	Neg.
Primary, two months' standing; Wassermann previously neg.	Neg.	Neg.	Neg.	Neg.
Genital sore in August; no treatment	+++	+++	+++	+++
No history	Neg.	Neg.	Neg.	Neg.
Rash specific; routine treatment	++	++	++	++
No symptoms	Neg.	Neg.	Neg.	+++
Positive, six months' standing; "neg."	Neg.	Neg.	Neg.	+++
No history	Neg.	+++	Neg.	+++
Carcinoma (operated)	Neg.	Neg.	Neg.	Neg.
Carcinoma (operated)	Neg.	Neg.	Neg.	Neg.
Carcinoma (operated)	Neg.	Neg.	Neg.	Neg.
Carcinoma (operated)	Neg.	Neg.	Neg.	Neg.
Carcinoma (inoperable)	Neg.	Neg.	Neg.	Neg.
Carcinoma (inoperable)	Neg.	Neg.	Neg.	Neg.

as the amboceptor is practically thermostable while the complement is thermolabile. The antigen should be titrated from time to time and not more than one fourth of the anticomplementary dose used in test. (See Table C for method.)

In delicacy we have found this method compares favorably with the original Wassermann test using acetone insoluble antigen, but it is not so sensitive as the Wassermann using cholesterinized antigen. We have not found it so delicate as the homohemolytic test lately suggested by Noguchi. Table D gives comparative results.

This test is not intended to replace any of the several good tests now in use, but is merely a substitute which by its simplicity may seem more expedient to use on shipboard and where complete equipment is not at hand to perform the classic Wassermann or Noguchi tests.

**The Treatment of Gonococcal Infections with Silver Iodide.**—A. E. Cerf (*Urologic and Cutaneous Review*, July, 1918) concludes that silver iodide is stable in solution or suspension under ordinary conditions. It is nonirritating and has the properties necessary for an effective medicament for topical use in any part of the genitourinary tract.

## EYE INJURY.

### Clinical Report of Three Interesting Cases.

By DUNBAR ROY, A. B., M. D., F. A. C. S.,  
Atlanta, Ga.

CASE I.—Clarence H., colored, aged twenty-eight years, received a most peculiar injury in his right eye on June 16, 1916, while performing his daily labors at the Atlantic Steel Works. In rising from a bending position and turning suddenly to the right with some force, a small steel rod which was projecting outward, penetrated the upper eyelid and passed through the orbit and orbital plate of the ethmoid into the nasal cavity of the same side. There was considerable hemorrhage from the right nasal cavity immediately following the accident. He was seen by me one hour after the injury. An examination showed considerable hemorrhage from the right nasal cavity and also into the nasopharynx. There was a large irregular jagged cut through the skin and muscular tissue of the right upper lid and underneath this a wound leading into the orbit and extending through the ethmoidal plate into the nasal cavity. The whole of the upper bulbar conjunctiva was lacerated and hanging loose from the sclera; the superior rectus was torn entirely through and its attachment to the sclera was hanging down over the cornea. There was of course extravasation of blood beneath the other portions of the bulbar conjunctiva. The eyeball itself did not seem to be injured and a rough examination of the vision indicated that it was normal.

On account of the hemorrhage from the skin wound I immediately closed this with interrupted

silk sutures, applied a wet bichloride compress and sent the patient to the hospital. Three hours later the conjunctiva and rectus muscle were operated upon. Under cocaine anesthesia the parts were thoroughly cleansed with a warm boric acid solution and all clots and tags of debris removed. Not being able to find the proximal or orbital end of the severed superior rectus muscle, I had my assistant grasp the distal end of the muscle which was lying down over the cornea and, with the patient looking down, as far as possible push this end through the torn opening of the conjunctiva as deep in as possible. At the same time the writer grasped the upper edges of the torn conjunctival opening, pulled it down, and with interrupted silk sutures closed entirely the conjunctival opening, the assistant not releasing his hold on the rectus until the last suture was tied, thus leaving the rectus stretched out entirely beneath the conjunctiva in its normal position but not anchored by any sutures. The whole paperal opening as well as the outer surface of the lids were filled with bichloride petrolatum (white) and a compress bandage applied. The patient made an uninterrupted recovery and left the hospital three days after the injury. Two months later the eyes were examined. The injured eye showed a vision of 20/20 and the phorometer tests showed only a slight retarded movement-upward. There was no diplopia.

*Remarks.*—In the first place this case is remarkable in that so serious an accident did not also produce some traumatism of the eyeball. This was largely due to the tough and fibrous structure of the sclera. The conjunctiva was literally peeled off this structure and it could be seen that the latter was even scraped. It is also remarkable that the concussion produced on the eyeball did not also produce some kind of intraocular hemorrhage. Close examination with the ophthalmoscope showed no trace of this condition. The other remarkable feature was the most excellent result obtained in the functional restitution of the completely severed and lacerated superior rectus muscle and this also obtained without sutures and with only the thorough replacement of the muscle beneath the sutured conjunctiva. The writer was at least expecting some deviation of the eye downward but the restricted movement was only seen when the patient looked in the extreme upward direction.

*CASE II.*—D. B. McG., white, aged forty-three years, motorman on the Atlanta Street Railway Co. On July 8, 1916, the patient accidentally grasped a live wire which had fallen across the car tracks. The shock was so severe that he was thrown to the ground and struck his right temple and upper orbital ridge. He was rendered unconscious, carried to the hospital, and remained there for several weeks. Stitches had to be taken. He remained in a dazed condition for some time and, even after he left the hospital, he suffered from such excruciating pain as to necessitate the frequent use of narcotics. He was under the constant care of the street railway surgeon. His subjective symptoms not being relieved and there having developed a double vision which materially interfered with his walking, he was referred to me by the company with instructions to take charge of the case.

*Examination.*—The patient walked into the room in a groping, staggering manner with his head turned downward to the left. He appeared physically in good condition. On being questioned he informed me that he had

spells of intense pain accompanied by a dazed feeling and inability to concentrate his mind. The old scar above his right eye could be seen. There were no signs of paralysis in any part of his body. His chief eye complaint was that of seeing double especially when looking to the right. He kept the right eye closed most of the time. The left eye movements were normal in all directions. The movements of the right eye were much restricted downward and outward. By means of the candle test a typical case of partial paralysis of the right superior oblique muscle was elicited. Refraction, R. E. V. = 20/50; L. E. V. = 20/50. Retinoscope showed marked hyperopic astigmatism. Vision in both eyes was easily corrected to normal by the following glasses: R. Eye plus 1 d c axis 180; L. Eye plus 1 d c axis 180. These were prescribed and worn continually. Three days later the patient returned wearing these glasses. The change in his appearance was remarkable. He walked into the room with head erect and a firm step. Said the pains in his head were much relieved and only when he turned his head markedly to the right was he troubled with the double vision.

From the very first consultation the patient was placed upon gradually increasing doses of iodide of potash although a Wassermann was negative. In addition he was given a mild galvanic current over and around the eye. From this time on the patient gradually improved so that he could accomplish some work as an office man. The last reports, however, showed that he was still suffering from occasional spells of pain and his mentality was far below normal. Whether this man will ultimately recover is still uncertain, for the severe blow over the eye must have produced a hemorrhagic disturbance in the frontal lobes which in time may lead to severe degenerative changes. The fact that correction of the hyperopic astigmatism produced such an improvement in the external ocular movement shows the close relationship between errors of refraction and the external muscles of the eyes. This marked relief lasted only a few weeks, however. Later the patient complained of a little more of the double vision than had been present immediately after the lenses were prescribed.

*CASE III.*—Margaret S., white, aged nine years. On January 5, 1917, while riding a bicycle on one of the residential streets she was run down by an automobile, was picked up, and carried to the city hospital where she remained unconscious for five hours. Examination showed that she was struck on the right parietal region but the x ray did not reveal any fracture. There was bleeding from nose and mouth. In a few hours there was complete ptosis and exophthalmoplegia externa with decided proptosis. She was kept in bed and her various symptoms were treated with appropriate remedies. Patient suffered no pain except on trying to move the eyes. The history showed that the patient had some fever and considerable offensive discharge from the nose, which lasted several weeks.

Up to April 4, 1917, the patient had been under the care of a general surgeon, but on this date the writer was asked to take charge of the case, since the eye condition was now the only symptom of which the patient complained. There was still marked proptosis, almost complete ophthalmoplegia externa with decided ptosis which of course was exaggerated on account of the exophthalmos. It was evident from the history that there had been considerable hemorrhage deep in the orbital cavity at the time of injury and this blood had not yet been absorbed. The ophthalmoplegia externa was evidently due to the exceedingly high degree of exophthalmos which restricted the movement of the eyeball. The pupil was of normal size, reacting to both light and



accommodation. Vision was 20/70. No fundus changes could be seen on ophthalmoscopic examination. Treatment consisted of the internal administration of gradually increasing doses of potassium iodide with mercurial inunctions to the temple every other night. Three times a week a mild galvanic current was used over and around the eye in order to keep up the muscle tonus in the external muscles. The patient's general health was good, and the mental condition seemed normal.

On May 1st, the exophthalmos had markedly decreased and there was decided movement of the right or injured eyeball. The patient complained of double vision. The same treatment was continued, and on June 1st the exophthalmos was hardly noticeable. The eyeball moved nicely but, as would naturally be expected, was most limited when turned toward the nose. At this time the patient went North on a vacation and did not return until October 15th. Examination at that time showed a continued improvement in the lessening exophthalmos and the external movements of the eyeball. Refraction taken at this time showed R. E. = 20/70 w plus 1.50 c ax 90; L. E. = 20/20 Hm. plus 1.50 c ax 90. These glasses were prescribed and the patient allowed to return to school doing a limited amount of work. The faradic current was continued over the eyeball twice weekly and the iodide taken for short intervals. On May 1, 1918, the patient moved away from Atlanta but the last examination showed very slight restriction in the movements of the eye. There was no pain or double vision and the patient was very happy over the final result.

GRAND OPERA HOUSE.

## CARBOLIC ACID IN TETANUS,

*With Report of a Case.*

By D. DELFINO, M. D.,  
Columbus, Ohio.

Methods of treating diseases such as tetanus are extremely varied. In fact, one's teachers tell of different ways in which this condition is to be treated. Some men claim a fair percentage of recoveries with methods which are ridiculed and considered unscientific by others.

Good authorities say a true case of tetanus means death. Recently I saw a case in which tetanus, so diagnosed, supervened, following a second degree burn of the foot. This was a woman of middle age. She presented a typical textbook picture as the symptomatology, such as is described in Osler's *Practice of Medicine*. The patient was given heroic treatment with antitetanic serum injected into the wound intravenously, intraspinaly, and into the nerves of the leg. This patient made a recovery after several weeks.

An interesting case was under observation and care in the Protestant Hospital, Columbus, in which a young man developed tetanus following a puncture wound of the foot caused by a rusty nail. The nail wound occurred July 10, 1918. Flaxseed poultice was applied to the wound, and after several days, the wound was apparently healed. In

about ten or twelve days the patient began to develop pain in his back with orthotonus and trismus of the jaw. Risus sardonius was manifest within a short time after the rigidity of the neck muscles appeared. The temperature was never above 105° F.; the pulse at one time reached 160. The patient remained conscious excepting for about twenty-four hours, during which time delirium was present. At least ten physicians saw the case and all agreed it was tetanus. I am sorry to state that a bacteriological examination, to confirm the diagnosis, was not made.

On July 26, 1918, upon entrance to the hospital, the patient received 5,000 units of antitetanic serum which was injected into the sciatic nerve of the affected side. The following morning an opening was made through the foot opening up the infected area. There was not much pus, apparently. On this same day, July 27, 1918, 10,000 units of serum were injected intraspinaly. No change was noted in the condition of the patient.

On July 28, 1918, 5,000 more units were injected subcutaneously.

Regarding treatment, Baccelli of the Clinic of Roma about twenty years ago through experimentation with phenol in these cases claimed good results. He used one to two per cent. carbolic acid in sterile oil; injections of two to four c. c. subcutaneously were given and finally increased to as much as seventy-five c. c. daily. Babès came to the conclusion that the carbolic acid acted directly on the tetanus bacillus while the other men thought the phenol neutralized or destroyed the tetanus toxin. Maragliano claims cures in a number of tetanus cases with carbolic acid alone.

On July 28th, ten c. c. of two per cent. phenol in sterile oil was injected; on July 29th, fifteen c. c. were injected; on July 30th, ten c. c. The patient now developed a dermatitis, from the phenol, which practically involved the whole face. The urine was scanty and cloudy; it contained albumin and phenol. He gradually became relieved of symptoms and made an uneventful recovery.

Whether the phenol was responsible is still an open question. Nature is frequently kind, and when she leads one from mystery to light we claim that our feeble methods were efficacious and that relief is due to the power of the drugs; so we robe ourselves with glory and pseudoscientific proof of our real help in the case.

As phenol was manifestly the cause of this young man's recovery, we shall give it to other poor victims of the dread disease, in the hope that it will prove equally efficacious.

10½ EAST POPLAR AVENUE.

**Collosol Palladium in Epilepsy.**--A. C. King-Turner (*British Medical Journal*, September 7, 1918) has secured strikingly favorable results in a group of twenty-three confirmed epileptics by the intramuscular injection, every three days, of half a mil of collosol palladium. The drug seemed to cause a prompt diminution in the frequency and severity of the fits.

# Medicine and Surgery in the Army and Navy

## WOUND AND SHELL SHOCK AND THEIR CURE.\*

BY FENTON B. TURCK, M. D.,  
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The conquests of medical science in this war will take their place on the scale of achievement close beside the Allied victories in battle. Dr. W. W. Keen (1), in a recent volume, declares that typhoid fever, "which has been one of the chief scourges of armies throughout all history and all over the world, has been completely suppressed." Tetanus, another almost equally desolating disease, has also been conquered, but the most horrible scourge of all, wound stupor and shell shock, remains uncontrollable. The verdict of the Allied military congress is of the same tenor as that of Gray (7) and other surgeons at the front (4), who from the beginning of the war to the present time have spoken of appalling wounds and the hopelessness of shock.

The reason for this tragic failure to prevent or cure shock is explained by Bayliss, who admits that the actual nature and immediate cause of shock are still obscure, and that there is as yet no agreement as to the methods of treatment. According to Charles (3), the preoperative treatment of wounded men consists principally of an attempt to deal with shock, and he states that, on arrival at casualty clearing stations, three classes of conditions are observed. First, dying condition; second, varying degrees of collapse; third, good condition and operable. He adds, however, that even in this third class a secondary shock takes place from twelve to twenty hours after the operation, and "even in abdominal wounds the chief danger is not peritonitis, but shock." Walters, Rollinson, Jordan and Banks (5) agree that when death occurs it is due to shock.

The importance of these statements will be seen when we consider that if wound stupor or shock could be eliminated mortality among soldiers would be enormously reduced. According to some authorities it is estimated that as high as fifty per cent. of recoveries would result if the collapse called shock could be counteracted. Wound treatment, according to the experience of military surgeons the world over, consists primarily in the attempt to prevent the poisoning which follows a wound. Gray (7, 8), says, "This war has proved the hopelessness of shock when treated according to antiquated theories, theories woven out of the symptomatology and psychological findings of the past." Careful studies of the proceedings of the Allied and French War Congress indicate that a wrong system in the treatment of wounded men has caused the loss of many thousands of lives on the battlefield and in hospitals. On the other hand, all observers, even the most empirical, have recognized that wound stupor or shock always follows closely upon

the disintegration of bodily tissue which results from a mechanical or chemical injury. The truth is a wound becomes at once a spot of injured flesh undergoing decomposition, whose decay puts into the blood stream a deadly poison which is of the nature of a peptone. Shock and death follow upon the absorption of the products of selfdigesting muscular tissue.

A very simple experiment will indicate the nature of this process. If the leg of an animal is bruised in imitation of a shrapnel wound and an Esmarch rubber ligature is placed above the wound area, thus preventing absorption, and if, after waiting the usual time before shock symptoms appear (from two to four hours), the ligature is removed, and the products of the injured tissue massaged into the animal's system, a fall in blood pressure and in temperature immediately results and death may ensue, according to the amount of the poisonous product formed and depending upon the animal's immunity. Furthermore, the biuret reaction of this tissue substance will show that typical polypeptides have formed and that these products, when injected into the same or another animal of the same species, cause immediate death from shock (9).

The logical conclusion to this experiment is this: If death from shock is caused by a toxin arising from selfdigested muscular tissue, it follows that an antitoxin can readily be produced, and that it is possible to establish, by means of it, active and passive immunity to wound stupor or shock. In point of fact, this has been accomplished. It has been found that the best antigen for the purpose of immunization is the heart muscle. If the heart is ground up and allowed to autolyze and an emulsion made from it is injected, in repeated increasing doses, into the veins of a horse, a serum is produced which prevents autolysis and neutralizes the toxic products of decaying tissue, thus becoming a most effective preventive and cure of shock. The repeated injections of isoautolyzed tissue (in 0.5 to one gram doses) in salt solution, produces active immunity after injection (9).

It remains to show that the action of germs has only indirect connection with the condition called wound stupor or shock. As mangled flesh becomes rich soil for the growth of germs their presence naturally hastens the selfdigestion of tissue, thus throwing an increased amount of shock poison into the system. Therefore, in formulating an antitoxin which shall antagonize wound infection it is necessary to use for the antigen not only the selfsame autolyzing tissue in which the germs are growing but also the germs themselves. When this combined product of the germ and the tissue poison is injected into a goat or horse in repeated doses an antitoxin of specific action is obtained. By the use of this antitoxin an immunity from shock and infection is obtained which the mere use of germs grown in ordinary media could not secure.

The following protocols briefly described will give the different types of shock production both in

\*Read before the New York Celtic Medical Society, October 17, 1918.



vivo and in vitro experiments presenting similar reaction.

*Experiment A.*—Into a tank we placed a fish, a frog, and a turtle together with a sealed tube of gelatine, and also a small amount of fresh drawn blood in a paraffin syringe. A blank cartridge was then discharged from an ordinary .38 calibre revolver with its muzzle submerged under the water, and the following results were noted: The fish, frog, and turtle were dead and on postmortem examination, showed the usual venous stasis in the liver, upper intestines, and lung. The most marked congestion was confined to the portal vein zone in the liver, the pulmonary arterial zone in the lung and the submucous veins of the intestines. The liquid gelatine had coagulated and the blood within the syringe, which was placed in the water a few seconds after aspiration from the vein, was also coagulated. The controls were made by submerging similar tubes of liquid gelatine and a paraffined syringe of blood in water of the same temperature remote from the shock discharge. The controls remained liquid, the drawn blood in the controls taking the usual time for coagulation.

*Experiment B.*—In this experiment air took the place of water as the medium of the shock impulse. A gun with blank cartridges was fired into a box cage in which a pregnant guineapig, a rabbit, a mouse, and an embryo chicken in the egg had been placed together, with a tube of liquid gelatine and a syringe of fresh drawn blood, as in Experiment A. The animals were all killed or fatally shocked. From those which were stunned but still alive, we removed the liver, lungs, and intestines. All displayed the same congested conditions as those in protocols in Experiment A. The embryo chick killed by the explosive discharge showed the same visceral stasis. The embryo of the guineapig suffered the same colloidal reaction as the mother. These results correspond to those produced by similar experiments (9) in which a pregnant guineapig was subjected to air disturbance brought about by placing the animal one inch distant from the single projecting arm of a centrifuge revolving at a high speed (12,000 to 15,000 revolutions a minute). All the viscera except the brain showed marked congestions and hemorrhages. The embryo was not spared in this reaction, but the brain and spinal cord, well protected against air pressure, were uninjured. The tube of gelatine, as well as the fresh drawn blood, was coagulated as in the shock discharge through the medium of water.

*Experiment C.*—In this experiment the blood was left in the filled vessels and they, with the tissues quickly ligatured, were removed from the living animal and immediately subjected to similar shock explosions, both in salt solution and in air. A loop of intestine in which the venous blood was allowed to accumulate by a slight pressure, together with the mesentery, was ligated, producing the minimum trauma, then quickly resected and placed in the shock box into which a .38 calibre cartridge was discharged. The blood in the vessel immediately clotted, so that no blood ran out from it on cutting the vessel. Coagulation of the entire tissue fluids occurred, so that rigor mortis of the muscle wall

of the loop of intestine was complete. The control loop removed from the animal at the same time showed the blood in the vessels still fluid, and the blood poured out on opening the vessels, with no rigor mortis of the muscle wall.

*Experiment D.*—Without general anesthesia, muscle tissue taken from an animal under local anesthesia was ground fine, mixed with an equal weight of salt solution, and left in the incubator eight hours. It was then centrifuged two or three minutes. The heavy particles appeared in the bottom of the tube, the fluid at the top, and the more toxic moiety in the upper middle zone. One c. c. of this fine suspension intravenously injected into the same animal from which the muscle tissue had been removed (isoautolyzed muscle) caused the death of the animal within three minutes. Upon examination congestion of the upper intestinal vessels, liver, and lung was observed, as in other shock experiments. The controls did not suffer from shock, that is, animals subjected to the same experiments that were immunized by vaccination with isoautolyzed muscle tissue and those that were injected with the antitoxin.<sup>1</sup>

*Experiment E.*—This group of experiments was conducted with living skeletal and smooth muscle tissue, and comparison made with expressed muscle plasma of the same animal. The muscle plasma was obtained by the Kühne von Furth method. Blood free frozen muscle was ground and pressed out with a meat press kept at 40° C.; blood free muscle tissue extract with normal salt solution and expressed with a meat press was kept at a temperature below the coagulating point. From the living animal small portions of the skeletal muscle were quickly resected and also involuntary nonstriated muscle tissue from which the plasma was extracted and expressed by the von Furth and Kühne method and placed in closed tubes. Small pieces of living and skeletal and involuntary muscle were placed in the shock box in a cold room and .38 calibre cartridge discharged. The muscle tissue immediately showed rigor mortis and the muscle plasma within the tube instantly clotted. The control muscle tissue was normal and the plasma remained uncoagulated.

In the following experiments shock is seen to follow injuries of the tissues by means in which the mechanico-physical forces do not play the deciding rôle. Nevertheless it will be seen that similar results in the nature of tissue autolysis (through the velocity of the catalytic action of the tissue ferments) caused the absorption of the proteins, precipitation of the body fluids, with increased viscosity, coagulation and death.

*Experiment A.*—Two cats under anesthesia were ligated with thigh elastic Esmarchs at the sacroiliac articulation. Extensive wounds of the thigh muscles were made by cutting and bruising the tissues. At the end of three hours, the usual time that profound shock occurs after such injuries, the ligature was removed from one cat and the products from the injured area massaged upward into the body.

<sup>1</sup>See writer's article (9) giving additional protocols with references to previous work; also microphotographs of sections from the intestines, liver, and lungs, taken from animals in shock and from immune animals.

The animal displayed the usual shock symptoms, i. e., fall in temperature and lowered blood pressure, and soon died.

**Experiment B.**—Instead of releasing the elastic ligature in cat B, products from the injured tissue were pressed from the tissue and allowed to autolyze further for thirty minutes. This was intravenously injected and the animal died with the same shock symptoms as the cat in Experiment A.

The question naturally arises, how can these antitoxins be clinically applied? In our own clinical work, in consultation cases in which injuries are followed by shock and in bad surgical cases, we make a point to reproduce in our laboratory similar conditions in animals for the purpose of comparing results in the treatment of patients.<sup>2</sup>

The following case of a child serves well to illustrate the method we are employing:

**CASE.**—A male child, four years old, having been run over by an ice wagon, was brought to Bellevue Hospital for treatment. Examination disclosed the fact that the child was suffering from a fracture of the femur, and from a crushed and contused side and thigh, together with other injuries of a very serious character. He was in profound shock, and during the night efforts were made to reduce the shock by the use of saline solutions, drug stimulation, and the application of heat.

On arriving at the hospital in the morning the boy was found to be failing fast, with marked pallor, very rapid pulse, and shallow breathing. Death seemed imminent. A 30 c. c. dose of shock antitoxin was injected. Within one hour the boy's temperature began to rise, the pulse improved, the respiration began to deepen, and the wound stupor disappeared. On the following day the child was still gaining, but to make sure of the results and to hasten recovery, an additional injection was given of 30 c. c. of the shock antitoxin. This caused the expected reaction against shock, and the child's condition became normal. Not only was recovery uninterrupted, but the wounds healed with unusual rapidity. Another report is now prepared for publication which includes clinical protocols from different hospitals which parallel throughout our experimental work on animals. Diseases produced by microorganisms in conjunction with isoautolyzed tissue have been treated by the writer with antitoxin made from antigen, human tissue, and the offending organisms. Wound infections, rheumatoid infections, acute infections, particularly of the respiratory tract, and other conditions in which autolyzed tissue plays the leading rôle in the etiology, have cleared up under this treatment. These cases

have been classified in a special report which verifies the experimental work here presented.

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14 EAST FIFTY-THIRD STREET.

#### MEDICAL NOTES FROM THE FRONT.

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#### PARASPECIFIC SEROTHERAPY.

Considerable attention has been given in France during the war to paraspecific serotherapy given by mouth, particularly in certain ocular affections, and by this means to stay the progress of infections due to the streptococcus, pneumococcus, staphylococcus, and gonococcus.

Paraspecific serotherapy is a powerful stimulant of the vital energy of the entire organism, and for this reason places it as a condition to more easily resist the infectious agents. It is, in a way, a defensive serum opotherapy, bringing to the diseased organism a serum laden with defensive elements elaborated by healthy animals, after having been subjected to an intensive immunizing training, so to speak.

Paraspecific serotherapy will act all the more rapidly and with greater energy, the earlier it is resorted to in an infectious process localized in a richly vascularized tissue, because the arrival of defensive antibodies will take place with a greater intensity.

The most constant results of paraspecific serotherapy by mouth in ocular injections is a decline of pain and an analgesic and euphoric action. Intravenous or subcutaneous injections are, perhaps, surer and more scientific than a paraspecific serum administered by mouth, but in both the medicine and the surgery of warfare require the simplest of treatments when possible, and as this method is devoid of any risk whatsoever, it commends itself for trial. All accidents in serotherapy are unknown when the serum is given by mouth and it can be exhibited with impunity for several days. Here is the formula:

B. Antidiphtheritic serum, ..... 10 c. c.  
Syr. rubi idæi, ..... 30 c. c.  
Aq. dest., ..... 110 c. c.

M. S.: A soup-spoonful every hour for the first three days, and every two hours after the third day.

The effects of this treatment are not long in making themselves manifest, and at all events the time gained will in no way interfere with treatment with other sera or vaccines if the infectious pro-

<sup>2</sup>It happened by a curious coincidence in connection with the work in our laboratory that a pet Angora cat fell from the window of the building adjoining our laboratory and lay for the most of the night on the pavement, unconscious and apparently fatally injured. A veterinarian, who was called in to treat the wounded animal, brought it to the laboratory. On examination the cat was found to be suffering from multiple fractures of all four legs, its jaw was badly torn, and it had sustained other injuries, internal and external. We injected five c. c. of shock antitoxin, and were highly gratified to observe the prompt effect which we had previously obtained from our experimental cats. The restoration from shock was immediate and we were able to place the animal under anesthesia. Its legs were put into casts and its jaw dressed. During the following night the owner of the cat, under the mistaken belief that the cat was suffering from the bandages, removed them, together with all the casts. In order to have the casts replaced the cat was again brought to the laboratory. Before placing the cat under anesthesia a five c. c. dose of wound infection and shock antitoxin (Antitoxin B) was administered in order to prevent the toxic effect of the mangled flesh, and to make certain that no secondary shock would arise from the anesthesia and the manipulation necessary to replace the casts. Infection also was thus prevented. The animal made an uninterrupted and rapid recovery.



cess is not cured by the paraspecific serotherapy.

Typhoid fever is an all important subject in military medicine and for this reason I would report the case of a soldier, twenty-two years of age, who was discharged from the front because he had complained of feeling tired for several days, with nausea and headache. There was likewise anorexia, abdominal pain, and diarrhea. The temperature was not taken but he felt feverish at night.

When he entered the hospital, the patient was entirely prostrated, complaining particularly of his head, and replying with difficulty to questions; but it was at length ascertained that he had been ill for a fortnight or thereabouts. His face was drawn and pale, covered with perspiration, his tongue coated, temperature  $40^{\circ}$  C., his pulse weak—96 a minute. The abdomen was neither painful nor distended and inspection revealed nothing pathognomonic. The spleen was slightly tumefied. Diarrhea was profuse and the urine scanty and highly colored. Heart and lungs were normal. What was most striking in the examination of the patient was the tumefaction in the region of the right parotid gland, which was edematous, red, and very painful on pressure. The patient also complained of violent pain in the right ear.

On the following day the tumefaction of the parotid had increased and by palpation a softening of the parotid area could be detected which led to the supposition that pus was present. Examination of the ear revealed a suppurating otitis media. The patient was still in a state of complete prostration with a high temperature and profuse, fetid diarrhea. A serodiagnosis was made and found positive at 1/50, and hemoculture showed the presence of the typhoid bacillus in the broth.

The next day the patient was still profoundly prostrated, and incision of the abscess of the parotid followed. In spite of the exit given to the pus the patient died the same evening. No autopsy was permitted.

Here was a case of a typhoid fever beginning with an abscess of the parotid gland before the clinical signs permitted the making of a diagnosis, and this was also delayed on account of the intensity of the general phenomena.

The parotidides of typhoid usually arise when the infection is at its height and of a severe type, or they may take place during convalescence.

Among the cases of typhoid having an atypical commencement, primary meningeal and parotid localizations are to be mentioned and kept in mind, as with the progress of the war abnormal evolution of generally well recognized diseases is becoming rather frequent.

Since we are on the subject of typhoid, let me refer to another aspect of the disease as it is met with in the armies at present. Up to within a very few years typhoid fever was regarded clinically as a single infection, but it is often in reality a multiple infection, composed of a mixture, in various proportions, of the three bacterial species composing the typhoid class. The invasion of the organism usually takes place progressively, as if one of the bacteria prepared the soil for the invasion of another species, but it must not be forgotten that it

may take place at once. In the former case the intervention of a new germ is clinically made manifest by changes in the temperature curve (ambipolous stage, relapse, reiteration, etc.). The latter are, consequently, merely the clinical expression of the intricateness of the typhoid infections. And what is extraordinary is the fact that relapses are always absent in infections which are of the multiple variety from the start.

Blood examination, if only resorted to once, whether hemoculture or agglutination, or both, only reveals the fact that the process is typhoidal in nature. In reality, it only gives an incomplete idea of the bacteriological evolution of the infection.

From all this it naturally follows that the method of mixed antityphoid vaccination, as advocated by Chatemesse some years since, and employed both in the French army and navy since 1915, is the proper method.

As is known, cerebrospinal meningitis has been present off and on in all the armies at war since the early days of hostilities. Now as a complication of meningococcic meningitis iridocycloroiditis has been found to supervene in from four to six per cent. of cases. It is rarely bilateral.

The lesions may commence in the anterior segment, giving rise to an iridocyclitis, sometimes of an acute and purulent type, usually followed by a subacute plastic panophthalmia, resulting almost always in atrophy of the globe. In other circumstances the deeper structures of the eye are the first to be infected, resulting in either a suppurating choroiditis which may secondarily invade the anterior segment, or the formation of a pseudoglioma or even—when the infectious process is very mild—to simple disseminated foci of choroiditis.

The new data acquired of late on meningococcic septicemia, occurring before or during a cerebrospinal meningitis, naturally lead to the supposition that there is a metastasis by the blood in many cases, which accords well with the majority of recorded clinical facts and the rather rare pathological examinations.

When the lesions are deepseated from the start a direct extension of the meningeal infection to the globe, by way of the optic tracts, has been maintained by several observers, but although this hypothesis would at first sight appear to be quite logical, no satisfactory demonstration has been made up to the present.

The evolution of the affections sometimes terminates in a simple diminution of the visual acuity, but generally it results in blindness with atrophy of the globe, or yet the formation of a pseudoglioma.

The treatment of the meningitis itself may, perhaps, lessen the frequency of the ocular complications, but has no action over them when once they are declared. Serotherapy by intravenous injections has no appreciable effect, while, on the contrary, local injections of serum in the vitreous body seem to have given a few really favorable results, but it is yet too soon to form a definite opinion.

#### TALIPES EQUINUS.

Talipes equinus follows various lesions of warfare of the lower limb. In wounds of the calf equinism is of great frequency, even following a

simple through and through bullet wound, with no injury to the bones, nerves or blood vessels. Repair may take place without any phenomena of sepsis. The lesions appear to be limited to the muscles or their remains and the most thorough palpation fails to discover either induration or cicatricial nodule. In these circumstances the equinism is clearly the outcome of contracture of the posterior muscles of the leg, followed by secondary retraction when the vicious attitude is prolonged.

In other cases the destruction to the tissues has been severe. The calf is more or less irregular and multiple incisions are required because septic phenomena have developed. When cicatrization is complete the calf will be found to be greatly atrophied. The skin is scored by sometimes very extensive adherent cicatrices, and this cicatricial tissue dips down deeply, penetrates the muscles and transforms them into hard, sclerous cords. In these circumstances the equinism results from muscular retraction as well as myositis.

It is interesting to study the influence of movements of the knee on the position assumed by the instep. In many cases the equinism is changed by the position of the knee. When the knee is extended, the equinism increases, while, when the knee is flexed, the equinism decreases, and the foot may reach a right angle to the leg. The cause of these variations of the equinism resides in the insertions of the gastrocnemius to the posterior aspect of the condyls of the femur. When the knee is extended the condylar insertions of the gastrocnemius become more distant from the heel and pull upon the tendo Achilles, therefore there is an increase of equinism. The inverse phenomenon is produced when the knee is flexed.

From these facts interesting clinical data can be obtained. When the equinism is completely reduced in flexion of the knee it may be surmised that neither the soleus nor the muscle forming the deep layer enter into the mechanism of the equinism and that the gastrocnemius is the sole cause. On the other hand, if the equinism is fixed and not influenced by movements of the knee, the cause resides in a contracture or retraction of those muscles whose insertions are purely in the leg—soleus, flexor longus digitorum, tibialis posterior.

An interesting consequence of this solidarity offered by the gastrocnemius between the positions of the foot and the knee is the frequent coexistence of equinism and permanent flexure of the knee. The shortening of the gastrocnemius causes flexion of the knee, then, having placed the tibiotarsal joint in a position of extreme extension, the gastrocnemius pulls beyond this limit on the femoral insertions of the extensor. However this may be, the influence of flexion of the knee on the vicious position of the foot should never be overlooked in examining a case of talipes equinus, as it is a very simple means of appreciating the condition and action of the flexors of the foot on the knee. By flexing the knee the gastrocnemius and tendo Achilles are relaxed and thus allow the antagonistic muscles to manifest their activity. Besides the anatomical solidarity created by the gastrocnemius there likewise exists a physiological solidarity between the posi-

tions of the foot and knee. In point of fact the equine position of the foot has resulted in making the involved limb too long during walking, and from this it results that the subject keeps his knee permanently bent in order to compensate this elongation. This position of flexion, which at first is functional, ends by becoming fixed.

In wounds of the knee and thigh, equinism, although somewhat less frequent than that following wounds of the calf, is nevertheless far from being uncommon. Take for example an arthritis of the knee or an injury of the posterior muscles of the thigh. It is a well known clinical fact that these lesions cause permanent flexion of the knee. This flexion takes place at once after the receipt of the injury, and if care is not taken it becomes permanent and persists after cicatrization has taken place. As soon as the patient resumes walking the limb will be found too short, and in order to compensate for this shortening the foot assumes the position of equinism. This attitude, in the first place functional and temporary, slowly becomes permanent and in relation with the retraction of the posterior muscles of the leg. The same mechanism is met with following fractures of the femur in wounds of warfare. In these circumstances shortening of the leg is usual, either from overlapping of the fragments or from elimination (spontaneous or surgical) of large sequestra, and may reach as much as two to three inches. As soon as walking is possible the foot becomes extended in order to lengthen the shortened limb.

It is of the greatest importance from the therapeutic viewpoint to fit these patients with orthopedic boots without any delay, and thus the functional equinism at the beginning of walking will be avoided or at least will not become transformed into an irreducible equinism, incompatible with a well made orthopedic apparatus. The inclined plane formed when a marked degree of equinism exists makes a bad point of application for the correcting cork sole.

When the external popliteal nerve alone is injured paralysis of the muscles of the anterior external aspect of the leg naturally results in foot-drop, and since the posterior group of muscles become preponderant, they finally produce fixation of the foot in hyperextension on the leg. When the lesion of the nerve is located higher up on the sciatic, all the muscles of the feet are paralyzed. The foot is at first flail and limp, but under the influence of gravity is becomes drooping and finally the equine position becomes permanent on account of retraction of the posterior muscles.

Every wounded man, complaining of a painful affection located in the lower limb is fearful of putting his weight on it, and consequently he is given crutches. The patient then as a matter of course flexes the thigh on the pelvis and the leg on the thigh. Correlatively the foot undergoes hyperextension on the leg with relaxation of the muscles and drops by its sheer weight. When this position has been maintained month after month it ends by becoming permanent from retraction of certain muscular groups, and thus the crutch "hook-leg" is formed.



In the case of patients who are not up and about of course the effect of crutches is out of the question, but the part played by weight remains still important. The equine position (or rather more exactly *varus equinus*) is the position of rest and persists indefinitely in the horizontal position and is still more accentuated by the weight of the bed clothes. Many are the cases of tibiotarsal extension which insidiously develop during the treatment of some injury of the lower limb, oftentimes at some distance from the tibiotarsal joint, as the hip, thigh, or knee, when care has not been taken to mobilize the joint from time to time and to maintain the foot at right angles to the leg in a suitable apparatus to correct the deformity.

When equinism has developed several methods are at our disposal for dealing with the situation, but the only one to be commended is tenotomy of the tendo Achilles. The divided tendon will undergo repair if care is taken not to divide its fibrous sheath. The treatment of equinism must go hand in hand with treatment of the flexion of the knee; but straightening of the knee is facilitated by tenotomy of the tendo Achilles. Complete extension of the knee can always be reached if one proceeds by steps, applying plaster casts in succession. Complete recovery from equinism is obtained in the majority of cases from tenotomy of the Achilles, but a complete one of flexion of the knee is a less easy affair as there is a tendency to recurrence and in many cases the patient has to wear a leather kneecap in order to give support to the joint.

### CAUSES OF BREAKDOWN IN FLYING.

Dr. Norman S. Gilchrist, a captain in the Royal Army Medical Corps, attached to the Royal Air Force of the British Army, has made an analysis of 100 cases of breakdown in flying, which is published in the *British Medical Journal*, October 12, 1918. Nothing was done in the way of selecting cases, which all came under review by the Royal Air Force Special Medical Board, E. E. F. Breakdown was the term chosen to describe those patients who were rejected by the board as "permanently unfit," for permanent could not be looked upon as other than a relative term. None could tell how far many of those rejected might ultimately recover, but in the opinion of Captain Gilchrist none would be fit to fly for six months, most of them not for years, and some, in the case of those who broke down under training, probably never.

The following is a summary of the author's observations in the cases studied:

1. *Nervous family history.*—Twenty-seven per cent. of failures gave such a history. I do not want to labor the value of this, but it is very certain that unstable nervous temperament is hereditary, and, though this alone is not very important, its existence should call for the further history to be very carefully sifted.

2. *Nervous personal history* (forty per cent.).—By this I mean they were nervous as children, had St. Vitus's dance, habit spasm, bit their nails, avoided the usual rough and tumble of children's sports, etc.

3. *Actual nervous breakdown* (thirty per cent.).—Nothing I know of will more surely lead to failure in air work (especially piloting) than the previous history of a serious nervous breakdown. I do not refer to a breakdown of a week or a fortnight, but to those lasting two or three

months, often involving cessation of duty (but not necessarily so), producing, however, definite neuroathetic symptoms, with mental depression, insomnia, loss of power of concentration, and so on. I do not think it matters much what produced this, whether worry at the office, or an accident in the hunting field, or a bomb in battle, so long as the symptoms have been pronounced, nor do I consider it essential that present symptoms exist, though usually one can detect them if one observes closely enough. Sometimes these symptoms occur after concussion, and when they do they make the acceptance of such a candidate more and more hazardous.

*Does it matter at what age the breakdown has occurred?* I hardly think so, except that if it be said to have occurred before nine or ten years of age, that is, before puberty, I should be inclined to doubt its reality and would ignore it in the absence of other signs. From puberty on I think it is about of equal significance at all ages.

*Does it matter how long ago?* Again, no, if sufficiently definite and prolonged, and not occurring in infancy. The nervous system does not recover enough to warrant acceptance for training, at least under war conditions.

*Should it apply to observers who come up for training as pilots?* In many cases, yes; they should not be accepted, but here one would except certain men whose strength of will and character stamp them as far above the average—only they must be very carefully chosen, show no active symptoms, and have had a prolonged rest since the breakdown.

*Does the same apply to qualified pilots?* Not to the same extent. Much will depend here on the cause of the breakdown—for example, simple stress of service or malaria should be recovered from in time, and again much depends on the individual. It is here that experience in dealing with flying people counts for much. I do not mean to imply that all such subjects will fail to qualify as pilots if given the opportunity to do so. What one finds is that a large percentage fails in training, and of the few who qualify, only a small proportion can stand the strain of active service sufficiently long to justify the time and money spent in their training.

4. *Dreams, nightmare, and somnambulism* (in infancy twenty-one per cent.; in adult life fifty-five per cent.).—I am convinced that nightmare in infancy (or somnambulism) is a sign of an unstable nervous system, and that its presence to a pronounced degree should mark a candidate as suspect, and is enough to call for a searching examination of his nervous system otherwise. In adult life it is even more important, especially where there is a history of accident or injury, flying or otherwise. But nightmare is invariably associated with other derangement of the cerebral functions to be detailed later. One would roughly lay down that even a qualified flying officer should be free from nightmare for eight or ten weeks at least before starting to fly again. Indeed, collateral symptoms will usually demand a much longer rest.

5. *History of concussion or shell shock.*—Thirty-seven per cent. gave such a history. Although these are not by any means the same entities, yet their effects are so similar that they may be taken together. Their importance varies considerably, depending on whether one is dealing with an officer who can fly or with a candidate for admission.

(a) *Candidates.*—In these a history of concussion should always be regarded seriously, but several details should be taken into account in coming to a definite decision. If the concussion was accompanied by prolonged unconsciousness—for example, three or four days—then acceptance should be very carefully considered and granted only in very special cases. If followed by serious nervous breakdown, then reject in every case. These conclusions apply equally to shell shock, which on the whole seems to be more often followed by a nervous breakdown, and is therefore more serious for flying purposes. A good deal depends upon the age at which the concussion took place and consequently on the lapse of time since. Thus, if it happened before the tenth year, I think, broadly speaking, it is much less serious than from the tenth to the twentieth year.

(b) *Qualified pilots.*—Even though unconscious for two or three days, if there has been no fracture of the base, if recovery is speedy and complete without impairment of the higher cerebral functions and without nervous breakdown, such, after three months' or even after two months'

rest, may be safely employed again as flying officers in not too strenuous circumstances. A good deal depends in these cases on the individual's own wishes as regards continuing to fly. Confidence is a most essential asset in forming conclusions in these cases. They should be given light "graduated flying" duties, with dual control at first, and their performances carefully watched before being launched as fully responsible instructors, ferry pilots, etc. Indeed, it is possible that with a year or two's rest many more may ultimately be classified fit than is at present the case. But I would like to utter a word of warning in cases that have sustained more than one attack of concussion, even though recovery has been apparently quick and complete. They should be given very prolonged rest before flying again, even if they are not totally rejected.

6. *Affection of higher cerebral functions* (occurred in fifty-two per cent.).—By this is meant derangement of memory, powers of concentration, judgment, temper, affections, including, I doubt not, reaction times, and intimately associated with dreams, nightmare, and manifested in a very serious way as actual obsessions and hallucinations. In both candidates and flying officers these derangements, whether past or present, are to be regarded seriously, and no matter what their cause their presence in the history will weigh heavily in the balance against fitness for flying duties, most heavily in the case of candidates for admission as pilots. It does not matter whether, as is most usual, they are associated with an admitted nervous breakdown or not. This is a frequent concomitant of concussion and shell shock. Of course, such symptoms to be serious must be more than transitory—that is, lasting two or three weeks at least. They are probably also less serious after a definite accident or injury than if coming on as the result of pure mental worries in a neurosthenic subject. With experienced flying officers the case is somewhat different, and after two or three months' rest and absence of symptoms they may safely be allowed to resume flying—light base duties. But so far I have no notes or recollection of any who have successfully tackled service as pilots after such a breakdown if at all prolonged. Some have tried as observers, others as pilots, but they do not last. If ever they are to become fit for service flying again they need more rest than it has so far been possible for them to have while under my observation. However, not a few have made good as very capable instructors. Much depends on the individual; if he is keen and wants to fly he will often by mere will power get over any temporary subjective difficulties. If the will is absent it is useless to force him, and even when the will is present it may be painfully tragic to allow him to fly. Great discrimination is needed, and personal knowledge of such officers in private life helps enormously in forming the right conclusion.

7. *Malaria*.—Thirty-six per cent. gave a history of fairly recent malaria. Of this number twenty-five per cent. was in flying officers back from active service. I cannot put down too strongly my conviction that malaria is often the direct cause of a most profound breakdown of the nervous system, and especially of the higher cerebral processes, producing depression, bad memory, loss of concentration, irritability, delayed reaction times. When the possibility of such an infection exists let us never neglect to examine the blood—not for parasites alone, but also for any increase in large mononuclear leucocytes. Under rest and appropriate treatment these cases do well and are to be regarded in most cases as but temporarily unfit.

8. *Reflexes*.—Eighty-two per cent. had exaggerated reflexes. This is included partly in order to protest against too much significance being attached to this phenomenon. How many hundreds—thousands, may be—of excellent pilots have exaggerated knee jerks! Taken by itself the knee jerk is almost useless as a test of the soundness of a prospective pilot's nervous mechanism. Taken with other symptoms and signs its value is definite enough.

9. *Tremor* (seventy-three per cent.).—Almost the same remarks apply as for reflexes, yet tremor of the tongue is, if marked, a very useful clinical symptom. I think, of nervous instability. But, again, it must be taken only in association with other symptoms.

Suppose, then, we come across a candidate with a definite history of mild nervous instability, in fact, a highly strung person—are we to accept or reject him, and on what grounds? It is well known that some men of this

type make the finest, the most brilliant flying officers. The choice is not without responsibility, for the slightest mistake in training will ruin their chances. One has to consider the man's individuality. He is nervous, but are his nerves well under control? This is not easy to test, and though certain methods have been suggested, a good deal must still be left to the insight and judgment of the examining medical officers. Will he fly two hundred hours on service? Then accept him, for in that time he will probably justify training expenses. Further, it is suggested that one would much sooner accept a well educated nervous type as a pilot than one whose mental training has been very limited. For the nervous, pale faced, introspective, East End clerk, with little or no experience of outdoor exercise and sport, whose habit of life almost compels him to think far too much of himself, one would probably advise rejection; while for the university athlete, equally nervous, but trained to ignore himself and to control his feelings, trained to act and think of and for others, of good physique and broad in mental outlook, one would on the whole advise acceptance. The one is by habit and training habituated to selfcontrol, the other to selfcommiseration.

This leads me to say that much depends in these cases on the manner in which the pupils are handled in training. These nervous subjects are very sensitive of criticism and cursed with an anxiety to do well which exceeds their powers of execution. Having been found fault with, perhaps somewhat brusquely, they begin to worry over their mistakes, think they are stupid and slow, become over-anxious, and, instead of progressing, get worse. Flying occupies their dreams, and soon fills their minds to the exclusion of everything else—in short, flying becomes an obsession. An instructor who is himself nervous is especially disastrous for such pupils. Akin to this is the error of "stunting" a timorous beginner in the hope of increasing his confidence.

Finally, a word with regard to medical officers of the Royal Air Force. There still exist, unfortunately, doctors who believe that the neurosthenic is a fraud, that his ailment is imaginary, or, more accurately, that his ailment is voluntarily assumed and capable of being equally voluntarily set aside. Such types should not be chosen as medical officers for flying schools. There is great scope for the finest scientific minds in the investigation of all aerial medical problems.

### A United States Naval Hospital in England.—

In a recent issue of the *Saturday Evening Post*, Samuel G. Blythe tells of one of two hospitals maintained by the United States Navy on the coast of Great Britain, as follows:

"The hospital that was in operation when I was there is domiciled in a summer and health resort in the hills, and has taken over two or three big hotels, remodeling them into complete and well equipped hospitals. This hospital is in executive charge of a naval medical officer of the regular service, and it is staffed by a hospital unit recruited in California. It has accommodations for a large number of patients, and all its equipment is of the latest scientific and sanitary sort, all brought from the United States.

The doctor in charge of the hospital work is a famous Californian and his assistants are all men of high attainments. The place is equipped for all contingencies, from casualties arising from engagements at sea to the ordinary diseases. It has many specialized wards and many specialists. Its operating rooms are the equals of any in the most modern hospitals at home, and its nursing staff is ample and competent.

Among other places taken over was a hydropathic establishment; for there are mineral springs here and the waters of them have been utilized in the



usual way. Inasmuch as recourse to German and Austrian baths is closed by the war, there was a fear lest the navy would close these baths, too, and thus deprive certain citizens who seek to boil out their gout and rheumatism and obesities of the opportunity for such endeavor.

The officers in charge are kind and compassionate men, and they said that persons outside the service might have the benefit of the waters and the baths free, but that a Red Cross contribution box would be placed in the lobby of the spring house for such voluntary contributions as might be made. This works very well, except in occasional instances. On the day I was there they found some threepenny silver bits in the box, which shows that some thrifty souls had been along.

A hotel keeper in the place, who was very loud in his denunciation of the navy plan for taking over the main hotels and turning them into hospitals, on the ground that it would not only ruin his business but impoverish the village because the usual summer boarders would not come, and who protested all the way up to the War Council, showed some thrift himself after he saw that his protests were unavailing. He advertised in many British papers that, though the springs had been taken over by the United States Navy, the navy was treating all comers free; and that, of course, the only place for the afflicted to stop, those who took advantage of this wonderful generosity and liberality on the part of the United States, was at his hotel. That didn't last long.

A good success has been secured at this hospital in the treatment of shell shock cases, those unfortunates who lose control of their nerves through their experiences in battle and who are most pitiable objects."

#### MEDICAL NEWS FROM WASHINGTON.

*Brigadier General Charles Richard, M. C., U. S. Army, Placed on Retired List.—Achievements in Medical Department of the Navy.*

WASHINGTON, D. C., November 18, 1918.

Brigadier General Charles Richard, Medical Corps, who has been on duty in the Office of the Surgeon General of the Army during the war, was placed on the retired list, with his permanent rank of colonel, on November 10th, upon reaching the age of sixty-four years. At the time of his retirement he was, in point of length of service, the senior officer of the Medical Corps of the Army.

He was born in New York in 1854, and he received the degree of B. S. from the College of the City of New York in 1874 and the degree of M. D. from New York University two years later.

He afterward served in the Charity Hospital of New York, the Randall's Island Hospital, and the Essex Market Dispensary. In June, 1879, he was appointed an assistant surgeon in the army, and he reached the grade of colonel in February, 1910. In August, 1917, he was appointed a temporary brigadier general in the Medical Corps.

General Richard served twice in the Philippine Islands. He was in command of the Army Medical School for two years, and served twice as chief of

the Army Medical Supply Depot in New York. He was the surgeon of the Department of the East with headquarters on Governor's Island when he was made a brigadier general. In December, 1917, he was assigned to duty at the Surgeon General's Office in Washington and became acting surgeon general when Major General Gorgas went to Europe.

\* \* \* \* \*

At this time, when fighting has been suspended and a state of peace approaches, those interested in the Medical Department of the Navy are calling attention to its achievements since the United States entered the war in April, 1917.

When the war began, the Medical Corps of the Navy numbered about 300 commissioned officers. Today there are that many on duty in European waters and ashore in foreign countries. Now the Medical Corps consists of some 3,000 officers, all of whom are actually required for the present needs of the service, and that number would not be sufficient in the event of further expansion of the naval personnel and its activities.

All the new officers were taken into the Medical Corps after physical and professional examinations, and they have received special training for the naval service and special professional training at the Naval Medical School at Washington, at naval hospitals, on board cruising ships of the navy, and at great medical centres like New York, Boston, and Philadelphia, where intensive courses, both didactic and practical, were conducted for their benefit by the best professional talent in the country.

Serving in the field with the marines in France are medical and dental officers. The first commissioned officer of the navy proper to die in battle in France was Dental Surgeon W. E. Osborne, who was wounded fatally while carrying a wounded comrade from the field. He, posthumously, was awarded the distinguished service cross by General Pershing.

Equal courage and fortitude has been shown by members of the Hospital Corps, the male nurses of the navy, who serve on battleships and go into action with the marines, sharing every danger with their comrades of other branches of the service. The Hospital Corps in July, 1916, numbered 1,585 men. Today the corps consists of 14,000 men, for whom there are four large, thoroughly organized training schools and many smaller centres of instruction.

The Female Nurse Corps of the Navy includes 1,126 women, of whom 260 are serving at our naval hospitals and dispensaries in England and France. We have more than doubled, nearly trebled, enrollment of female nurses since last year.

During the first year of the war there was completed sufficient naval hospital construction to increase the previously existing hospital facilities in eighteen regular naval hospitals, with their 1,600 beds, by 144 new buildings constructed and equipped. By July, 1917, 2,700 additional beds had been provided. The buildings since completed or now nearing completion or contracted for or under way will give the Medical Department of the Navy a patient capacity of between 11,000 and 12,000 beds.

# Editorial Notes and Comments

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## NEOPLASMS OF THE HYPOPHYSIS AND ROENTGEN RAYS.

Neoplasms of the hypophysis are among the number of pathological conditions requiring both radiodiagnosis and radiotherapy. The diagnosis of these tumors is frequently a difficult matter, particularly at the beginning of the process, on account of their silent evolution, the rather mild character of the symptoms, and the multiplicity and diversity of the morbid pictures which simulate them. The signs of intracranial compression, headache, vertigo, and vomiting; ocular disturbances particularly characterized by concentric narrowing of the visual field; an abnormal growth of the skeleton assuming the clinical type of gigantism and acromegaly; disturbances of the general nutrition realizing the type of genital infantilism with fatty overgrowth, such are the principal symptomatic forms, either isolated or variously associated, of neoplasms of the hypophysis.

Given any of the symptoms which may lead one to suspect a growth in this gland, radiologic exploration of the skeleton should always be methodically practised. When applied to the long bones, it re-

veals the condition of the epiphysary cartilages, and whether they are ossified or have remained without adult changes beyond the normal time. It will decide if growth of the limbs has been achieved, if the height of the patient has arrived at its maximum or if the body may still grow; in other words, whether the case is one of fixed gigantism or gigantism still in evolution. Applied to the skeleton of the hands and feet when they are enlarged, it distinguishes the part due to hypertrophy of the soft parts from that due to an increase in the thickness of the osseous tissue, thus revealing the lesions of the bones properly belonging to acromegalia.

Applied to the skull, it shows the unequal increase in thickness of the cranial bones, the varying spreading of the external and internal tables at different points, the enlargement of the cavities of the face, the frontal, maxillary, and sphenoidal sinuses. Thus the diagnosis of the silent types of acromegalia is made.

When directed to the sella turcica, it reveals its shape and size, particularly in the vertical and anteroposterior directions, showing if the cavity of the pituitary fossa is simply increased without broadening of the opening by which it communicates with the cranial cavity, or if it is both enlarged and more or less considerably excavated. It will also show if the bone structures, the clinoid apophyses and blade of the sphenoid, which circumscribe this opening, are preserved or have been more or less partially absorbed. Thus, indirectly, radiography reveals the existence of a new growth of the hypophysis, indicating its size to a certain extent, and even shows if the tumor is developing toward the nasal cavity or in the direction of the brain.

By some clear cases, although not in large numbers, it is definitely proved that in certain neoplasms of the hypophysis, methodical radiations of the gland with Röntgen rays has resulted in a remarkable improvement in the symptoms, particularly in a decrease, at all events partial, of the ocular disturbances. Such fortunate results may be explained by the elective sensibility of the gland cells and neoplastic cells in general to the destructive action of the rays. Excepting instances of undoubted lues which should be treated with mercury, the treatment of tumors of the hypophysis reduces itself to two methods: the surgical removal and radiotherapy. On account of the necessarily incomplete and purely palliative action of surgical interference, radiotherapy should always be preferred, or at least it should always be attempted in the first place. Generally speaking, radiotherapy of growths of the



hypophysis will be more successful when applied early, with method, and an irreproachable technique; hence the importance of an early diagnosis. In the ophthalmic form, it offers considerable chance of improving the ocular disturbances if atrophy of the optic papilla has not yet taken place. In the giant and acromegalic types, radiotherapy is of course powerless to cause a retrocession of the already acquired lesions, although it is quite capable of arresting the evolution of the abnormal skeletal growth.

### THE WAR AND THE DRUG SUPPLY.

Before the war all countries were largely, too largely by far, dependent upon Germany for drugs—owing to various reasons, partly perhaps to excellent organization and to crafty advertising. German chemical firms had secured a practical monopoly of the synthetic drug industry. German scientific chemistry represented the acme of progress in this direction, and Ehrlich was the high prophet. The medical men of other nations humbly learned at the feet of the mighty German professors and proclaimed aloud that there were none like these and that the Teuton synthetic products possessed such remarkable therapeutic properties that it was idle for chemists of the inferior races to attempt to vie with them. A rich harvest of fame and wealth was gathered by erudite professors of the Fatherland, who were not too proud to make much money from their efforts to heal suffering humanity. The synthetic drug industry was established upon a strictly commercial basis.

Since the war began, Germany has been a negligible quantity as far as supplying drugs to other countries is concerned. Strange to relate, that although the call for therapeutic products of every description during the past four years has been immensely increased, the call has been met in a satisfactory manner.

In the first instance, it has been demonstrated that when the necessity arises, chemists other than Germans can manufacture reliable synthetic remedies. In the second place, and this phase of the situation is even more important, it has been shown that synthetic drugs are not indispensable, that many of the old time drugs, especially those of the vegetable world, and which had been elbowed aside and viewed with scorn in favor of the more modern cure-alls from the land of the all highest, do possess therapeutic agents of great efficacy.

As a matter of fact, synthetic remedies and other drugs, which have proven their worth by the infallible test of clinical experience, all have their places, and while the potency of the remedial pro-

ducts derived from Germany has been somewhat unduly extolled, no one will aver that they are barren of results. A few are essential in the treatment of disease and many are useful; and the same thing may be said, with added emphasis, of a goodly number of the oldtime remedies. In the main, and this statement applies in particular to vegetable remedies, they are considerably safer than the most modern chemical conceptions.

It is then gratifying and soothing to our pride to know that Americans can make good synthetic drugs. Whenever there has been an urgent demand for a particular substance, American science, reinforced by American chemical industry, has coped with the situation successfully and the outcome has been that the needed substance has been forthcoming in requisite amounts and of requisite purity, within a reasonable period of time.

Vegetable drugs are being more largely grown and more largely used than ever before. It is perfectly true that there is a shortage of drugs, and consequently their cost is increased. However, this lack is greatly due to army requirements and to the fact that the time and energy of all the workers of all nations engaged in the war are directed more to the destruction than the saving of life. All things considered, the supply of drugs is satisfactory and the lesson has been fully learned that American chemists can make synthetic drugs and that vegetable drugs should not be relegated entirely to the background.

### THE DOCTOR'S PART.

The doctor's part in this war exceeds in importance that played by the doctor in any preceding war. His most important rôle has been played in preventive medicine.

Dr. W. W. Keen has said that during the Civil War 80,000 of the troops engaged suffered from typhoid fever. During the war with Spain in the army of 180,000 there were 20,700 cases. During the present war, less than 200 of the troops in our own army have had this disease. The new lipo vaccine T. A. B., of the French Army, which gives immunity after a single injection, promises not only to simplify and accelerate the administration of the preventive vaccine but will probably lower the morbidity and the death rate still further.

The prophylactic measures against venereal disease have also had a very marked effect, though this appears more strikingly in the lower sick rate than in the mortality; but the low sick rate is a matter affecting vitally the effectiveness of a command.

The nutrition of our troops has been handled by the medical department from a wholly new point

of view. The quality of the food is checked up constantly, of course, so as to protect the soldier from inferior or decayed food. This has been done, more or less efficiently, in all armies and in all wars. But nutritional surveys are something never before attempted. A nutritional survey of a company, a regiment, a camp, or a hospital means that experts are sent by the surgeon general to that company, regiment, camp, or hospital, to live with that command for days, to study the methods of obtaining, handling, cooking, and serving food and to analyze the food as it is actually consumed, not only as to its preparation but as to its palatability and its nutritional value. Much food which is good when issued is ruined before it reaches the consumer; much of it is wasted in the serving; much of it is prepared so unpalatably that it is not consumed, and much of it goes into garbage, which can be recovered for other than food uses if the garbage is handled intelligently. All this is covered by the food survey, and as a result of hundreds of these food surveys carried out in every phase of the soldier's life, we have accumulated invaluable data for the guidance of the quartermasters of the army.

The studies of trench fever in the armies on the western front and of the plague on the eastern front have convicted the *Pediculus vestimenti* of being a murderer instead of a mere nuisance, and we therefore have entomologists under the doctors' direction studying the life history of these pests and devising improved means for their elimination.

The fiendish ingenuity shown by the Germans in adding new horrors to war by the use of poisonous and irritant gases has called for the display of an equal or superior degree of ingenuity in creating means of defense, and this too has been the doctor's part, for the gas defense service was originally organized by the surgeon general though the work is now carried out by chemists.

In the field of treatment, too, the doctor's part in this war transcends in importance that played by the doctor in any previous war. The Carrel-Dakin, the De Page and other methods of treating wounds, and the De Sandfort method of treating burns, the method of treating gas burns, devised by our own pharmacists in the chemical service, the wonderful results achieved in plastic facial surgery and in reconstruction are all new, and these form but a portion of the doctor's part in the war. Through these curative methods, something like ninety per cent. of the wounded are returned to duty.

We are indebted to Colonel James R. Church, of the Medical Corps of the United States Army, for this happy phrase, the doctor's part, for that is

the title of the book [Colonel James Robb Church: *The Doctor's Part, What Happens to the Wounded in War*, D. Appleton and Company, New York], in which he tells, in simple, nontechnical language, what he saw during more than two years of service on the western front, as an accredited military observer from the United States before we passed out of the category of friendly neutrals. He does not tell all that he saw, for military reasons demand reticence on some points, while a detailed recital of the horrors of war such as has been made by Henri Barbusse in *Under Fire* and Ellen La Motte in *The Back Wash of War*, can serve no good purpose now, though they may later help to build up such a just appreciation of what war means as to make a recurrence of war impossible.

To write of war is also the doctor's part and reams have been written by the doctor, most of it technical and didactic. For the doctor who is in active service in this war is a student in the greatest medical school of all time, and must perforce put down for the help of others what he has himself but just now learned. It is indeed significant of the place filled by the doctor that, with us, the term doctor, which in its original significance meant teacher, should come to mean practitioner of medicine. For every practitioner of medicine is a teacher, the general practitioner teaching his patients the laws of health and the methods of conserving it, while the specialist in turn teaches his fellow practitioners what he learns in his own particular field. The doctor's part in this war has indeed been most helpful and most creditable both as a participant and as a teacher.

#### A STUDY OF THE OCULAR LESIONS PRODUCED BY MUSTARD GAS.

Careful and extensive experimental studies have recently been made of the ocular lesions produced by mustard gas with a view to discovering more adequate means of treatment [Warthin, A. S., Weller, C. V., Herrmann, G. R.: Ocular Lesions Produced by Dichlorethylsulphide, *Journal of Laboratory and Clinical Medicine*, October, 1918]. Thus far literature has yielded only unsatisfactory reports upon these lesions, all of which prove existing treatment inadequate.

In order to consider every possible phase of the effect which would be produced either by direct application of the mustard gas in liquid form or by exposure to the vapor, the experimenters utilized two methods of application. In the first a standard droplet of the former was administered to the centre of the cornea of the rabbits and dogs experi-



mented upon. In the second, the animal was put into a gassing chamber and exposed for a fixed period to a definite concentration of the vapor. The symptoms and gross pathology which resulted from both forms of application differed only in degree, not in kind; therefore, the former constitutes the better means for experimental work. It is convenient, accurate, and all complications of respiratory and cutaneous involvement are avoided.

There is at first a definite irritation of the conjunctiva, with increase of lachrimation. A well marked hyperemia soon appears, followed by an edema which steadily increases for twelve hours. This is earliest and most marked in the palpebral conjunctiva after direct application, but frequently appears first in the bulbar conjunctiva after exposure to the vapor. In man the edema is less marked and regular, but the hyperemia more distinct. By the end of the third day the edema begins to subside, but does not entirely disappear for several weeks.

The cornea shows a necrosis, visible usually in five or six hours, and manifested by a definite cloudiness, which a little later becomes a characteristic bluish white opalescence. Frequently there is an opaque band running horizontally across the cornea, just inferior to its transverse diameter. Microscopic examination reveals that the necrosis of the cornea is much greater in degree than that of the conjunctival epithelium, although the latter also shows widespread necrosis and desquamation. Shallow ulcers appear at the palpebral margin. There is an extreme edema of the subconjunctival connective tissues, which results usually in liquefactive necrosis. Healing takes place with a readily occurring regeneration of the conjunctival epithelium, but the conjunctiva is permanently thickened because of the formation of fibroplastic tissue.

One of the marked features is the production of a seropurulent exudate which increases and seals the eyelids for several weeks, or until the inflammatory process begins to subside. It was found that forcible separation of the lids and removal of the accumulated exudate was very important in lessening this stage of purulent exudation, as well as preventing a secondary infection and perhaps also suppurative panophthalmitis, with complete destruction of the eyeball.

After the subsidence of the edema, the upper lid presents a characteristic ruffled appearance with a combined entropion and ectropion—the latter becoming sometimes a complete eversion—while the lower lid shows a smooth ectropion. Depilation occurs on the lids and on the face about the orbit. From the third week on, the lesions show the same

progress toward resolution and repair that are characteristic of skin lesions caused by mustard gas. The final sequelæ are corneal cicatrization and thickening of the eyelids and nictating membrane, with marked impairment of vision. Even in the lesser exposure in man, visual disturbance and reduction of vision follow upon the chronic course of the edema and hyperemia. There may also be increased susceptibility to the vapor.

Because of the unsatisfactory character of the treatment in the clinical cases brought to the authors' attention, they also investigated methods of treatment of these lesions. Dakin's solution is too irritating in severe forms, but they found that repeated irrigation with one half to one per cent. or an even stronger solution of dichloramine-T in chloroform will in severe cases prevent secondary infection, and in milder cases act as a prophylactic, where it may be followed by boric acid irrigation. The use of argyrol, silvol and cocaine they consider unwise. Such simple measures as irrigation with boric acid, light compresses of the same, hot vapor baths, and protection from the light are suggested. It is most important not to permit the lids to become glued together by accumulations of the exudate, also that there should be no pressure upon the eyeballs through heavy compresses or tight bandaging. Actual disturbances of vision are matters to be referred to a competent ophthalmologist later.

#### PROBLEMS OF DEMOBILIZATION.

The terms of the armistice are such as to preclude the possibility of a general resumption of hostilities. There may be an occasional clash between the army of occupation which is now nearing the borders of Germany and troops, or Bolsheviks. It is possible that a prolonged military occupation may be necessary to settle the question of disputed boundaries and to police Europe in order to insure the establishment of stable forms of government. Save for such exceptions we may consider that the war is a thing of the past. The military authorities, acting on this assumption, have announced the order in which the troops in the United States will be demobilized. It has been intimated that the demobilization of the American Expeditionary Forces will begin with the return of the sick and wounded. With these will be sent back the casualties, the fighting divisions being probably the last to return to the United States. In demobilizing troops every soldier must be given a critical examination by a competent military surgeon, for the physical condition of each soldier must be accurately determined at the time of his discharge so as to avoid the possibility of overlooking some disease contracted during the war on the one hand or opening the door for unjust claims for pensions on the other. In view of the service required of the surgeons in dismissing the troops, it will be seen that the physicians who have entered the service are not justified in looking for-

ward to a very early discharge. In fact medical units are still being sent to Europe. The question of the future of our regular army will depend very largely on the outcome of the peace conference. Under the terms of the National Defense Act, we must continue to maintain an army of not less than 175,000 men or more than 187,000. It seems not improbable that unless the peace conference makes provision to the contrary, there will be a demand for universal military service of short duration, probably six months, with a cadre of professional soldiers to act as instructors.

## News Items.

**Symposium on Influenza in Pregnancy.**—At a meeting of the Section in Obstetrics and Gynecology of the New York Academy of Medicine to be held Tuesday evening, November 26th, the program will consist of a symposium on epidemic influenza in pregnancy. Dr. Lillian K. P. Farrar will present a paper on the Visitation of Influenza and Its Influence on Gynecological and Obstetrical Conditions. Dr. George W. Kosmak will read a paper. There will be a general discussion.

**Total British Casualties.**—The British War Office announces that the total casualties on all fronts of British troops amounted to 3,049,991, of which 2,032,122 were wounded, 658,665 killed, and 359,145 missing or prisoners. These figures include the troops from India and from the Dominions, as well as those from Great Britain. The killed included 37,836 officers and 620,829 men. Of the wounded 92,644 were officers and 1,939,748 were enlisted men. Of the missing and prisoners 12,094 were officers and 347,051 were enlisted men.

**The High Cost of Rations.**—Statistics issued by the Subsistence Division of the Army, quoted in *The Army and Navy Journal*, state that in 1897 the average daily cost of food for each soldier was a little less than thirteen cents. In 1900 the average cost had advanced to twenty-four cents. During the campaign in Mexico, the average cost rose to twenty-five cents, and now the food cost is from forty-eight to fifty cents a day. This, of course, is the cost of the food alone and does not include the cost of transportation and service.

**Tuberculosis Among European Nations at War.**—At a stated meeting of the New York Academy of Medicine, held Thursday evening, November 21st, Dr. James Alexander Miller, associate director of the Commission for the Prevention of Tuberculosis in France, delivered an address on Tuberculosis Among European Nations at War. The subject was discussed by Dr. David R. Lyman, president of the National Association for the Prevention of Tuberculosis, and Dr. Wickliffe Rose, general director of the International Health Board.

**Section in Laryngology and Rhinology of the Academy of Medicine.**—This section will hold a clinical meeting Wednesday evening, November 27th. Dr. E. R. Faulkner will present a patient exhibiting an unusual form of laryngeal paralysis. Dr. Max Unger will describe a new method of radiographing the accessory nasal sinuses, illustrating with x ray pictures. Dr. D. Bryson Delavan will read a paper on the Successful Disinfection of Non-suppurative Infections of the Upper Air Passages. Dr. John E. MacKenty will read a paper on Papilloma of Larynx Cured by Surgical Methods.

**Medical Society of the County of New York.**—The one hundred and thirteenth annual meeting of this society will be held on Monday evening, November 25th, in Hosack Hall, New York Academy of Medicine, under the presidency of Dr. Howard C. Taylor. After the transaction of routine business, officers will be elected and annual reports of various committees will be received and passed upon. The following papers will be read: The Respiratory Tract as a Portal of Entry for Infectious Diseases, by Dr. Irving W. Voorhees; The Two Most Important Signs in Chronic Appendicitis, by Dr. Robert T. Morris; Doctor Voorhees's paper will be discussed by Dr. John E. MacKenty, Dr. Rufus Cole, Dr. Walter Lester Carr, and Dr. James G. Dwyer.

**Change of Address.**—The Anglo-French Drug Company announces that it has opened a depot at 1270 Broadway, New York, where all communications should be addressed.

Dr. Frederic Estabrook Elliott announces the removal of his office from 232 Seventy-seventh Street to 245 Seventy-fifth Street, Brooklyn.

**Meetings of Medical Societies to Be Held in Philadelphia.**—The following medical societies will meet in Philadelphia during the coming week:

*Monday, November 25th.*—Genitourinary Society; North Branch of the County Medical Society.

*Tuesday, November 26th.*—Jewish Hospital Clinical Society; Northern Medical Association; West Philadelphia Medical Association.

*Wednesday, November 27th.*—County Medical Society; Neurological Society.

*Friday, November 29th.*—Medical Club (board of directors).

**Personal.**—Dr. Samuel G. Tracy, of New York, has been placed in charge of the physiotherapeutic department of the Hotel Chamberlin, Fortress Monroe, Va. Doctor Tracy practised medicine in New York for over twenty years, and was formerly connected with the electrotherapeutic department of the New York Post-Graduate Medical School and Hospital. He studied the Nauheim method in Nauheim, Germany, and upon his return to America was made medical director of the New York Artificial Nauheim Baths.

**Influenza More Deadly than War.**—The Bureau of the Census at Washington has published the statistics for forty-six large cities, with a total population of twenty-three million, which show that from September 8th to November 9th inclusive, 82,360 deaths occurred from influenza and pneumonia. Normal deaths from these causes for the same period would be 4,000, leaving approximately 78,000 deaths attributable to the epidemic. The total loss of life in the American Expeditionary Forces to date is estimated by the bureau to be between 40,000 and 45,000. From this it appears that the deaths occurring in the forty-six cities with a population of only one fifth of the total population of the United States nearly doubled the number of deaths in the American Expeditionary Forces. Philadelphia shows the highest death rate with 7.4 in a thousand during nine weeks. Baltimore came next with a rate of 6.7 in a thousand for the same period.

**\$40,000,000 to Charity.**—According to the terms of the will of the late Mrs. Russell Sage, approximately \$40,000,000 will be divided among thirty-six religious, educational, and charitable institutions, in sums ranging from \$10,000 to \$200,000. Among the specific bequests to charitable institutions are the following: Woman's Hospital in the State of New York, \$50,000; Charity Organization Society of New York, \$20,000; New York Institution for the Deaf and Dumb, \$25,000; Servants of Relief for Incurable Cancer, \$25,000; Mount Sinai Hospital, \$100,000. The residuary estate is to be divided into fifty-two equal parts, each of which will amount to approximately \$800,000. Of this the Russell Sage Foundation will receive seven parts; Woman's Hospital in the State of New York, two parts; Children's Aid Society, two parts; Charity Organization Society, two parts; New York Infirmary for Women and Children, Presbyterian Hospital, and State Charities Aid Association, each one part.

**Meetings of Medical Societies to Be Held in New York.**—The following medical societies will meet in New York during the coming week:

*Tuesday, November 26th.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; New York Medical Union; Metropolitan Medical Society of New York City; New York Otological Society (annual); New York Psycho-analytic Society; New York City Riverside Practitioners' Society; Therapeutic Club; Valentine Mott Society; Washington Heights Medical Society (annual).

*Wednesday, November 27th.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; New York Surgical Society; Brooklyn Pediatric Society.

*Friday, November 29th.*—New York Academy of Medicine (Section in Surgery); New York Microscopical Society; Practitioners' Society of New York; Alumni Association of Roosevelt Hospital; Gynecological Society of Brooklyn (annual); Hospital Graduates' Club, Brooklyn.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### STROPHANTHUS AND ITS ACTIVE PRINCIPLES VERSUS DIGITALIS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 871)

The advantageous effects of strophanthin in comparison with the results from digitalis in cases of mitral disease with pain in the left scapular region and attacks of tachycardia, as well as in heart cases with a tendency to heart block, were pointed out in the preceding issue, on the basis of clinical observations recently recorded by Vaquez and Lutembacher. Tracings were made by these authors showing marked improvement in cardiac action, without further slowing of the rate, in a patient with impaired conduction, and the improvement resulting from intravenous injections of moderate doses of ouabain prepared by the Arnaud method. Digitalis, previously administered, had caused an increase of conduction disturbance and symptoms of Stokes-Adams's disease.

Yet, where there is muscular insufficiency of the heart in valvular and other cardiac affections, with associated arrhythmia in the form of extrasystoles and, in particular, an increased rate of contraction, ouabain has been found by Vaquez and his co-workers to be capable of slowing and regulating the heart, and of affording marked general improvement where digitalis, after a more or less prolonged period of useful service, has lost its effect. Tracings illustrating the favorable action, in these respects, of injections of one half milligram of ouabain in a case of insufficiency of the left side of the heart, have been published by these authors. Before treatment, the heart rate was rapid and showed marked extrasystolic arrhythmia. After a single injection the rate was reduced and few premature contractions occurred. After four injections, normal regularity of the contractions was restored.

It is almost generally conceded that the administration of digitalis and its derivatives in the circulatory failure of febrile disorders does not yield the results that are obtained from these agents in the absence of fever. While, according to Cohn, 1915, patients in whom auricular fibrillation develops under these conditions are strikingly benefited, its usefulness otherwise appears to be correctly summarized by Sollmann, 1917, who states that in the early stages of the disease, when the heart is inefficient but the blood pressure is still maintained, the drug may improve the pulse, rendering it fuller and more regular; on the whole, however, the utility of digitalis is rather limited in such cases. On the other hand, in the light of recent researches and clinical observation, the question seems worthy of investigation, whether the cardiac action of the strophanthins, including ouabain, is not more effectually exerted in the presence of fever than

that of digitalis. Granting, for the moment, a more prominent vagal than musculotonic action in the case of digitalis under all circumstances, and a more prominent muscular than vagal action in the case of the strophanthins, it is readily conceivable that the nervous—slowing and regulating—effect of digitalis could be impaired in fever through intoxication of sensitive nervous tissue while a drug exerting more prominently a direct tonic action on the myocardium might better preserve its therapeutic properties. There is some evidence, experimental and clinical, to the effect that such a difference in the behavior of the two drugs in the presence of fever actually does exist.

Jamieson, 1915, found the action of strophanthin to be identical in normal animals and in animals infected with pneumonic germs. While experimental and clinical doses by no means always correspond, this observation suggests that the action of strophanthin upon the myocardium may be definitely exerted under both afebrile and febrile conditions. From the clinical standpoint, Cornwall, 1918, states that he has seen remarkable improvement from injections of a strophanthin prepared from *Strophanthus gratus* in acute heart failure in both typhoid fever and pneumonia. He administers one five hundredth grain of this strophanthin hypodermically every four hours or one one hundredth grain in a single dose. In one case of pneumonia on the fifth day, with an almost imperceptible pulse and extensive pulmonary edema—apparently brought on by the patient's getting out of bed in delirium—this author saw an injection of one one hundredth grain followed promptly by cardiac recovery, clearing up of the urgent symptoms, and after two days, by defervescence. These results seemingly support the analogous observations of Vaquez and Lutembacher, who report gratifying effects from intravenous ouabain medication in alarming cardiac emergencies in the course of acute disorders such as typhoid fever and pneumonia. These effects they do not deem surprising, having already become convinced, in other varieties of cases, of an effectual action both on cardiac tonicity and in raising the blood pressure on the part of ouabain. As already pointed out in an earlier instalment, Pratt, 1918, similarly observed definite effects from intravenous injections, not given oftener than once in twenty-four hours, of one quarter to one half mgm. of amorphous strophanthin in cases of heart failure—afebrile, however—with regular cardiac rhythm. Danielopoulo, in a recent communication, has emphasized the favorable results obtained by him from intravenous strophanthin injections in cases of typhus fever with severe toxemia. In brief, the special availability of the strophanthins as heart remedies during fever, if not as yet well established, may at least be said, it would seem, to be deserving of further study, both experimentally and clinically.

(To be concluded.)

**Resection of the Hip for Secondary Arthritis in War Wounds.**—P. Chutro (*Presse médicale*, August 5, 1918) has found it possible to perform this resection in less than ten minutes and without loss of blood by combining several different portions of former procedures. An incision fifteen to twenty centimetres long is made, beginning at the anterior superior spine and passing down in the interval between the tensor of the fascia lata and the gluteus minimus, on the outside, and the anterior rectus and psoas, within. Two vessels are ligated, opening of the psoas sheath avoided, and the anterior aspect of the joint capsule exposed by retracting the psoas. The capsule is opened by a longitudinal incision to the base of the neck. The femoral head is not luxated out, but a broad bone chisel introduced and an oblique osteotomy of the neck of the femur effected, the plane of section being directed from without inward, from before behind, and from below upward. The section begins in the middle of the lower surface of the neck and terminates near the posterior cartilaginous flange on the head of the femur. The trochanter and part of the neck fall posteriorly and the head is easily removed with a curved gouge or Lane lever. Foreign bodies or bone fragments, if present, are now removed, the parts cleansed, six or eight Carrel tubes inserted, and the wound left widely open, to be closed later, with a diachylon dressing. No counteropening is required, and in some cases the author even closed the posterior wound which originally led to the arthritis. Continuous extension of both lower limbs in maximum abduction is instituted, with a five kilo weight on each side. Counterextension is supplied by raising the foot of the bed fifteen centimetres. Excess of inward rotation is carefully avoided and the extension continued for six or eight weeks. Massage is practised as soon as healing occurs. Spontaneous movements are permitted. Crutches are eliminated as soon as possible, as they promote elevation of the pelvis and external rotation and adduction of the limb.

**Dried Milk in Infant Feeding.**—Roger H. Dennett (*New York State Journal of Medicine*, July, 1918) records his observations, in a variety of cases, on the use of plain dried milk as an infant food, and concludes that it is very satisfactory and has a number of advantages over other forms of feeding. Dried milk is better tolerated than raw or boiled milk mixtures by infants who have previously suffered a food injury, indicating that it is better and more readily digested. It is also of great value for the infant who does not prosper on the various milk mixtures, and should be given in such cases without delay. Its use often controls vomiting within twenty-four hours and intestinal indigestion is overcome immediately. If given along with orange juice, after the first week or two, its prolonged use does not produce either rickets or scurvy. It is extraordinarily simple to prepare, being merely mixed in the prescribed proportions with hot water. To supply fifty calories daily per pound of body weight, three tablespoonfuls of the dried milk, levelled with a knife, must be given for each pound of body weight. This is too high a food value for any but very poorly nourished infants, and most babies will

gain adequately on forty calories per pound per day. The maximum concentration of the dried milk mixture should not exceed one tablespoonful of the milk per ounce of water. When beginning the use of dried milk in any case in which there has been food injury, much less should be prescribed than called for by the body weight, and the amount should then be raised rapidly as tolerance is established, just as with any other change in diet in the infant. The very ready digestibility of dried milk may possibly depend upon the fact that the casein in it does not clot in the stomach in large masses, but the small grains merely swell and are therefore very easily attacked both by the gastric and intestinal secretions. The milk also has a low fat content when diluted with the proper amount of water and contains a larger proportion of the fatty acids than whole milk. These tend to form soaps very easily and these soaps in turn favor the emulsification of the fat and enhance its digestion. The relatively high protein content of the dried milk makes desirable the addition to it of sugars or gruels or both after the digestive disturbances have been controlled, and this addition also avoids the possibility of the urine becoming excessively ammoniacal when large amounts of the milk are being taken. Other advantages of dried milk are its convenient form, its sterility, and the fact that it will keep for long periods of time even after the container has been opened.

**Ulcer of the Stomach.**—Martin E. Rehfuuss (*Medicine and Surgery*, June-July, 1918) discusses the treatment of gastric ulcer as based on the newer conceptions of its etiology and those of the gastric functions. Owing to the etiological importance of infection in a certain proportion of cases it is essential that every effort be made to find the focus of infection, if present, and to remove it by appropriate means. To this end the tonsils, the postnasal space, pyorrheal teeth, and the bile should be cultured and a vaccine prepared from the organisms if there is probability of their being influential in the production of the ulcer. The tonsils, if infected, should be removed. From the physiological aspect ulcer causes a break in the normal physiological sequence of the digestive and interdigestive phases; increases vagus tone, and induces hypersecretion and spasm; and ultimately produces a vicious cycle in the stomach. Unquestionably the best condition for healing of a gastric ulcer is the prolongation of the interdigestive phase, since during that period the total and free acids are at the minimum, tryptic regurgitation and intestinal reflux are at their height, peristalsis is stopped, and the walls of the ulcer are approximated. Starvation fulfills these conditions the most adequately, and after a period of this treatment the interdigestive interval can be prolonged by giving only two feedings daily of eggs and butter, or very frequent feedings may be given with complete neutralization of all acidity. Frequent feedings in some cases result in glandular fatigue and irritation and hypersecretion, but in the great majority such is not the case if the food given is wholly nonstimulating. Foods meeting this requirement include the carbohydrates preeminently, while the proteins induce high acidity. Fruits and vegetables may be used along with the carbohydrates.



**Medical Treatment of Graves's Disease.**—H. C. Gordinier (*Dominion Medical Monthly*, October, 1918) points out that every case should be examined for focal infection. Mild or incipient cases are cured by prolonged rest, hygienic and medical means; fifty per cent. of the more advanced cases are curable by the same methods. If a case has been under medical care for some time without improvement it should be placed in the hands of an experienced surgeon, skilled in thyroid work. Cases showing myocardial insufficiency or serious arrhythmias, as alternation, fibrillation, or flutter, should be treated medically. X ray pictures of the chest should be taken to discover extraneously placed accessory or dipped thyroids and to determine the size of the thymus gland. The ideal treatment is enforced therapeutic rest.

**Treatment of Trachoma.**—A. B. Crain (*Texas Medical Journal*, October, 1918) employs a specially devised forceps, two small scalpels, a horn spoon, Desmarre's forceps, a tooth brush, 1-2000 bichloride and plain sterile gauze. The lid is inverted, scarified, and the granules incised superficially with the scalpel. The surfaces are gone over with the tooth brush and the bichloride solution and followed by a thorough use of the gauze. Local anesthesia is usually used but general anesthesia may be necessary. Immediately after the operation the conjunctiva is washed with boric acid solution with the eyelids everted. The eye should be cleansed every three hours with boric acid solution followed by twenty per cent. argyrol. After five or six days, if uneven granules are present, the lids should be everted and brushed with two per cent. silver nitrate solution.

**Sulphur Solution in Psoriasis and Other Conditions.**—L. Bory (*Presse médicale*, August 22, 1918) at present uses a stronger sulphur solution than formerly. The formula is as follows:

R Sulphuris præcipitatis puri, .....	1 gram;
Guaiaecolis, .....	5 grams;
Camphoræ, .....	10 grams;
Eucalyptolis, .....	20 grams;
Olei sesami, .....	q. s. ad 100 mls.

In the treatment of psoriasis, the minimal amount injected is six mls; the maximum ten mls, and the usual dose eight mls. Febrile reactions, lasting about twenty-four hours and with copious sweating are neither more marked nor more lasting than with the much smaller doses of sulphur formerly used. The urine and lungs should be examined before the treatment is applied. In women the sulphur oil exerts an emmenagogue action, inducing menstruation for one to three days. In psoriasis four or five sulphur injections are given at weekly intervals. If combined with painting of the lesions every day or every other day with pure coal tar, two sulphur injections are often sufficient for a cure, and the patient nearly always leaves the hospital in three weeks. Later recurrence is prevented by injection of ten mls of the oil every month or two for six months, then at longer intervals. Interesting results were obtained by injection into the buttocks in cases of recent, extensive, and painful gonorrhoeal orchepididymitis. Within one to three days the testicle returned to its normal size

and sensitiveness. Control injections of the oil, without the sulphur, in other patients showed the sulphur to be the main beneficial factor, such injections causing some improvement, but far more slowly. The sulphur is not held to act on the gonococcus, which persists unchanged in the urethral discharge, but is considered to exert an exceedingly marked decongestive action on testicle and tunica vaginalis affected with gonorrhea. The value of the sulphur oil in gonococcal rheumatism has already been reported.

**Operability of Primary Malignant Tumors of the Bony Thorax.**—Mériel (*Presse médicale*, August 22, 1918) had occasion to remove a sarcomatous growth of the anterior wall of the thorax—at first sight seemingly unremovable. He succeeded in eliminating it after ascertaining its breath and depth by exploratory thoracotomy and states that one should not hesitate to carry out this procedure whenever it is necessary to make sure of the operability of a primary tumor of the bony thorax. Its advantage lies in the fact that the tumor in its entirety can thereby be investigated with the senses of touch and sight. Exploratory thoracotomy is no more serious an operation than exploratory laparotomy, the latter likewise calculated to show the feasibility of a difficult operation.

**Acidosis in Children's Diseases.**—Roland C. Connor (*Interstate Medical Journal*, August, 1918) considers that the immediate administration of alkalis is warranted by the following group of symptoms: enlargement of the liver, hyperpnea, vomiting, thirst, dry mouth and lips, restlessness, acetone odor of the breath, strong odor of ammonia in the urine, and heavy acetone ring in the urine. Alkaline treatment is advisable in all infant diarrheas, and the routine use of alkaline fever mixtures as a preventive. For most purposes a four per cent. solution in glucose or cereal water by mouth, or the same strength intravenously, is best. If there is no diarrhea they may be given by the bowel, and when there is vomiting small doses of a more concentrated solution may be given. A large draft of water should be taken two or three times a day.

**Control of Fragments in Gunshot Wounds of the Jaw.**—H. P. Pickerill (*Lancet*, September 7, 1918) discusses the various factors which tend to produce displacement of the fragments in gunshot fractures of the jaw, laying special stress upon the rôle of muscular action and entering into a detailed presentation of the most important actions of the individual muscles, alone and combined. He then presents a number of suggestions, with illustrations, as to the various methods which may prove of value in controlling the fragments, and concludes with the statement that there should be no "best method" of controlling fragments, but that each case should be treated individually according to its special requirements. The one aim of the method employed should be the control of the fragments but not their absolute immobilization, since the presence of some motion greatly enhances the progress of union. Wherever possible loose teeth and small bone fragments should be retained and controlled with function, rather than be sacrificed, to secure a quick but inferior result.

**Fallacies of the Face Mask in the Control of Acute Infectious Diseases.**—Archibald L. Hoyne (*Illinois Medical Journal*, September, 1918) is of the opinion that the observance of aseptic nursing is of much greater value than the use of masks. Where all the details of aseptic nursing cannot be carried out the following precautions may be taken: 1, The hands should be scrubbed with soap and running water after handling the patient; 2, a separate gown should be worn in handling each patient; 3, all attendants who have a positive Schick should have active immunization by the toxin antitoxin method; 4, nurses and physicians should have a throat culture made twice a month; 5, no nurse with diseased tonsils or carious teeth should be allowed to handle contagious cases until such defects are remedied; 6, a face mask is advisable where work of any kind is to be done on the throat, nose or mouth of a contagious case.

**Musculospiral Nerve Disabilities.**—Astley V. Clarke and N. I. Spriggs (*British Medical Journal*, September 14, 1918) attempted to determine the most suitable position for the hand to secure the optimum relaxation of the tendons of the paralyzed muscles by careful measurements on the cadaver. The measurements were made for each individual muscle involved in musculospiral paralysis. None of the several positions commonly employed produces any relaxation of the extensor ossis metacarpi pollicis or of the extensor brevis pollicis, such relaxation being possible only by extension of the thumb and simultaneous abduction of the hand, a position impossible of attainment when the other affected muscles are relaxed. The position offering the greatest all-round advantages for prolonged maintenance is that provided by the short "cock-up" splint which leaves the thumb and fingers free for use. The long cock-up splint which supports the first phalanges is of great value for temporary use, as at night for patients wearing the short splint, as this provides perfect relaxation for the long common extensor and the long extensor of the thumb, which is imperfect with the short splint.

**Antimony in Bilharziosis.**—J. B. Christopher (*Lancet*, September 7, 1918) records the results of his observations on the intravenous administration of tartar emetic in a series of thirteen cases of bilharziosis, and believes that the treatment is extremely satisfactory. The drug is administered intravenously in distilled water in the proportion of thirty milligrams in four mls. For adults the initial dose is thirty milligrams and on each alternate day the dose is increased by that amount until the dose reaches 0.13 to 0.2 gram every other day. The dose for children should be proportionately less at the beginning, but the smaller of the maximal doses stated may be reached. A total of about two grams should be given in the course of treatment. The injections are made into one of the cubital veins and great care must be exercised to be sure that none of the fluid escapes into the subcutaneous tissues, as it will cause necrosis. The administration of the drug must be watched with care, as it is a slow and cumulative poison. Of the thirteen cases so treated, not all received the full course. Three patients had relapses after insufficient courses

of treatment; two passed from care before the treatment had been completed; and the remaining eight were apparently cured. The acute toxic symptoms from the drug include vomiting, vertigo, delirium, fever, diarrhea, and cramps in the calves of the legs. Their appearance demands the interruption of treatment with later return to smaller doses. Chronic poisoning is indicated by weakness, loss of weight, anemia, glossitis, cracked tongue, and diarrhea, and requires both suspension of the antimony injections and the institution of appropriate treatment.

**A White Substitute for Vidal's Red Plaster.**—L. A. Longin (*Presse médicale*, August 29, 1918) states that while Vidal's plaster is very efficient in pyogenic skin affections it is disadvantageous in that it stains the linen and skin when the plaster dressing has slipped or run over at the edges. He prefers a white preparation consisting of calomel, three grams; lead carbonate, six grams; and rubber plaster, thirty grams. In some instances the addition of six grams of zinc oxide is serviceable. The resulting combination is better borne by irritable skins than that without the zinc oxide. In its curative effects the white plaster is equally as powerful as the Vidal red plaster.

**Röntgenotherapy in Tuberculous Glands of the Neck.**—Charles A. Pfender (*Medicine and Surgery*, April, 1918) bases his conclusions on his personal experience and an extensive analysis of the literature when he says that röntgenotherapy gives the best results of all therapeutic measures in acute, subacute, and chronic tuberculous glands of the neck, both suppurative and hyperplastic. The simple hyperplastic form should not be treated surgically until röntgenotherapy has been tried and has failed, while the suppurative form should be evacuated by simple incision or aspiration, preceded and followed by röntgenization. Old sinuses respond promptly to surgical drainage and the use of x rays. Medicinal, dietetic, and heliotherapeutic measures should be combined with the use of the x rays. There are no contraindications to röntgenotherapy.

**Causes of Failure and Untoward Results in Conductive Anesthesia.**—Richard H. Riethmüller (*American Journal of Surgery*, October, 1918) with regard to conductive anesthesia, concludes as follows: When we consider the thousands of injections of novocaine-suprarenin being made in every large community every day without any untoward results whatever, the remarkable safety of this method of anesthesia is patent. Surely few operators would be willing or able to do without conductive anesthesia in their practice today, after they have once come to fully realize its incomparable advantages over older methods. A knowledge of the causes, however, of possible untoward results which may arise seems most desirable, and it is to be hoped that the teaching and practice of this method will be left to the fully competent, else dentistry may again—as has happened with other methods before—be cheated out of the blessings of a doctrine which has proven itself to be a boon to humanity.



# Miscellany from Home and Foreign Journals

**Epidemic Influenza**—Le Marc'hadour and Denier (*Bulletin de l'Académie de médecine*, September 10, 1918), in a partially censored communication, point out that the influenza symptoms are accompanied by an increase of urea concentration in the urine together with a decreased elimination of chlorides. The blood shows a leucocytosis, with polynucleosis of eighty to ninety-five per cent. The red cell count progressively diminishes and with it the hemoglobin percentage. In grave forms of the type of disease they witnessed, pleural disturbances were a feature. In addition to the facies of infection, dyspnea, and tachycardia, there occurred a stitch in the side, radiating to the abdomen. A seropurulent or purulent effusion rapidly developed, often accompanied by pericarditis with effusion. Septicemia was frequent and the prognosis always doubtful, many deaths occurring from one to five weeks after the onset of symptoms. The form with initial hyperthermia, more or less extensive pulmonary congestion, breathing somewhat tubal, and fine crepitant and subcrepitant râles generally terminates in recovery but requires a prolonged convalescence during which the patient continues to harbor bronchopneumonic foci, these gradually subsiding. Blood cultures revealed streptococci in six grave cases. Inoculation of pleural or pulmonary fluid likewise yielded streptococci in all instances, as did also all metastatic abscesses met with. In all autopsies in influenza cases made in the course of several months, streptococcic septicemia was concluded to have been present. The streptococcus isolated from these patients exhibited the properties of streptococci in general, but its marked virulence in man was shown in the case of a physician, accidentally infected in the course of a pleurotomy in an influenza case, who thereupon succumbed to a streptococcic septicemia. In short, the influenza epidemic under observation appeared to owe its special virulence to streptococcic complication. Antoine and Ortoni report bacteriological studies in a group of cases characterized by early pulmonary complications, not infrequently fatal. Blood cultures and sputum and pleural fluid examinations revealed, in some patients, gram positive encapsulated diplococci often disposed in short chains in the culture bouillon. In a few cases, blood cultures revealed a gram negative, nonmotile bacillus, apparently with most of the morphological staining, and vital attributes of the Pfeiffer bacillus. That this organism was actually the Pfeiffer bacillus was confirmed by Martin and Legroux, of the Institut Pasteur of Paris. This germ was also found in pleural pus, always in association with diplococci in single pairs or cocci in short chains, positive to gram's. In the sputum the pneumococcus was often the predominant germ, not only in the period of pneumonic jellylike sputum but also in the white air filled, often blood streaked sputum of the early stage. No Pfeiffer organisms were ever found in the sputum. In two fatal cases, bronchial mucus showed the Friedländer pneumobacillus—in one instance practically in pure culture.

The question arises whether the influenza bacillus, not found by any one in the blood in the course of the first, mild epidemic of influenza occurring in France, was not already present at the time and assumed increased virulence in the more recent, severe epidemic. Or, the recent disorder may be an entirely different affection due to a particularly resistant and virulent strain of the Pfeiffer bacillus. Researches conducted for the purpose of elucidating this question are in progress.

**Trinitrotoluene Poisoning**.—A. W. Gregorson and F. E. Taylor (*Glasgow Medical Journal*, August, 1918) report five instances of this condition, including two fatal cases. Both of the latter had toxic jaundice, one case showing in addition a swollen and cyanosed face, mental torpor, severe headache, abdominal and lumbar pain, tinnitus, a feeling of pins and needles in the arms and legs, a rash of purple, discrete papules, a subnormal temperature, almost complete obliteration of liver dullness, and much bile in the urine. Bloody vomiting, pallor, twitchings, and progressive weakness preceded death. The second case, that of a worker in a munition factory for two months, ended fatally and was characterized by jaundice, vomiting, hemorrhages from various mucous membranes, with marked anemia and leucopenia. The leucocytes consisted entirely of badly staining, degenerate looking cells, somewhat resembling abnormal lymphocytes—a condition never before encountered by the authors in any other disease. Autopsy findings in both cases are given. Itching of the skin, which usually accompanies jaundice, was absent in these patients. The principal channels of absorption appear to be the lungs and stomach, the poisonous dust being, in the latter case, swallowed with the saliva. Gastric disturbance and peripheral neuritis were the earliest symptoms, headache, anemia, and jaundice following in the order named. The intensity of the jaundice varied from week to week, being at times a deep yellowish green. When the color faded there was general improvement. As for the treatment, absolute rest in bed and warmth are essential. Milk, with five grains of sodium bicarbonate to the ounce, is given every two hours, to the amount of six ounces. Barley water, fish, rabbit, vegetables are allowed in moderate amounts, and fatty and saccharine foods prohibited. Alkaline beverages are given freely. Calomel and a saline are administered at the outset, and later cascara and sodium sulphate. To correct intestinal acidity whenever this develops, magnesium carbonate is given. The patient also takes a mixture containing potassium citrate, sodium bicarbonate, and sodium sulphate every four hours. Later, he may be given potassium bicarbonate with tincture of ginger, compound rhubarb tincture, and infusion of gentian. Rectal salines with sodium bicarbonate, two ounces to the pint, are given every six hours. Intravenous or subcutaneous saline injection, when the patient is first seen, gives great relief, and inhalation of oxygen through warm ether is a valuable stimulant in such cases.

**Cardiovascular Disturbances as a Cause of Aviation Accidents.**—D. Berthier (*Bulletin de l'Académie de médecine*, September 10, 1918) reports the cases of two aviators who, when at high altitudes, were often seized with tinnitus, dazzling, dizziness, and even unconsciousness. Both had large livers, in one instance apparently due only to congestion of the organ, but in the other manifestly associated with organic disease. Cardiac examinations showed clear heart sounds, a strong apex beat, and slight irregularities of rhythm. Blood pressure estimations with the Pachon instrument showed a systolic pressure of 190 mm. and a diastolic of only sixty in the one case, and a systolic of 150 and diastolic of fifty in the other. Upon examination in bed on awakening, the beats were found regular but weak and infrequent. In one case the rate was but fifty and no apex beat was noticeable. These aviators had both lost weight and become subject to gastrointestinal disturbances. Whether the enlarged liver is the cause or the effect of the low arterial tension in such cases—in the absence of all valvular disease—is not clear. Nervous fatigue may also be a cause of low pressure. That high altitudes may induce unconsciousness through additional diminution of blood pressure in subjects already suffering from low tension, due to cardiovascular disease is well known. The aviator with initially low pressure is likewise threatened with syncope when the pressure drops too rapidly, and this possibly accounts for the sudden falls to death of numerous aviators. The blood pressure of all aviators should be tested periodically, with special examination of those who report nervous disturbances, dyspnea while in flight, or who have hepatic trouble. An aviator with a diastolic pressure of sixty or below should be considered temporarily disqualified for the work. A thermal course of treatment at Royat was found to relieve such subjects rapidly.

**Differential Diagnosis between Functional and Organic Paraplegia.**—R. T. Williamson (*British Medical Journal*, September 14, 1918) emphasizes the need of early differentiation between the functional and organic paraplegias and the great advantages of early diagnosis of organic lesions from the standpoint of treatment. He says that certain reflexes are of the greatest value in these respects, especially the Babinski or Oppenheim reflex and the loss of the Achilles reflex because these evidences may be detected before other changes have occurred. The main difficulty arises when the knee jerks are not lost and when ankle clonus, rectus clonus and clasp knife rigidity are absent. The presence of the Babinski or Oppenheim reflex in such cases is diagnostic of organic disease, while in the absence of the Babinski type of reflex the loss of the tendo Achilles reflex is diagnostic of organic disease. The three indications of greatest help in especially difficult cases are the presence of the Babinski type of reflex, the loss of the Achilles reflex, and the loss of the vibrating sensation with the preservation of other forms of sensation. The following combinations are of diagnostic importance: Paresis with loss of the Achilles reflex, as in early anterior poliomyelitis; paresis with loss of the plantar reflex and

of the Achilles reflex, in many organic diseases; paresis with double sciatica and loss of the Achilles reflex, as in early cauda equina lesions; paresis with loss of the Achilles reflex, loss of the vibrating sensation, and pains in the legs, as in early peripheral neuritis; very slight paresis and incoordination with loss of the vibrating sensation, with or without a Babinski, as in early posterolateral degeneration of the cord; paresis with the Babinski reflex, as in many organic lesions; paresis with loss of both Babinski and vibrating sense, as in several organic cord lesions; root pains or symptoms, followed after weeks or months by paresis, as in spinal meningeal tumor.

**Suppuration of Goitrous Thyroid Following Administration of Thyroid Extract.**—Edward A. Tracy (*Endocrinology*, April-June, 1918) describes a case which illustrates the care with which thyroid extract must be given. The patient was a widow, aged fifty-one years, was sleepy in the daytime and melancholic, probably owing to the fact that her son was in prison. She had a moderate sized goitre. One half grain of desiccated thyroid after each meal was prescribed. After a week of treatment the right lobe of the thyroid became painful, and the treatment was discontinued. After two weeks the painful lobe reddened, and later broke. After three days the patient, prescribing for herself, applied a bread and water poultice. The appearance of the sloughing lobe of the thyroid was alarming, so that a sulphonal poultice was applied every three hours. After a few days the dead thyroid tissue was snipped off, and antiseptic treatment continued until healing occurred four months later. In passing, it may be remarked that the mental symptoms cleared up quickly after the administration of the desiccated thyroid. In goitre with myxedematous symptoms Tracy recommends an initial dose of one half grain of desiccated thyroid daily, with careful attention to the least sign of trouble, such as pain in the thyroid, when medication should be stopped. The dose may have been sufficient to awaken the tissue to renewed activity, but if not, treatment with the same careful watching should be begun again.

**Complement Fixation in Tuberculosis.**—V. H. Moon (*Journal A. M. A.*, October 5, 1918) reviews at length the literature upon the subject of complement fixation as a diagnostic method in tuberculosis, and concludes that this should be regarded as an established technic which is well past the experimental stage. The value of the test is greatest in the diagnosis of very early tuberculosis where a positive complement fixation should be regarded as a valuable point in reaching a definite conclusion. The test should be regarded in precisely the same light as the Wassermann test, that is, not as one which alone is diagnostic, but as evidence to be considered together with other findings. Of the various antigens employed by different workers that prepared from a number of strains of tubercle bacilli by the method of Miller is the best and gives the most satisfactory results. In every case the test should be accompanied by a Wassermann test, since false positive reactions to the tubercle antigen are frequent in Wassermann positive serums.



**Susceptibility of the Antiscorbutic Principle to Alkalinity.**—A. Harden and S. S. Zilva (*Lancet*, September 7, 1918) have found, by careful experiments on animals, that the treatment of orange juice with sodium hydroxide, so as to render it as little as one twentieth to one fiftieth normal alkaline, wholly or very largely destroys the antiscorbutic principle. Most antiscorbutic vegetables are neutral or very slightly acid in reaction and any manipulation in cooking which includes alkaline treatment to even a very slight degree will be likely to destroy or very greatly reduce their antiscorbutic properties. This fact assumes special importance at the present time when fresh fruits are difficult to procure.

**Vascular Changes Produced by Adrenalin in Vertebrates.**—Frank A. Hartmann, Leslie G. Kilborn, and Ross S. Lang (*Endocrinology*, April-June, 1918) in order to determine whether the dilator action of adrenalin was confined to carnivorous animals, studied its action on the following species: snapping turtle, fowl, opossum, horse, goat, cats and dogs, ferret, raccoon, rats, rabbits and monkeys. This extensive study led them to conclude that the usual vasomotor reaction in skeletal muscle was dilatation with moderate doses of adrenalin, except in the case of rodents; and because of the uniform occurrence in other mammalian orders, as well as the presence in the monkey, it was believed that these mechanisms were also present in man.

**Vitiligo.**—A. W. Harrington (*Glasgow Medical Journal*, August, 1918) reports four cases of this disease seen during seventeen months' service in Macedonia. Three cases occurred in Serbian soldiers and the fourth in a Bulgarian prisoner. One patient was aged thirty-three years and another forty-nine when the condition appeared, while in the remaining two it had begun at the ages of eleven and twenty-four years respectively. In textbooks it is said rarely to attack those over thirty years. In three cases the condition made its first appearance after a severe illness. In all, it began as small round or oval white spots, which gradually enlarged and coalesced until extensive areas were affected. In no case was there loss of hair pigment.

**Septicemia of Buccodental Origin.**—Dufourmentel and Frison (*Presse médicale*, August 8, 1918) report having met, in the French Army, with what appeared to be almost an epidemic of infectious processes starting in teeth. Practically all were merely local, ranging from simple periostitis to extensive gangrenous and phlegmonous conditions. Phlegmons themselves at times passed into gangrene, and where they developed in the floor of the mouth suggested Ludwig's angina, interfered with respiration, and led to widespread cervical infiltration. In three cases a general septicemia supervened and the patients succumbed. In the first the condition was associated with hyper-toxic cellulitis of the neck; in the second, with phlebitis of the craniofacial venous system; while in the third there was no definite pathological accompaniment, the autopsy revealing nothing other than marked enlargement of the spleen and kidneys. No effectual treatment for these septicemic cases is known, and a fatal termination may be said to be one of their characteristic features. A relationship

appears to exist between the severe forms of local buccodental infection and the septicemias with venous involvement or devoid of pathological changes; these cases develop progressively and secondarily. The lymphophlegmonous form, on the other hand, causes death, not in a week to a month, but within twenty-four to forty-eight hours, and appears to be a violent intoxication, a septicotoxemia, rather than a septicemia. The mind remains clear, but the pulse becomes small, compressible and irregular, and dyspnea due to direct bulbar intoxication is a feature. Inoculation of a guinea pig from the author's case caused death with widespread edema in twenty-six hours. Whether Ludwig's angina is a definite nosologic entity remains a question. Sebileau looks upon it simply as a particular form of buccal sepsis.

**Nevi Appearing in Adults.**—H. Gougerot (*Paris médical*, August 31, 1918) protests against the prevailing belief that nevi are always congenital or appear in the first few months of life. He reports a number of cases in which the typical "birth-mark" lesions develop only in adult life, and points out that the definition of nevi should include those cases which appear in adults, providing the lesions which develop at this time are identical with those of congenital origin. Some persons appear to be born with a nevic tendency, i. e., with potential nevi. These may not show themselves, in the absence of an exciting factor, but make their appearance if some influence arises which will bring to life the nevic predisposition and induce a localization of the nevi. Thus, in one case a wound of the hip caused a capillary angioma to develop on the injured extremity. In a second, exposure of the arm to cold was followed by the appearance of an extensive venous and capillary nevus. In a third, freezing of the left foot was followed after over three years by the occurrence of a dozen confluent angiomatous nevi on the dorsum of the foot and just above it, and of additional nevi higher up on the same limb.

**Origin of Daughter Hydatid Cysts.**—F. Dévé (*Presse médicale*, August 8, 1918) asserts that in man the presence of a multivesicular hydatid cyst means that the original cyst has been subjected to some unfavorable influence, e.g., senescence of the membrane surrounding the mother cyst, spontaneous or purposive evacuation of the cyst fluid, infection of the perivesicular or endocystic space, or in the case of cysts of the liver, the oozing of bile into the perivesicular space. The last two causes act mainly by impairing the vitality of the wall of the mother cyst. From the general standpoint, the echinococcal vesicle constitutes the mode of defense of the parasite, reacting against some unfavorable influence which threatens its vitality. Clinically such threats to the existence of the parasite are, in a measure, avoidable. From both the medical and surgical standpoints it is highly advantageous to adopt preventive measures. No hydatid cyst should ever be tapped. All hydatid cysts should be treated by operation as soon as their existence is recognized. Clinicians should make it a point to diagnose hydatid cysts early. This applies to adolescents and children as well as adults, for the majority of hydatid cysts met with in adults date back to early life.

# Proceedings of National and Local Societies

## PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Meeting Held Wednesday, October 9, 1918.*

The President, MAJOR FRANK C. HAMMOND, M. C.,  
U. S. Army, in the Chair.

### SYMPOSIUM ON THE PRESENT EPIDEMIC OF INFLUENZA AND ITS COMPLICATIONS.

**Influenza in Naval Hospitals.**—Dr. JUDSON DALAND, Lieutenant Commander, U. S. N., called attention to the fact that in this epidemic the cases observed have been in men from eighteen to twenty-six years of age, the men being selected because of their physique. It should be remembered that the organism of infection may float in the air for many hours, and that it enters the human body more particularly by way of the respiratory tract. The period of incubation, apparently, is very brief—from twelve hours to two days. The onset is variable; there may be slight coryza, dry cough, pains in the head, back, and limbs, with slight fever. Representing the other end of the cycle were two big husky men, in the pink of condition, at work on board a ship who, when admitted to the hospital within twenty-four hours, were so prostrated that they could not sit up. Doctor Daland found that the mild type is often accompanied with bursts of perspiration; there is profound weakness with fever lasting perhaps only twenty-four hours. There is marked circulatory depression, and such a patient may remain weak for several days, though fever and symptoms are transitory. The second type have more marked headache and backache, with general soreness of the entire body. There is dry cough for two or three or more days and the eyes are markedly brilliant. The majority do not sneeze. The perspirations present in the ordinary cases seem to be beneficial; in this type also the fever tends to be remittent. The pulse rate in both mild and severe types is disproportionately low with the fever. The respiratory rate is not much altered. The mild type presents a varying amount of râles of the bronchitic character, and later moist râles. It is a striking fact that in a large number of cases nothing is heard in the lungs; at one or both bases there is silence. The explanation of this nonfunctioning lower lobe is probably due to the fact that the act of respiration is greatly interfered with on account of the toxemia. Whenever, in a large proportion of cases, a silent lower lobe, with or without impairment of percussion resonance, is found, unmistakable evidence of lobar pneumonia will be apparent on the second or third day. During an epidemic no physician should put his head to the chest of a patient, but should use the double stethoscope, and if, during the examination, the patient is asked to cough to bring out the auscultatory sounds, the physician should be shielded from the direct infection he is liable to incur. The stupor attending the severe form resembles the typhoid state. The men of extraordinary physique have shown no more ability to combat the disease than the less physically

strong. The remarkable change in color—the blueness usually seen in these severe cases—is more marked about the tips of the nose and ears. The pulse shows extraordinary weakness. This is no doubt due to the toxemia which seems to affect more especially the vasomotor and cardiac apparatus through the nerves or muscle fibre. Thin, salmon tinted sputum is looked upon as an unfavorable omen. The usual signs guiding us in ordinary times do not guide us in times of epidemic; vast changes may occur in from six to eight hours in the pulmonary or cardiovascular system. The complicating pneumonia in the influenza makes one think of a primary infection and secondary invasion by one of the types of the pneumococcus. The pneumococcus seems to belong largely to Type III or Type IV; occasionally we find Type I. In an extraordinarily large number herpes febrilis and epistaxis have been noted; a certain number complicated by jaundice in which the sputum has sometimes been canary color. In these more than half have succumbed. Doctor Daland was inclined to look upon the pneumonia as a part of the picture of the influenza rather than as a complication.

In prophylaxis the following were important considerations: 1, avoid crowds; 2, any one who coughs should be avoided; 3, nurses and physicians should invariably wear masks; 4, the patient and the articles in the room should be touched as little as is possible; 5, the physician's stay in the sick room should be as short as possible. Doctor Daland had seen severe toxemias of malaria, of typhoid, and of typhus, but had never seen more grave examples of intense toxemia than in this epidemic. The mild forms will recover if kept absolutely at rest in bed and given nourishing food. In the severe forms with loss of appetite beneficial results have been obtained from the use of the Murphy drip—three pints in twelve hours. It seems probable that the nausea is of toxic origin, and we have met it by the use of water, thus giving the body opportunity to eliminate the toxins by sweats, the urine, and by the bowels.

**Bacteriology of the Present Epidemic.**—Dr. RANDLE C. ROSENBERGER said that in an epidemic like the present two questions present themselves—the questions of the cause and of duration. During the last three or four years the weather has been uncertain regarding sunlight, one of the best of our natural disinfectants. It has been proven by experiment that persons who are ill have shown peripheral leucocytosis with increase in lymphocytes in about an hour's exposure to sunlight. In our bacteriological studies of this epidemic we have failed to demonstrate influenza bacilli. We have found what we thought was the influenza bacillus, but we cannot be certain that it is without having a culture to substantiate our findings. The organism most frequently found is the pneumococcus. We have not yet had time to type it. The next in frequency is the *Micrococcus catarrhalis*. Streptococci and staphylococci are also present. The cough and the



sneeze are the chief mediums of dissemination. The mouthing of toys and the passing of food from one child to another offer a favorable medium also. Investigation of restaurants and cafés shows that drinking glasses are not sterilized. Individual drinking cups should be instituted. The smoking car is another means of dissemination of the disease. It should be called a "spitting car." The great amount of sputum on the floors of these cars is a severe indictment. From the constant grinding, by being walked over, the sputum becomes dust which is inhaled. In the protection of the nurse against infection the secretions should be handled with the utmost care; the same is true of the undertakers' assistants. In the fatal cases there is a marked edema of the lungs, and fluid is discharged. Doctor Rosenberger strongly advises the use of the mask, though he has little faith in the efficacy of vaccines except, perhaps, in perfectly healthy persons without abnormal symptoms.

Dr. HENRY BEATES, JR., said that reference has been made to the failure of the lungs to functionate; the air vessels become filled with serum and the patients actually drown in their own fluids. The same is seen in the gastrointestinal type. In this type the pain is almost as acute as in acute pancreatitis. The bowels refuse to move, and volvulus is suggested, but the physical signs of obstruction are absent. In the cerebral type there is sudden intense pyrexia with maniacal delirium, the patient needing to be restrained and passing into a state of coma. A patient recently seen had a temperature of  $107^{\circ}$  after the development of what Doctor Beates regarded as acute cerebritis, because the symptomatology of meningitis was wanting. Another form seen raises the question of anterior poliomyelitis. In one case, an adult, weighing two hundred pounds, awoke in the night with paralysis of the extensors of the head, of the spinal column, legs, and arms. In a few days the patient recovered except for some weakness of the muscles of the leg. Four cases showing such paralysis were seen within a few hundred yards of each other. In one case of a child there was complete loss of power of the legs, which disappeared on the fourth day. It seems as though there is nothing to which this could be attributed except the toxemia of this so-called influenza. In the cases of coalescing lobar pneumonia fair success was obtained in what would be considered enormous doses of quinine combined with caffeine, camphor, and digitalis. Feeding is very important, and predigested food was given, by rectum when necessary.

LIEUTENANT A. E. CASE, Naval Hospital, Philadelphia, regretted that he could discuss the subject from the laboratory standpoint only, and felt that this had been rather unsatisfactory. While the disease behaves like the epidemic form of influenza the conservative opinion is the better one to assume from the bacteriological point of view since, in this connection, the subject is by no means settled. In 225 urinalyses, 150 showed albumen; in eighty-three cases casts were found, indicating a very distinct kidney irritation. A great many of the cases are associated with marked kidney irritation, if not distinct nephritis. The blood cultures in twenty-six

cases were negative except in one pneumonia case in which Type IV pneumococcus was isolated. Failure to isolate the influenza bacillus does not mean that it is not present. The matter of the value of vaccine as a prophylactic is still experimental, and before being accepted all data should be subjected to critical examination.

Dr. FRANCIS J. DEVER said that the peculiar temperature curve of this epidemic should be noted. For the first twenty-four to thirty-six hours it is usually febrile; there is then sometimes a very sharp drop which may last for a day and a half. If the patient is kept in bed, at the end of thirty-six hours, there is usually no fever, but later there will be a rise of temperature. It was noted that in the patients admitted with temperature of  $105^{\circ}$  and a respiratory rate of twenty with the low pulse rate, recovery would often ensue. It was most astonishing to see these men come in with faces flushed, and conjunctiva, red; dropping down in the first place they could find, and going off to sleep as soon as they were put to bed; in forty-eight hours they were in a much better condition. On the other hand the patient admitted with a temperature of  $101^{\circ}$ , and not appearing to be very sick, with respirations of twenty-five and over, needed most careful watching. In a considerable proportion of such cases lobar pneumonia developed, the mortality of which is extremely high regardless of any management. Doctor Dever felt that the importance of wearing the mask should be placarded all through the city.

Dr. JUDSON DALAND read a message from Captain Pickrell, U. S. Navy, which stated that in the Fourth Naval District there were 15,000 men; that of these, 3,305 have had influenza—twenty-two per cent.; of these 3,305 cases fifteen per cent. had pneumonia; and of these cases of pneumonia thirty-one per cent. died, the average mortality being 5 per cent.

*Meeting Held Wednesday, October 23, 1918.*

The President, MAJOR FRANK C. HAMMOND, M. C.,  
U. S. Army, in the Chair.

#### SYMPOSIUM ON THE FURTHER STUDY OF EPIDEMIC INFLUENZA.

**Value of Active Immunization with Vaccine Virus against Influenza.**—Dr. JOHN H. KOLMER considered that sufficient time had not elapsed to permit of definite conclusions regarding the value of vaccines in the prevention and treatment of epidemic influenza, and wished his remarks to be interpreted purely as preliminary statements. By most bacteriologists the disease is regarded as due to the influenza bacillus. In our own work he felt that we were experiencing considerable difficulty in isolating this bacillus. The streptococcus, according to our observations, seems to predominate in our findings. The vaccine which we have prepared contains not only the influenza bacillus, but likewise the pneumococci, particularly Types II and IV, which we have found to predominate in the sputum and in the pulmonary lesions, also many strains of streptococci and of *Micrococcus catarrhalis*. At the present time there are certain serological inves-

tigations under way to determine the more exact relationship of these organisms to the disease, and in a preliminary way, Doctor Kolmer felt that such evidence is at hand indicating that the streptococcus and *Micrococcus catarrhalis* are also concerned in the pathology of the infection, possibly not as primary agents, but as secondary factors of considerable importance. That we might not reduce the resistance small doses of the vaccine had been given at intervals of three days until three injections were given. A distinction should be made as to the practical value of commercial stock vaccine and that prepared of organisms from the present epidemic. Several thousand doses of the vaccine we have prepared have been distributed in this city. It would seem that the administration of the vaccine at intervals of three days does protect a certain number of persons against influenza, but it does not confer absolute immunity. Reports, by direct correspondence from Boston, Rochester, and other cities are of a similar nature. We may, therefore, tentatively assert that the vaccine is worthy of trial, particularly in institutions and hospitals where a large number of people necessarily congregate. In the treatment of the disease with the bacterial vaccine we must be even more conservative. The majority of clinicians who have used our vaccine are of the opinion that it has cut short the febrile period and mitigated the symptoms. Doctor Kolmer, however, was not prepared to make any definite statement, though he believed that the vaccine was well worthy of trial in the prevention of disease, that it might even prove of distinct benefit in treatment, provided it was given early and in small doses. He considered that the dose bore an important relation to the results.

#### Physical Findings in Pneumonia Complicating Epidemic Influenza.—Dr. M. HOWARD FUSSELL

added a few points in regard to the clinical picture. In his experience he found that the simple case of influenza began with cough, pain in the legs and back, depression, temperature of from 98° to 103° for a day or two dropping back to normal, again rising and again dropping. In a case in which the temperature, after having been normal for three or four days, rises to 103° and 104° and remains at that point for two or three days lung involvement might be expected. In his experience in hospital and private work he has been impressed with the fact that one of the greatest factors in bringing about severe cases of pneumonia is that the patient with influenza has been well for two or three days, has gone about, and then develops pneumonia. This has been borne out in the experience of the nurses in two hospitals. In one hospital eighteen out of twenty-four nurses have been sick with influenza; two or three of these developed pneumonia and all recovered. In another hospital sixty-five nurses had influenza, three had pneumonia, and all recovered. This was not because of any specific treatment, but due to the fact that the instructress of nurses was told that the moment they developed the first symptom they should be put to bed and kept there until the attack was entirely over.

In the pneumonia, dullness over the affected area is heard first; coincident with this there is crepitation;

in a day or two moist large râles are found; later, when the patient is almost well, blowing breathing is heard, and, instead of ending in a few days, the whole chest becomes involved. The other cases of pneumonia begin suddenly like lobar pneumonia; the patient soon becomes cyanosed; the pulse is not very rapid until the very end; the tremor and cyanosis indicate an overwhelming toxemia, and the patient succumbs in spite of any treatment. Doctor Fussell felt that all efforts had been of no avail, the cases resulting fatally. The length of time that the physical signs last is a curious factor. In one instance the patient had had no fever for ten days, but the physical signs in the chest were about as bad as when the temperature went to normal. The blood in the sputum lasts a long while; the patient may be apparently well and yet spit about as much blood as in the beginning. The meneses are apt to appear at an unusual time. Nosebleed is common. In the majority of cases the mentality is clear although the infection is so terrific and is going to end seriously in a few hours. Only two persons over fifty in Doctor Fussell's experience have had the disease; only four have had empyema; there have been three or four cases of parotiditis. These suppurate and may rupture, causing death by sepsis. The patients he had seen recovered by the ordinary surgical methods. The mortality of the disease, of course, is very high; in 320 cases there were ninety deaths. This does not mean death by pneumonia, for many patients died within twenty-four hours. There were only four recoveries among pregnant women.

#### Acute Appendicitis Complicating Influenza.—

Dr. MOSES BEHREND said that the recent epidemic of influenza, often accompanied with its lethal complication, pneumonia, had furnished many occasions for the differential diagnosis of a chest, or an abdominal condition. When this differentiation cannot be made it is advisable to operate with the aid of nitrous oxide gas and oxygen anesthesia. In the event of a mistake the course of pneumonia, in his experience, has not been altered, all the cases ending in resolution. Close inspection without the aid of physical signs will often make the diagnosis. The one sign which, more than any other, differentiates pneumonia from appendicitis is rapid breathing with playing of the alæ of the nose. This is absent in acute appendicitis. It has been a constant observation that cases of appendicitis increased in number after epidemics of influenza. Lechtenstern believes the condition a typhlitis rather than true appendicitis, that exceptional cases of true appendicitis may occur, and that coincident appendicitis simply accompanies an attack of influenza. In only one of the eight cases observed by Doctor Behrend was there history of several attacks of appendicitis, nor can he subscribe to the theory of typhlitis. Such cases were primarily appendicitis.

#### The Nasal Complications of the Nasopharynx and Their Treatment.—Dr. G. W. MACKENZIE

presented his observations on this phase of the epidemic. He considered that practically all our knowledge of the anatomy and pathology of sinus disease dates from the works of Zuckerkandl and Hajek some years after the last world epidemic of



influenza (1889-1890). The contradictory reports of R. W. Allen, C. H. Benham, Will Walter, as well as his own, upon the bacteriology of the disease demonstrated the present day lack of knowledge of the subject.

Septal deflection is one of the most important predisposing causes of sinus disease. To guard against the intranasal complications of epidemic influenza, treatment should be directed to the systemic condition to secure a complete recovery. There should be avoidance of local applications to the nose and throat, for the reason that there is no antiseptic sufficiently strong to destroy a virulent strain of the *Bacillus influenzae* which will not injure the mucous membrane. One should breathe through the nose and not through the mouth, and by this is meant breathing through both sides simultaneously. The use of alcohol should be avoided. In influenza patients who died promptly from cerebral complications, suppuration of one or more of the sinuses has probably been an important factor. From the rhinologist's viewpoint an acute sinus disease is treated conservatively by drainage. Results thus far observed in the treatment of obstinate suppurations have been better from surgery alone than from vaccines alone. The subject of the diagnosis and treatment of accessory sinus disease is important technically. The science is a rather new one, our knowledge of which, while considerable, is but fragmentary compared with that which is promised.

**Mortality in Influenza in Pregnant Women.**—Dr. RICHARD C. NORRIS stated that the extraordinarily high mortality of influenza in pregnant women is undoubtedly due to the fact that these women are overwhelmed with toxemia while their resistance is reduced by the process of pregnancy. The arrangement of the Preston Retreat has made it peculiarly free from epidemic influences. There had been relatively few cases and these were isolated at once, having abundant room for them. The cases were at once put in charge of a special nurse and contact was prevented with the rest of the house, the food supply being taken to each patient's room. There had been no deaths. One woman brought in by the ambulance from another hospital where there was no room had a pulse of 138-140, and was cyanotic. She got well and did not miscarry. Whether she had pneumonia or not was not ascertained. Her temperature was 104°; respirations thirty-two; pulse 138. Not a sign of pneumonic change had been detected. Doctor Norris questioned whether the respiratory rate was a better guide to the diagnosis of pneumonia than the rise of temperature. At the Methodist Hospital the story was entirely different. Within a week there were ten women brought into the institution with pneumonia, and of these, nine died. Out of that entire group there were but three living children. In private practice, he had seen five influenza cases unaccompanied by pneumonia. All had recovered; three have had living children. In consultation work he had seen many cases stricken with influenza and pneumonia, in which he had been asked to advise concerning induction of labor. Doctor Norris concluded that if a woman carrying a load of either influenza or pneumonia had added to her carrying capacity the extra load of falling into labor

she was very greatly handicapped and had better be left absolutely alone. In two earlier instances in which the cases were borderline cases labor had been induced and the patients died. Since that time he had declined to induce labor, and found that wherever he had heard of it being done it had not lessened mortality. However, in three cases with no signs of pneumonia he had thought it necessary to induce labor in two because of the added toxemia of pregnancy. In that type of case it appeared to be the duty of the obstetrician to act for the advantage of the patient. These women have recovered. In multiparae, some of which were exposed to the most virulent type of influenza and others showing slight fever, pregnancy had been terminated and all made good convalescences and the children have all lived. This, however, was not justifiable in primiparae.

**Symptoms and Complications of Influenza.**—Lieutenant Russell S. Boles, M. C., U. S. Army, said that in cases observed by him the most noticeable feature was the marked drowsiness with the men falling into deep slumber. The onset of the infection was sudden, the incubation period being apparently from twelve to forty-eight hours. There was a lack of coryza and sneezing; a very harassing cough, however, was observed. The epistaxis present may have been due to the congestion with coughing. Fever of 101°-105° was nearly always present. There was severe lumbar backache, attributed to the intense degree of nephritis which had developed. A peculiar cyanosis like that from acetanilid was noted. The abdominal pain confused the condition with appendicitis. These symptoms were all distinctly ameliorated, especially the cyanosis, as the disease progressed. In the 525 cases of influenza there were 168 cases of pneumonia, with forty-eight deaths. In five cases there was severe relapse after sending the boys back to the training camp. In these apparently early recoveries emphasis should be placed on the importance of carefully guarding them after they are thought to be well. The complication of nephritis was sometimes very severe. Otitis media was present in some ten or fifteen cases; four suppurated. There were many so called mastoiditis cases but none went on to suppuration. The gastrointestinal complications when severe were regarded as unfavorably influencing the prognosis. Pleurisy and empyema were relatively uncommon. It was felt that immunization with the vaccine, while not an absolutely sure preventive, had some value.

**Treatment in Influenza.**—Dr. THOMAS C. ELY stated that in the recent epidemic he had treated influenza patients by first cleansing the intestinal tract with calomel and a saline purge, followed immediately by the active administration of the alkalies, sodium bicarbonate, potassium citrate and lime water. Granted that the organisms enter through the nose and mouth they are quickly transferred to the alimentary tract. At the outset and throughout the attack he had given every patient the three well known alkalies which combat acidosis—bicarbonate of soda, citrate of potash, and the calcium salts in the form of lime water. To every patient is administered a teaspoonful of bicarbonate of soda to a pint of lukewarm water every four

hours by enema. In routine treatment the following simple prescription, to spare the overworked druggists, was given:

Sodii bicarb., .....<sup>3ss</sup>;  
Aq. menth. pip., .....<sup>3iv</sup>.  
Sig.: One teaspoonful every two hours.

The following was alternated with this:

Potass. citr., .....<sup>3ss</sup>;  
Aq. menth. pip., .....<sup>3iv</sup>.  
Sig.: One teaspoonful every two hours.

The calcium salts were given in the form of lime water, one third, and milk two thirds. Some patients with fulminant attacks of vomiting and terrific headaches could not tolerate the potash salts; and to such were given only the sodium bicarbonate mixture every hour, and the soda enemas, as above. Even in severe cases the soda will relieve the early pains in twenty-four to forty-eight hours. Neither aspirin, coal tar series, heart depressants, serums, or vaccines were prescribed. The common heart and respiratory stimulants were employed. Doctor Ely does not think that all these patients, so desperately ill, could have recovered in so fatal an epidemic without the basic treatment by the alkalies on the acidosis theory. When well tolerated quinine, four grains, were given morning and evening, quinine was recommended quite universally, in connection with the soda salts as a preventive. The following was in the form of a tablet also given every four hours during convalescence, and even earlier:

Strychnine, .....<sup>gr. 1/40</sup>;  
Quin. bisulph., .....<sup>gr. ij</sup>;  
Takadiastase, .....<sup>gr. i</sup>.

It is Doctor Ely's belief that early sweating by hot drinks and the giving of water only during the first twenty-four hours are beneficial procedures.

Dr. S. SOLIS-COHEN stated that he was convinced that the use of mixed bacterins is highly scientific, useful, advisable, and necessary. They prevent the incidence of influenza and pneumonia; when they fail to prevent the incidence they render the attack much less severe and give greater promise of favorable issue. The mixed bacterins seem to give some protection against the streptococcus, the most deadly of all the bacteria concerned. We have drugs that will protect against the pneumonia bacillus, but none that will protect against the streptococcus. He would hesitate to give them in the presence of influenza and streptococcal toxemia at a late stage but when they can be given early he stood firmly upon their efficacy as upon the use of mercury in syphilis or of quinine in malaria. Regarding the question, why so many pregnant women die, Doctor Solis-Cohen agreed with Doctor Ely that early alkalization of the blood was an imperative duty.

Dr. WILLIAM EGBERT ROBERTSON said that he had been impressed with the small number of colored people who have been affected in this epidemic, and thinks it is the general experience that this race has been rather exempt. His results in the early intravenous administration of bacterins, particularly the sensitized bacterins, in the present epidemic, have been little short of brilliant. He was surprised to find that food had been withheld from patients with temperature, for he felt that if a patient was well fed his opportunities for recovery were enhanced.

## AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Thirty-first Annual Meeting, Held in Detroit, Michigan, September 16, 17, and 18, 1918.*

The President, Dr. ALBERT GOLDSPOHN, of Chicago, in the Chair.

**The Benefits of Stab Wound Drainage in Pelvic Infections.**—D. H. WELLINGTON YATES, of Detroit, drew the following conclusions: 1. It should be our constant endeavor to close without drainage in so far as safety would permit. 2. Drainage materials should be removed earlier than the general practice now obtaining. 3. The great majority of all infected areas in the pelvis were suitable for culdesac or stab wound drainage. 4. The abdominal incision should be left free to close by primary union. 5. Stab wounds were securely and quickly united after the drainage was withdrawn, with no fear of subsequent hernia. 6. The musculature of the areas usually chosen for stab wound drainage was our greatest asset to a speedy closure of the drainage opening.

Dr. GORDON K. DICKINSON, of Jersey City, N. J., stated that drainage was a misnomer. We did not speak accurately. He did not think that gauze acted as a drain when it was stuck in a wound. It was a local irritant and because of that property it walled off to a certain extent the local processes and made things fairly safe. We did have wonderful drainage in the abdomen, however. Some ten years ago he made what he thought was the first research study of the literature and of his own work regarding the value of the omentum in abdominal drainage, and he came to the conclusion then that the omentum, properly applied, would drain more in ten minutes than any gauze would take out in a day.

Dr. J. HENRY CARSTENS, of Detroit, said that the late Dr. Joseph Price was a firm advocate of drainage. Some fifteen years ago the association held a meeting in Pittsburgh, and he and a number of others performed operations at the hospitals there. He had the worst kind of a case to deal with, with extensive adhesions and pus. Doctor Price was there and talked about drainage, and the speaker said we could get along without drainage in many instances. He operated in this case, cleaned out the abdomen thoroughly without washing it, and closed the incision without drainage. Other men who at that time operated upon patients and drained lost their patients, but luckily for the speaker his patient recovered. Since then he had resorted to drainage very little.

Dr. JOHN W. KEEFE, of Providence, R. I., said that drainage was a subject that we all had to contend with from time to time. Hard rubber drainage tubes in the abdomen were largely discarded today. Recently a report from a certain cantonment came to Washington, of a case of appendicitis with a fecal fistula, and the officer to whom this report was sent wrote to the cantonment to know why the patient had a fecal fistula. When it was found that the patient had been drained with a drainage tube, word was sent back that that officer would be court martialled for placing a rubber drainage tube in the belly following an operation for



appendicitis. Most surgeons felt that a hard rubber drainage tube should not be put next to the intestine. There was no question but what an incision into Douglas's pouch for drainage was a desirable thing in a few cases. In looking back over the literature of gynecology one could see how many patients died from placing drainage tubes in the pelvis, and nurses withdrawing the serum that formed every half hour, or sometimes every three hours. As soon as surgeons began to close the belly and not interfere with nature these patients recovered.

Dr. CHARLES L. BONIFIELD, of Cincinnati, stated that just as soon as surgeons began to keep drainage tubes out of the abdomen abdominal surgery progressed and better results were obtained. While this was partly true, it was not the whole truth. One reason why surgeons secured better results now was because they were improving in their technic and drainage became less necessary.

Dr. HUGO O. PANZER, of Indianapolis, Ind., concurred heartily in what Doctor Bonifield had said. However, there were cases in which we could not get along without some form of drainage. There were cases in which there was an accumulation of pus indicating that the peritoneum was unable to cope with it at that time, and hence some form of drainage was necessary.

Doctor YATES, in closing, stated that drainage had been made use of altogether too often in the past, and drainage tubes should be used in the future much less frequently than they had been heretofore. However, there were certain instances in which it was essential to drain, and in still others it seemed best to drain from above. He suggested that the primary incision should be left to itself and to heal without discomfort.

**Pathological Conditions of the Pelvic Viscera, the Result of Induced Abortions Causing Sterilization, Disclosed by Abdominal Section.**—Dr. FRANCIS REDER, of St. Louis, Missouri, stated that this paper was prompted by eight cases of sterilization, the result of induced abortions. All the women were married, in good health and none over thirty-five years of age. In each instance the abortion was induced soon after the first period had been missed, usually the second or third week. It was of interest to note the number of abortions induced in these women.

Three women were relieved five times in two years.

Two women were relieved six times in two and one half years.

One woman was relieved nine times in three years.

One woman was relieved eleven times in three years.

One woman was relieved fourteen times in five years.

In later years when these women desired to have children they found themselves sterile. They cheerfully submitted to treatments which buoyed them with hopes from month to month, only to find that at the end of their course of treatment they were just as sterile as they were before they consulted the gynecologist. The treatment was generally of a routine nature and consisted of dilatations, curettements, the introduction of intrauterine wire pessaries, tampons, and the so called uterine tonics. Most of these patients were under treatment for many months. It must be said in due justice to such treatments that they were often successful in reliev-

ing certain forms of sterilization, especially when a chronic endometritis or a retroflexion was the active agent responsible for the sterile state. However, when a patient had been under the care of a conscientious gynecologist for two or three years, and the desired result had not been achieved, a continuance of these measures was hardly warranted. It must then be inferred that other conditions were responsible for the sterility, and their presence, if possible, should be determined. In the eight cases cited the true lesion was not diagnosed before operation. For this the reasons seemed cogent.

The physical examination in cases of this character revealed nothing definite relative to an intrapelvic condition which might be present. It was true a retroflexed uterus could be readily made out; a prolapsed ovary, always painful to the touch, could be recognized; a small ovarian cyst might be palpated, and a chronically diseased appendix diagnosed, but as to the condition of the tubes, the character of the lesion usually remained in doubt. There was only one diagnostic way by which the truenature of the intrapelvic condition could be disclosed, and that was by abdominal section. It was not often that a woman who had become sterilized through induced abortions was desirous of having her condition cleared up in this manner; however, there were some women, anxious to have children, who were prone to accept any advice which they believed would be to their advantage. During the last six years Doctor Reder said that he had operated upon eight women in the hope of relieving their sterility. The operation, an exploratory abdominal section, was in each case performed after these women had been subjected to therapeutic and minor gynecological measures for a time which seemed sufficiently long to give convincing evidence that without any further intervention the sterile state bade fair to remain permanent. It could be assumed from a limited experience that no woman sterilized through the induction of abortions should be subjected to a major operation unless her condition had for at least two years received careful study with the application of such minor gynecological measures as were indicated.

Summing up the operative findings in these cases it was revealed that in all, except one, the ostium abdominale of both tubes was closed. This was the positive factor in rendering the women sterile. In five of the cases there was a bilateral hydrosalpinx; in two there was a unilateral hydrosalpinx. The opposite tube in those cases was collapsed and presented a sacculated appearance, the lumen giving evidence of a number of strictures. In one case no hydrops of the oviducts was present; they were sacculated, however, and the uterine ends were stenosed. In each case the tubes were dislocated into Douglas's pouch and usually bound down with firm bands of adhesions and false membranes. On the left side the tube was buried under the sigmoid, while the tube on the right side was attached by side adhesions to the cecum and appendix. Examination of the ovaries revealed that pathological processes had invaded these organs. No ovary was found in its normal position; all were more or less prolapsed and adherent to the tubes.

In several instances there was a matting together of ovary, tube, uterus, and rectum. Some of the ovaries were twice their normal size and all gave evidence of cystic disease, i. e., a cystic degenerative process. As a result of these operative measures, two of the women conceived and went to full term within twenty months after the operation. These women had a bilateral hydrosalpinx and required resection of both ovaries. They were the youngest of the series and were respectively twenty-six and thirty years of age. The remaining six women, operated upon within the last four years, were still in a state of sterilization.

**Cæsarean Section.**—Dr. ABRAHAM J. RONGY, of New York, said that his experience with this operation consisted of 109 cases, in eight of which the patients died. Seventy-four patients upon whom eighty-two sections were performed were first seen in consultation with the family physician. All of these patients had been in labor from a few hours to twenty-four hours or longer. The remaining twenty-seven cases were in his own practice, and the operation was performed on twenty-two patients. That he had always been very conservative in choosing the abdominal route for the delivery of a living child, could be judged by the fact that during a period of twelve years he saw approximately 1,500 women in labor, in consultation with other physicians, all of them presenting some form of dystocia which made the attending physician anxious, and that out of this great number he resorted to Cæsarean section only eighty-two times. Cæsarean section had no place in eclampsia when Nature had already commenced to do her work, that is, when labor had already set in. In such cases large doses of morphine were the best form of treatment. He still held that Cæsarean section had no place in the pre-eclamptic stage. In such cases one always had time to induce labor, and the results were usually very satisfactory. The indications and contraindications for Cæsarean section must be carefully considered. Only one who was well trained in obstetrics had a right to decide upon this operation. A general surgeon had not the necessary knowledge to be competent to pass judgment on such an important question—important not only to the woman and to her future pregnancies, but also to the nation. If Cæsarean section was to be performed indiscriminately, there was bound to be a decrease in the birth rate, for the average woman would not submit too many times to this operation. For this and many other reasons, Cæsarean section should be left entirely to the well trained obstetrician.

#### Cæsarean Section under Local Anesthesia.—

Dr. WILLIAM MORTIMER BROWN, of Rochester, N. Y., stated that in doing this operation under a local anesthetic there were two important elements that were necessary for success. The first was to get the confidence and cooperation of the patient and the other was a thorough infiltration of the operative area and an exquisite delicacy of manipulation. No matter how careful the preparation might be, one could not hope to block all the underlying nerves, and it was very easy to pass from easily borne discomfort to unbearable pain. It was not difficult to anesthetize the abdominal wall so

completely that the peritoneum might be opened without appreciable pain. The fundus was without sensation and could be incised readily without the knowledge of the patient. The pain was attendant on the dragging or manipulation of the organs, either uterus or intestines. The ideal operation must be done without soiling the peritoneum, without lifting and pulling on the uterus. With these requisites in mind, Doctor Brown had found a method, which he had employed for several years, of peculiar advantage. It was his custom, after the abdomen was opened and the uterine incision partly made, to fasten the uterine incision out to the abdominal incision with four or five ordinary towel clamps. These clamps held the uterus to the abdominal wall and prevented the blood or amniotic fluid from getting into the peritoneal cavity. They were left in place until the uterine wound was largely closed, and did away with most of the traction on the uterus, rendering it unnecessary to pack gauze into the abdomen. Local instead of general anesthesia could not be a routine procedure in this operation any more than it could be in any other field of major surgery, but a careful study of all the conditions surrounding each case would sometimes convince us that certain patients were very much better operated upon in this way.

(To be continued.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*A Manual of Physiology. With Practical Exercises.* By G. N. STEWART, M. A., D. Sc., M. D. Edin., D. P. H. Camb.; Professor of Experimental Medicine in Western Reserve University, Clinical Physiologist to Lakeside Hospital, Cleveland; Formerly Professor of Physiology in the University of Chicago; Professor of Physiology in the Western Reserve University; George Henry Lewes Student; Examiner in Physiology in the University of Aberdeen; Senior Demonstrator of Physiology in the Owens College, Victoria University, etc. With Colored Plate and Four Hundred and Ninety-two Other Illustrations. Eighth Edition, University Series. New York: William Wood & Co., 1918. Pp. xxiv-1150. (Price, \$5.00.)

Physiology stands, no doubt, as one of the most cardinal of the branches of necessary preparation for the student and the practitioner of medicine. The functions of the body, while not more important than the structure, ought to take precedence in any inquiry which deals with the healing art. While it is true that the functions and structures are necessarily correlated, a didactic attitude toward medicine clearly demonstrates a marked increase in the interest in the functions as represented in various types of conduct as contrasted with that shown in the structure and its alterations. What the machine does, therefore, is always rather more interesting than what the machine is. When these studies are taught but are not correlated, great difficulty arises in the mind of the student and the interpretative intelligent processes are frustrated. The volume under consideration is an eighth edition. Lit-



tle, therefore, need be said about it further than that it has stood the test of many years of use—twenty-three in fact—and still retains its value. Hardly much more need be said of any book that can boast of so many years of service. One might expect that a book that has been published for so long a period had fallen behind in the march of active progress which has been so enormous. Interesting to relate, however, it has not. The author has been keenly alive to the many teachings of the time and has woven them into the structure of his work with considerable skill, showing the essentially valid foundation upon which he originally built. We can commend this book most heartily as a sound, concise, and extremely valuable volume.

*The Medical Clinics of North America.* Chicago Number. March, 1918. Pp. 240.

This number of the *Medical Clinics* maintains the high standard of quality which has characterized these volumes in the past and embraces subjects of a wide range of interest. It would be impossible in fairness to the other authors to select one, two, or more of the articles for special comment, as well as a task quite beyond our powers. The truth is that the articles are so different that they cannot be compared, for each will make its appeal to a different man, depending upon his particular interests. The papers include discussions of aortic regurgitation, aortitis and aneurysm of syphilitic origin, the diagnosis of cardiac lesions, juvenile diabetes in twins, the Karel treatment, treatment of angina pectoris; radium treatment of leukemia; epidemic respiratory infection; Vasquez's disease; abdominal lesions in the right upper quadrant; aortic syphilis; reflex gastric disturbances; tuberculin skin reactions in children; nephritis, splenomegaly and hepatic cirrhosis; insomnia; hysteria; asthma in children; the röntgen examination of the appendix, and pyelitis in children.

*La Gangrène gazeuse.* Bacteriologie, reproduction expérimentale, sérothérapie. Par M. WEINBERG, chef de laboratoire, et P. SEGUIN, boursier, à l'Institut Pasteur. Avec quarante-cinq figures, huit planches en noir, et huit planches en couleurs. Paris: Masson & Cie, 1918. Pp. viii-381.

This book presents a very full and detailed report of a study of gaseous gangrene. It treats of all the phases in which the subject would present itself to the bacteriologist, whose chief interest is the practical desire to come to the aid of the surgeon in combating this particular form of complication to wounds at the front. The study was undertaken at the urgency of the British medical staff after the battle of the Marne. So well have the authors of the work responded to that request for a thorough study of the infection and its treatment that their work has not only attained its immediate end, as far as possible, but has gone far beyond this in its scope of investigation. It stands therefore as a résumé of preceding studies, a compendium of bacteriological research detailed in its report of method and results, and also well illustrated in its exposition of experiments as well as graphically in freely interspersed plates.

Its scientific interest, like its practical surgical value, can be only briefly indicated but its fullness and clearness will well repay more thorough special-

ized study. The authors conclude that gaseous gangrene is due to a number of infectious agents. The number and variety of these agents give a varied pathology and also render the question of an effective vaccine therapy a complicated one. Both the variety of germs which cause the gaseous gangrene and the presence of other infectious agents at the seat of the wound indicate that an autovaccine would be most effective prepared from the pathological sera present and rendered innocuous by iodide. Vaccine therapy has been used for curative rather than preventive purposes. The latter would be especially difficult of accomplishment, owing to the variety of the infectious agents and their undoubted presence in the dirt which, in the trenches, affords such a fruitful harborage for them. The curative power is limited because the toxemia develops very rapidly and soon attacks the nervous centres. Yet a notable reduction in mortality has been the result of combining a vigorous serotherapy with surgical treatment. Indications are also that a mixed antigangreous serotherapy will be worked out so that wounded soldiers will be greatly benefited, and the attack upon this form of complication will meet with greater success. Both the scientific knowledge of this extensive and mischievous form of infectious complication and the means of combating it have doubtless been greatly advanced by this study.

## Births, Marriages, and Deaths.

### Married.

PARKE-WOODS.—In Philadelphia, Pa., on Tuesday, November 12th, Dr. William E. Parke and Miss Grace Woods.  
WYETH-CHALIFOUX.—In New York, on Friday, November 15th, Dr. John Allan Wyeth and Miss Margerite Chalifoux.

### Died.

AUGUR.—In Binghamton, N. Y., on Thursday, October 31st, Dr. Amelia M. Augur, of Hartwick, N. Y.  
BABCOCK.—In Buffalo, N. Y., on Thursday, November 7th, Dr. Cyrus W. Babcock, aged eighty-one years.  
BAGNALL.—In Norfolk, Va., on Friday, November 1st, Dr. Richard Daingerfield Bagnall, aged eighty years.  
CHAPMAN.—In Brockport, N. Y., on Friday, October 25th, Dr. Edward B. Chapman, aged thirty-six years.  
CONLEY.—In Naples, N. Y., on Friday, November 8th, Dr. David Harrison Conley, aged seventy-four years.  
COX.—In Penn Yan, N. Y., on Thursday, October 24th, Dr. Joseph T. Cox, aged fifty-two years.  
FRITZWELL.—In San Jose, Cal., on Friday, November 1st, Dr. William J. Fretwell, aged fifty years.  
HAMBLEN.—In Bedford, Mass., on Sunday, November 10th, Dr. Edward E. Hamblen, aged fifty-four years.  
KELLER.—In Spokane, Wash., on Sunday, November 3d, Dr. Sebastian Keller, aged eighty-nine years.  
LOCKWOOD.—In Coscom, Conn., on Wednesday, November 13th, Dr. Frederick W. C. Lockwood, aged sixty-two years.  
LOOMIS.—In Lockport, N. Y., on Wednesday, October 30th, Dr. Warren H. Loomis, aged sixty-three years.  
MARTIN.—In Binghamton, N. Y., on Monday, October 28th, Dr. Joseph S. Martin, aged thirty-three years.  
MELTZER.—In New York, N. Y., on Friday, November 15th, Dr. John S. Meltzer, aged thirty years.  
OSWALD.—In Buffalo, N. Y., on Friday, November 8th, Dr. Albert F. Oswald, aged thirty-five years.  
SAVAGE.—In New York, N. Y., on Tuesday, November 12th, Dr. Thomas Rutherford Savage, aged sixty-six years.  
STANNARD.—In Troy, N. Y., on Tuesday, October 29th, Dr. Frank T. Stannard, aged fifty-two years.  
TEFFT.—In Utica, N. Y., on Thursday, October 31st, Dr. Charles Byron Tefft, aged eighty-one years.

# New York Medical Journal

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## Original Communications

### A NEW METHOD OF MAKING THE GONORRHEAL COMPLEMENT FIXATION TEST.

*With Remarks on the Bacteriology of the Gonococcus—A Preliminary Report.*

By R. B. H. GRADWOHL, M. D.,  
St. Louis,

Director of the Gradwohl Biological Laboratories, and the Pasteur Institute.

Before the discussion of the question of diagnosis of gonorrhea by means of blood tests, a few words should be said concerning the gonococcus and its identification by means of direct examination of purulent material, its staining qualities, and its cultural behavior.

It might be well to bear in mind that for a long time gonorrhea and syphilis were thought to be the same disease, this idea having prevailed from the time of their earliest description until the epoch making work of the great French physician Ricord, in 1832, proved the duality of the two diseases. Fournier (1), Langlebert (2), and Profeta (3) further corroborated Ricord's contention, although Diday (4) and Zeissl (5) contended against it for some years after the first pronouncement. Ricord failed to determine the causative factor in gonorrhea, even though he separated it as a disease from syphilis. Following him, various workers attempted to prove the real cause of the disease. For instance, Donné (6) found a so called trichomonas, Thiry (7) a "virus granuleux," Jousseume (8) an alga, which he called "genitalia," and Salisbury and Hallier a fungus. It remained for A. Neisser (9), in 1879, to describe the real cause of this disease, namely, the gonococcus. It might be interesting to note that in Neisser's original communication he reported the finding of this new form of micrococcus in thirty-five cases of urethritis in the male, nine cases of vaginitis, two cases of gonorrheal ophthalmia in adults and seven in new born babies. Bokai (10), Aufrecht, Weiss, and others rapidly confirmed Neisser's observations. Bumm (11), in 1885, first secured a pure culture of the gonococcus on coagulated human blood serum, and from these cultures reproduced gonorrhea in the male by placing pure cultures on the urethral mucosa of healthy subjects. Thus the entire chain of specificity proof was completed.

### MORPHOLOGY AND IDENTIFICATION OF THE GONOCOCCUS BY BACTERIOLOGICAL METHODS.

The gonococcus is a biscuit shaped diplococcus resembling a coffee bean in shape. It is formed as a result of a prolongation of the single coccus into a figure-of-eight formation, then a splitting in the middle of the figure, resulting in the appearance of two distinct cocci. From pole to pole Bumm described gonococci as measuring 1.6 microns each, with a width in the middle of 0.8 micron. Their size is dependent on age and on length of staining, light stained cocci appearing smaller than those more heavily tinted. They are surprisingly similar in appearance to the meningococcus of Weichselbaum. Neisser's original description of the gonococcus devoted so much space to the intracellular disposition of this micrococcus that one involuntarily thinks of the organism only as an intracellularly located bacterium, just as we think of the meningococcus just alluded to. The diagnostic value of the finding of the diplococcus of Neisser within the cells has some value but this is not an infallible test, as they often appear extracellularly. From all the evidence we have in the literature, and from our personal experience, we believe that in the very acute primary stage of gonorrheal urethritis we may find in the first mucous discharge, before the purulent character of the discharge has been established, practically no gonococci within the cells; in fact, in this stage we find only epithelial cells. Later on when pus appears, we find many cells within which are plainly seen the typical biscuit shaped organisms. It seems fairly well established that the intracellular disposition of these cocci is a phenomenon of phagocytosis.

Scholtz (12) considers it so for the following reasons:

1. Fresh pus mixed with ascites bouillon, plus a pure culture of the gonococcus, shows the gonococci entering the cells.
2. Inoculation of dead or living gonococci into the abdominal cavity of a guinea pig is followed by phagocytosis.
3. Foreign bodies, taken up by the phagocytosis activity of leucocytes, may be demonstrated by vital staining of these cells, as shown by Plato (13).

As for the staining characteristics of the gonococcus, we know that they are easily stained by the ordinary methods. Much diagnostic importance has



been attached to the so called gram method. Originally, Roux (14), Allen (15), Wendt (16), Steinschneider and Galewski (17), Heymann (18), Hogge (19), Kral (20), Keifer (21), Hijman Van der Bergh (22), and Scholtz (23), considered this staining method of great value in their identifying studies; but Bumm (24), Furbinger (25), Totuon (26), and others spoke against it. It is to be noted that the gram method of identification is reliable only to a limited extent under certain conditions, and then only if the method is very carefully carried out in respect to decolorization and washing out. Unless absolute alcohol is used, the method gives poor results. It is our practice, too, to use the carbol-gentian solution instead of the older anil-oil-gentian violet method. This carbol-gentian solution of Czapelewsky (27) is made by mixing ten parts of saturated alcoholic solution of gentian violet with ninety parts of 2.5 per cent. solution of phenol (carbolic acid). This makes a permanent solution. It is used as follows:

1. Stain one minute.
2. Pour off.
3. Flood with Lugol's solution one minute.
4. Pour off.
5. Repeatedly flood with absolute alcohol.
6. Wash with water.
7. Counterstain with watery safranin one minute.

#### CULTIVATION OF THE GONOCOCCUS.

The original culture medium on which Bumm (24) first isolated the gonococcus was coagulated human blood serum, obtained from placental blood. It may readily be obtained by venipuncture. Other mediums have since been successfully used, notably Finger's urine; Turro's acid gelatin; Wertherim's agar, a mixture of blood serum and glycerin agar; Kral's agar, which is calf blood and agar; Heiman's agar, which is pleuritic fluid and agar; Wildholz's agar, which is agar plus ovarian cystic fluid; Pfeiffer's blood agar; Bezançon and Griffon's blood agar; Nastikoff's agar; which is yolk of an egg and agar; Leipschutz's agar, which is Merck's powdered egg albumen and agar, and Steinschneider's agar, which is coagulated urine and agar. We have been very successful in cultivating gonococci on a mixture of egg and agar plus human blood serum on plates. We make successive streaks across the plates, and in this way secure pure cultures. The growth is then perpetuated in tubes of the same material. We have found no difficulty in securing cultures from fresh cases of gonorrheal urethritis in the male, more difficulty in subacute and chronic cases, and the greatest difficulty in cultures from the vagina and cervix, owing to heavy bacterial flora contaminating these parts.

As a diagnostic measure, cultivation of the gonococcus is not practical, for the reason that in those situations in which we most desire light, namely, in the chronic cases in the male and the subacute and chronic case in the female, other organisms are likely to overgrow the gonococcus. Pure cultures may be obtained easily from the very acute case in the male; in fact, this is a practical, clinical, diagnostic measure, if such is needed. It is not in this class of cases, however, that any corroborative diagnostic measure ordinarily is necessary. The chronic cases with "occult" manifestations, with prostatitis, seminal vesiculitis, etc., also the cases of women with salpingitis, metritis, pyosalpinx, etc., are dif-

ficult to culture for diagnostic purposes. The methods of provocation of discharge by means of the injection of chemical irritants into the urethral canal are only of relative usefulness.

Again, we must remember that there are pseudogonococcal findings, which have taxed the expertness of the best talent to differentiate from the true gonococcus. For instance, four times in eighty-six cases, or 4.65 per cent., Steinschneider and Galewski (17) found gram negative gonococcal-like diplococci in the male urethra, which were extracellularly situated. Twice in sixty-three cases, von Hoffman (28) found gram negative diplococci resembling gonococci, once a gram negative coccus in chains, and three times a gram negative staphylococcus. In twenty-four healthy male urethras Pfeiffer (29) found on one occasion a gram negative diplococcus. In twelve cases, Baermann (30) found in the cervix a diplococcus which strongly resembled the gonococcus.

#### DIFFERENTIATION OF GONOCOCCUS FROM MENINGOCOCCUS.

The difficulty of differentiating the meningococcus from the gonococcus has already been noted. The possibility of genital lesions caused by the meningococcus must not be lost sight of. Schottmueller (31) reported a case of epididymitis as a complication of cerebrospinal fever. Reutter (32) reported a case of periorchitis purulenta as a complication of cerebrospinal fever. The meningococcus was isolated from the spinal fluid and from the purulent discharge from the testicle. Pick (33) reported a case of seminal vesiculitis due to the meningococcus in the course of leptomenigitis. Owing to the biologic similarity of these two organisms, manifestly it would be difficult to separate a case of cerebrospinal meningitis with a complication of meningococcus urethritis from a case of cerebrospinal meningitis with an accompanying gonorrhea. Another difficulty in diagnosing the gonococcus is seen in the case of extragenital mucous membrane infections, notably purulent conjunctivitis, in which gram negative diplococci, not gonococci, have been found by Abelsdorf and Neumann (34), Krukenburg (35), Urbahn (36), Axenfeld (37), Morax (38), and others. An organism that very closely resembles the gonococcus is the *Micrococcus catarrhalis*, and, in fact, this organism is difficult to differentiate from the meningococcus, a fact not to be lost sight of in our present attempts to classify meningitis carriers by nasal cultures.

Close and prolonged study of cultures of these three organisms will help to differentiate them. The colony of the meningococcus has a diameter of from two to three millimetres. The gonococcus measures from one to 1.5 millimetres. The meningococcus under low power has no scalloped edge, while the gonococcus is always scalloped. The gonococcus has an elevated centre, the meningococcus never. Both show the same light yellow or yellow brown colorations. Gonococci ferment glucose only; meningococci ferment maltose and glucose. Cultures of the *Micrococcus catarrhalis* show small, white, irregularly rounded colonies. They grow well on all mediums, and do not ferment carbohydrates.

With the knowledge of the difficulty in practical work of quickly differentiating gonococci from non-specific infections, it is not at all surprising to know that attempts were made very early to apply complement fixation test for this purpose. Bruck (39) first pointed out the presence of the gonococcic antibody in the circulating blood in 1906, but Mueller and Oppenheim (40) in the same year, first applied the method of complement fixation to the blood in a case of gonorrheal arthritis. Bruck (41) later tried the test in two cases of gonorrheal disease of the adnexa and one case of recurrent iridocyclitis. Bruck could not find the complement binding substances at that time in the blood of uncomplicated gonorrheics. Meakins (42) in 1907, confirmed this work. Watabiki (43) carried out considerable experimental works in rabbits, proving the same phenomenon. Nancioni (44) tested thirty-three cases, obtaining positive reactions in eight of them. Dembska (45) in 100 cases of adnexa disease found the reaction positive in all cases of over two weeks' duration. Teague and Torrey (46), in this country, carried the work further. Possibly the greatest impetus was given to this line of investigation by the publication of Schwartz and McNeil (47), in 1911, in which they advocated with good results the use of an antigen made from a number of stains of the gonococcus.

At the 1912 meeting of the American Urological Association, the writer reported (48) the results of complement fixation in fifty selected cases, using the technic advocated by Schwartz and McNeil. The conclusions from this limited experience were as follows: That this is a specific test; that it is not present in anterior urethritis; that the test is valuable when it is impossible to find the gonococcus by microscopic and cultural methods; that a blood which is first positive and then becomes negative probably means a serologic as well as a clinical cure; that the test is very useful in the female, particularly in forensic cases; and finally it is particularly valuable to the operating surgeon in differentiating between a gonorrheal and nongonorrheal pus collection in the adnexa. Gardner and Clowes (49), reporting at the same meeting, came to somewhat similar conclusions regarding the male cases, but they expressed the belief that in certain severe cases the reaction may persist for some time after a cure has been effected. Since the time of this publication, we have examined a number of blood samples for complement fixation, using the methods already noted, with what might be termed fairly good success. From time to time, we have failed to obtain positive results in cases that were unquestionably gonorrheal, and that, too, with complications. For this reason, we have struck out to get results with new methods. In 1914, we (50) reported our results with complement fixation in syphilis, utilizing the ideas of Hecht and Weinberg (51), with a modification that has since been called the Hecht-Gradwohl method. This was based on an experience with 1,000 cases. In 1916, we reported (52) results with the new method in comparison with the straight Wassermann technic on 5,000 cases, and again (53) in 1917, on 10,000 tests. We wish to be understood now as basing our statements in

reference to complement fixation in syphilis with the Wassermann and Hecht-Gradwohl tests on a study of 16,000 blood samples, exclusive of the 165 gonorrheal blood samples which are now under discussion. Having shown to our own satisfaction, and that of many others, such as Heidingsfeld (54), Louis Schmidt, Wolbarst, Gruskin (55) and Kolmer (56) that by the use of our method, comprising the combined technic of Hecht and Weinberg and Gradwohl, that we were able to obtain between twenty and thirty per cent. more positive reactions than could be obtained with the classical Wassermann test, it occurred to us that the same method might well be applied to the gonorrheal complement fixation test. There was apparently just as much practical necessity for departing from the regulation gonorrheal complement fixation test as advocated by Schwartz and McNeil, as there was in departing from the Wassermann technic in syphilis. The necessity arose from the fact that many complicated gonorrheal subjects gave negative results with the Schwartz-McNeil technic, clearly indicating flaws in technic. We began the work on male blood specimens, and quickly obtained some very remarkable results. The work was then continued on female blood specimens, obtained mainly from patients from the wards of the St. Louis City Hospital.

#### THE NEW TECHNIC.

Before we discuss these results, the new technic might well be described. We might add here that the technic in the main agrees in all particulars with that described by us in connection with the complement fixation test for syphilis, except in the use of an antigen derived from culture of the gonococcus. It is as follows: In a rack should be placed fourteen small test tubes. The first ten of these tubes are used to determine the hemolytic index of the suspected blood. By this we mean the exact amount of hemolytic amboceptor present in the given blood serum. The last four tubes are used in the actual test. One c. c. of fresh unheated patient's blood serum should be added to each of the first ten tubes. Then decreasing amounts of physiological sodium chloride solution should be added to these tubes, beginning with one c. c., then 0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, 0.1 c. c. to the succeeding nine tubes. Next there should be added increasing amounts of fresh five per cent. suspension of sheep's blood, starting with 0.1 c. c., and ending with one c. c. The rack should be placed in the water bath for one half hour. The tube which last shows complete hemolysis constitutes the "hemolytic index." If it is in Tube 4, the index is 4, because this tube had received 0.4 of sheep corpuscles. Therefore, we have obtained an idea as to how much sheep's blood is to be added to the last four tubes. The first three tubes—11, 12, and 13—constitute the tubes for the actual test, while the last tube in the rack—14—serves as the serum control tube. Tubes 11, 12, and 13 therefore receive the patient's serum, the proper amount of sheep's corpuscles, dependent on hemolytic index, and rising strengths of antigen, but no complement and no amboceptor. Tube 14 receives only sheep corpuscles, but no antigen.

In the new technic for gonorrheal complement



fixation test, we use in Tube 11 0.1 c. c. of a diluted antigen determined by titration (usually a dilution of 1 to 6 is correct), 0.15 c. c. antigen to Tube 12, 0.2 c. c. to Tube 13, and none to Tube 14. In order to equalize the volume of fluid in all these tubes, we add 0.2 c. c. normal saline to Tube 11, 0.15 c. c. to Tube 12, 0.1 c. c. to Tube 13, and 0.3 to Tube 14. The tubes are then agitated and placed in the water bath for half an hour. The last four tubes are filled at the time we make the addition to the first ten, and are left with them in the water bath for one half hour for fixation of complement. The rack is then taken out and the hemolytic index computed. If the index is low, say between 1 and 4, we add 0.1 c. c. of sheep's blood to the last four tubes. If the index is between 5 and 7, we add 0.15 c. c. of sheep's blood to the last four tubes. If it is between 8 and 10, we add 0.2 c. c. If the index is more than 10, we rack up ten more tubes and repeat the titration of the natural complement and amboceptor. Then we estimate that. If the index is between 11 and 15, we use 0.25 c. c.; if between 15 and 18, we use 0.3 c. c.; and if between 18 and 20, we use 0.35 c. c. If the patient's serum has an index of only 1, we regard the reaction as of doubtful value. If it is larger than 1, we regard it as absolute.

The reaction is read off exactly as in the Wassermann test, that is, for inhibition or noninhibition of hemolysis. If the amount of complement or natural antishoop amboceptor is very low, we may add the proper amount of guineapig's serum, or rabbit's immune serum, ascertained by preliminary titration. We wish to state here that the addition of guineapig's serum for complement and artificial antishoop amboceptor is only necessary in about two per cent. of the blood specimens examined, provided the blood is not kept too long before examination. In the 158 cases here recorded, it occurred but twice. We wish to emphasize the fact that blood from a distance does not necessarily lose its natural complement or natural amboceptor in transit, as we frequently receive bloods that have been in transit forty-eight hours, which have still retained sufficient natural complement to carry out this procedure. This is true both for the test for syphilis and the test for gonorrhea. The complement may go down, but the amboceptor persists. The absence of complement or natural antishoop amboceptor is not always referable to undue retention of blood before examination, as we have seen both absent soon after blood was withdrawn, that is, within two or three hours. This kind of case constitutes two per cent. of patients in whom it is necessary to add artificial amboceptor and complement in carrying out these modifications. It should be noted that we use three different amounts of antigen, of which the dilution is 1 to 6. Our purpose in using these three different quantities of antigen, of course, is to titrate, as it were, the gonorrheal antibody supposed to be present.

#### THE ANTIGEN.

Our antigen used in this research was kindly furnished by the Parke, Davis & Co. research department. It consists of a number of strains of the gonococcus in the form of an alcoholic extract.

We have made various antigens from multiple strains of gonococci, and have found but little difference in the results obtained under the older technic, using several antigens on the same blood. We do not believe, therefore, that improvement in technic must come from any change in the antigen, inasmuch as the antigen used in our tests is uniformly successful within the limitations of the test as previously performed. Our contention is that the discrepancy which we obtain in the various cases listed further on is not due to any fault in the antigen, rather it is due to an improper technic, namely, the use of heated serums, and the introduction of foreign amboceptor and complement into the reaction. The new method, we believe owes its superiority to the fact that in using unheated serums, we are catching all the gonorrheal antibodies, some of which may be destroyed by heat, just as in the case with the syphilitic antibody, as proved by our own results, and the researches of Busila (57) and Noguchi (58) on the destruction of syphilitic antibody by heating blood serums to temperatures of 45° to 56° C. I also wish to call attention to the selfevident fact that in no case did we get a positive reaction with the older method without obtaining the same result with the new method. In addition to this, before I present our figures, permit me to note here that we obtained something like eighty per cent. more positives with our method than we did with the Schwartz-McNeil technic.

#### SURVEY OF TABULATED DATA.

We examined altogether 158 samples of blood with this double technic. A number of these blood specimens were introduced into the study as controls. In most instances we knew no details of the history of any of the cases before the results were reported. We do not, therefore, wish it to be understood that we have here reported on 158 known clinical gonorrheal subjects. Many of them were candidates for matrimony, giving every evidence of a clinical cure. There were a number of cases of women recovering from curettement after abortions, with no history or symptoms of gonorrheal infection. There were seventy-nine male blood specimens and seventy-nine female. In seventy-seven cases a negative reaction was obtained by both methods. In sixteen cases, we obtained a strong positive reaction with both methods. In sixty-nine cases we obtained a clear negative reaction with the older method, and a strong positive with our own method. In three cases, an insufficient amount of blood was submitted to make both tests, therefore these three cases are eliminated from the figures. In other words, the older technic yielded but twenty per cent. of positive reaction in patients unquestionably harboring gonococci, whereas the technic we are describing yielded 100 per cent. of positive reactions in these sixty-five cases. This means that the new method is eighty per cent. more accurate than the other method. We do not wish to be understood, however, as stating that the new method yielded 100 per cent. positive in all gonorrheal cases in which a reaction was to be expected.

As a matter of fact, we do not wish to go further in drawing conclusions regarding this technic than

TABLE 1.—CASES IN WHICH THE GONORRHEAL COMPLEMENT FIXATION TEST WAS APPLIED BY THE SCHWARTZ-McNEIL AND GRADWOHL TECHNIQUES.

Case. Name.	Males—79 bloods.	Schwartz-McNeil technic.	Gradwohl technic.	Case. Name.	Males—79 bloods.	Schwartz-McNeil technic.	Gradwohl technic.
1 A. J.	Chronic gonorrhea prostatic four years' duration . . . . .	Positive	Positive	37 A. N.	Candidate for matrimony. Uncomplicated gonorrhea one year ago . . . . .	Negative	Negative
2 W. W.	Anterior posterior gonorrhea urethritis one year's duration, "clinically cured." No discharge . . . . .	Negative	Negative	38 L. G.	Candidate for matrimony. Posterior gonorrhea two years ago. Clinically cured . . . . .	Negative	Negative
3 T. E.	Chronic prostatic, one and one half years' duration. Smear positive . . . . .	Negative	Positive	39 J. T.	Chronic posterior urethritis existing for one year. Smear negative . . . . .	Negative	Positive
4 J. P.	Gonorrhea two years ago, "clinically cured" . . . . .	Positive	Positive	40 M. M.	Chronic gonorrhea with vesiculitis existing three months. Negative smears . . . . .	Positive	Positive
5 T. A.	Gonorrhea two years' duration, with seminal vesiculitis, "morning drop" . . . . .	Positive	Positive	41 O. S.	Chronic gonorrheal prostaticitis and vesiculitis for ten years. Smear negative . . . . .	Negative	Positive
6 J. C.	Gonorrhea for one year, with bilateral seminal vesiculitis, right sided epididymitis . . . . .	Negative (No index)	Positive	42 A. B.	Gonorrhea for two months, with cystitis, epididymitis, prostaticitis. Positive smears . . . . .	Negative	Positive
7 R. G.	Chronic gonorrhea for three years. No complications test made after third month of treatment. Smear negative . . . . .	Positive (No index)	Positive	43 R. B.	Posterior gonorrhea for two months, no treatment for two weeks, no discharge, clinically cured . . . . .	Negative	Positive
8 F. C.	Gonorrhea one year's duration with chronic prostaticitis and seminal vesiculitis bilateral. Negative smears . . . . .	Positive	Positive	44 E. P.	Anterior posterior urethritis, with epididymitis; duration six weeks. Same as Cases 8, 15, 18, 30, 34. Test made three months after . . . . .	Negative	Positive
9 S. S.	Gonorrhea anterior posterior three years ago, clinically cured. No discharge . . . . .	Positive	Positive	45 F. C.	Case 34 . . . . .	Negative	Positive
10 K. G.	Subacute gonorrhea, anterior posterior urethritis, duration now four weeks. Smear positive . . . . .	Negative	Positive	46 T. B.	"Morning drop," gonorrhea one year ago. Now has chronic prostaticitis. Smears negative . . . . .	Negative	Negative
11 A. C.	Chronic gonorrheal prostatic, one year old. Negative smears . . . . .	Negative	Negative	47 N. D.	Anterior posterior urethritis, two weeks' duration. Smear positive. Same as Cases 8, 15, 18, 30, 34. Test made two months after . . . . .	Negative	Positive
12 W. C. B.	Acute anterior gonorrhea, duration two weeks. Positive smears . . . . .	Negative	Positive	48 F. C.	Case 45. Smears always negative . . . . .	Negative	Positive
13 L. B.	Gonorrheal arthritis in course of anterior posterior urethritis, existing one month. Smear positive. Anterior posterior gonorrheal urethritis existing six weeks. Smears negative . . . . .	Positive (No index)	Positive	49 F. H.	Gonorrhea eight years ago; now has "morning drop." Smears negative . . . . .	Negative	Positive
14 T. M.	Same as Case 8, eighteen days later . . . . .	Negative	Positive	50 L. M.	Gonorrhea for six months; now seminal vesiculitis, prostaticitis. Smears negative . . . . .	Negative	Negative
15 F. C.	Gonorrhea two years previously, no symptoms, anterior urethritis, no discharge . . . . .	Negative	Negative	51 O. K.	Gonorrhea one year duration with vesicles and prostatic now infected. Smear positive . . . . .	Positive	Positive
16 T. L.	Anterior posterior urethritis, one year old, no complications. Negative smear . . . . .	Negative	Positive	52 C. E.	Chronic anterior posterior urethritis for six weeks. Positive smears . . . . .	Negative	Positive
17 B. P.	Same as Cases 8, 15. Test made twenty days after last date (Case 15) . . . . .	Negative	Positive	53 A. B.	Gonorrheal anterior urethritis for three weeks. Smear positive . . . . .	Negative	Positive
18 F. C.	Gonorrhea three years' duration, prostaticitis, bilateral seminal vesiculitis. Negative smear . . . . .	Negative	Positive	54 D. K.	Gonorrheal anterior posterior urethritis for two months. Smear positive . . . . .	Negative	Positive
19 S. G.	Candidate for matrimony, gonorrhea three years ago, clinically cured, no discharge . . . . .	Negative	Negative	55 G. E.	Gonorrhea duration one year, with prostatic and vesicles now infected. Smear negative . . . . .	Negative	Positive
20 G. S.	Chronic gonorrhea four years' duration, now has bilateral seminal vesiculitis and epididymitis. Negative smears . . . . .	Negative	Negative	56 P. B.	Acute anterior gonorrheal urethritis one week. Smear positive . . . . .	Negative	Positive
21 R.	Chronic gonorrhea four years' duration, now has bilateral seminal vesiculitis and epididymitis. Negative smears . . . . .	Negative	Positive	57 R. B.	Chronic gonorrheal prostaticitis and vesiculitis for six months. Smear negative . . . . .	Negative	Positive
22 Y.	Acute anterior urethritis two weeks' duration, slight discharge. Negative smear . . . . .	Negative	Positive	58 T. S.	Chronic posterior urethritis with prostaticitis, duration eight months. Smear positive . . . . .	Negative	Positive
23 A. B.	Gonorrhea for six years, prostaticitis. Negative smear . . . . .	Negative	Positive	59 W. B.	Anterior posterior urethritis for two months. Smear positive . . . . .	Positive	Positive
24 L. K.	Chronic gonorrhea for one year, with seminal vesiculitis, double vasotomy thirty days ago, no discharge since . . . . .	Positive	Positive	60 M. L.	Candidate for matrimony; clinically cured of gonorrhea occurring three years ago . . . . .	Negative	Negative
25 K. A.	Chronic gonorrheal prostaticitis and vesiculitis, one and one half years' duration. Positive smears . . . . .	Negative	Positive	61 F. C.	Same as Cases 8, 15, 18, 30, 34, 45, 48. Test made three months after Case 48 . . . . .	Negative	Positive
26 R. L.	Acute gonorrhea anterior two weeks' duration. Positive smears . . . . .	Negative	Negative	62 J. G.	Gonorrheal ophthalmia duration ten days. Positive smear from eye. Also has subacute gonorrheal infection posterior urethra. Candidate for matrimony, gonorrhea uncomplicated one year ago . . . . .	Negative	Negative
27 G. S.	Candidate for matrimony. Had gonorrhea uncomplicated ten years ago. No discharge . . . . .	Negative	Negative	63 H. L.	Sexual intercourse, no venereal history of infection. No discharge . . . . .	Negative	Negative
28 A. L.	Candidate for matrimony. Gonorrhea two years ago, uncomplicated. No discharge . . . . .	Negative	Negative	64 H. W.	Gonorrhea three years ago with epididymitis, clinically cured. No discharge . . . . .	Negative	Negative
29 E. G.	Gonorrhea six months' duration with epididymitis. Negative smears . . . . .	Negative	Positive	65 O. A.	Candidate for matrimony. Gonorrhea with epididymitis three months before. Clinically cured. A medical case; claims trauma of testis, but has history of urethritis and swelling of epididymis six months ago. Smears said to be negative . . . . .	Negative	Positive
30 F. C.	Same as Case 8, 15, 18, 30, 34. Test made three weeks later than Case 18 . . . . .	Negative	Positive	66 A. L.	Gonorrheal urethritis existing three months, with shreds, but no discharge. Smear negative . . . . .	Negative	Negative
31 T. M.	Gonorrhea for four years with epididymitis. Smear negative . . . . .	Negative	Positive	67 K.	Chronic gonorrhea urethritis three years ago. Clinically cured . . . . .	Negative	Negative
32 L. M.	Arthritis in course of gonorrhea existing for two months. Smear negative . . . . .	Negative	Positive	70 L.	Anterior urethritis existing three months. Smear positive . . . . .	Negative	Negative
33 H. H.	Arthritis in course of four weeks' old anterior posterior urethritis. Smear positive . . . . .	Negative	Positive	71 B.	Gonorrhea seven years ago; no complications. Clinically cured . . . . .	Negative	Negative
34 F. C.	Same as Cases 8, 15, 18, 30, 34. Test made two months after Case 30 . . . . .	Negative	Positive				
35 K. T.	Uncomplicated gonorrhea four years ago. Clinically cured. No discharge . . . . .	Negative	Negative				
36 R. L.	Chronic gonorrheal prostaticitis existing one year. Positive smears . . . . .	Negative	Positive				



TABLE 1.—CASES IN WHICH THE GONORRHEAL COMPLEMENT FIXATION TEST WAS APPLIED BY THE SCHWARTZ-McNEIL AND GRADWOHL TECHNIQUES—Continued.

Males—79 bloods.			Females—77 bloods.		
Case, Name.	Schwartz-McNeil technic.	Gradwohl technic.	Case, Name.	Schwartz-McNeil technic.	Gradwohl technic.
72 G. J. Gonorrhea twenty years ago, with double epididymitis. Vasotomy now owing to purulent vesiculitis. Smear negative . . . . .	Negative	Negative	29 M. R. Ascending gonorrhea; no other clinical data available. Smear negative . . . . .	Negative	Positive
73 F. Gonorrhea uncomplicated ten years. Clinically cured . . . . .	Negative	Negative	30 C. Ascending gonorrhea, salpingitis. No other data . . . . .	Negative	Positive
74 S. S. For eighteen months chronic gonorrhea with prostatitis. Smear positive . . . . .	Negative	Positive	31 M. L. Relaxed pelvic floor. No smears examined. No history of gonorrhea symptoms . . . . .	Negative	Positive
75 P. Urethritis and prostatitis for eight months. Smear positive . . . . .	Negative	Positive	32 J. N. Syphilis; no present evidence of gonorrhea . . . . .	Negative	Positive
76 Z. Sixteen months' old chronic urethritis and prostatitis. Smear positive . . . . .	Negative	Negative	33 M. C. Abscess Bartholin gland . . . . .	Negative	Positive
77 K. Three months' old posterior urethritis. Smear positive . . . . .	Negative	Negative	34 D. P. Chronic salpingitis, double pyosalpinx, metritis . . . . .	Negative	Positive
78 P. Acute anterior urethritis for one month. Smear positive . . . . .	Negative	Negative	35 N. C. Ascending gonorrhea, acute salpingitis . . . . .	Negative	Positive
79 W. Anterior posterior urethritis seven months ago. Clinically cured . . . . .	Negative	Negative	36 L. P. Abortion; no clinical data on gonorrhea . . . . .	Negative	Positive
Schwartz-McNeil technic.			37 E. W. Chronic salpingitis . . . . .	Negative	Positive
Gradwohl technic.			38 E. C. Chronic salpingitis . . . . .	Negative	Positive
			39 H. H. Cyst of ovary; no other clinical data . . . . .	Positive	Positive
			40 R. P. Cerebrospinal syphilis; no rheal history . . . . .	Negative	Negative
			41 E. R. Abortion. No other data . . . . .	Negative	Negative
			42 N. McN. Abortion. No other data . . . . .	Negative	Negative
			43 M. S. Abortion. No other data . . . . .	Negative	Negative
			44 M. J. Adhesions of peritoneum. No other data . . . . .	Negative	Negative
			45 M. McM. Syphilis. No other data available . . . . .	Negative	Negative
			46 I. T. Syphilis, endometritis . . . . .	Negative	Negative
			47 M. D. A healthy control . . . . .	Negative	Negative
			48 F. J. Retroflexio uteri . . . . .	Negative	Negative
			49 D. F. Ascending gonorrhea . . . . .	Negative	Negative
			50 R. B. Syphilis . . . . .	Negative	Negative
			51 H. P. Ascending gonorrhea. Positive smears . . . . .	Negative	Positive
			52 M. S. Double pyosalpinx, operated and drained . . . . .	Positive	Positive
			53 V. N. Acute gonorrheal vaginitis. Positive smears . . . . .	Negative	Negative
			54 F. D. Chronic salpingitis; probably gonorrheal from standpoint of history . . . . .	Negative	Negative
			55 C. M. Ascending gonorrhea existing long . . . . .	Negative	Negative
			56 P. C. Chronic salpingitis; gonorrheal; clinical diagnosis gonorrheal in origin . . . . .	Negative	Negative
			57 O. D. Syphilis. No clinical data . . . . .	Negative	Negative
			58 E. McD. Acute gastritis. Control case . . . . .	Negative	Positive
			59 A. S. Metritis . . . . .	Negative	Negative
			60 N. W. Chronic salpingitis . . . . .	Negative	Negative
			61 G. C. Bilateral oophorectomy for purulent salpingitis and abscess of ovary. Test made ten days after operation. No other data . . . . .	Negative	Negative
			62 N. B. Chronic salpingitis . . . . .	Negative	Positive
			63 B. L. Miscarriage. No other data . . . . .	Negative	Positive
			64 L. K. Chronic salpingitis . . . . .	Negative	Positive
			65 C. M. Postoperative neurasthenia. Control . . . . .	Negative	Negative
			66 M. S. Chronic salpingitis . . . . .	Negative	Positive
			67 M. S. Syphilis. No other data . . . . .	Negative	Positive
			68 S. S. General peritonitis, following miscarriage. No other data available. Fatal issue . . . . .	Positive	Positive
			69 G. J. Retroversion uteri. No other data . . . . .	Positive	Positive
			70 M. G. Left salpingitis. Operated. No other data. Condition existed over one year . . . . .	Negative	Positive
			71 H. L. Chronic salpingitis. No other data . . . . .	Negative	Positive
			72 G. C. Acute salpingitis . . . . .	Negative	Negative
			73 M. W. Baby, aged 3 weeks, ophthalmia due to gonococci. Case yielding to treatment . . . . .	Negative	Negative
			74 K. W. Mother of Case 73; no examination made, as mother was simply accompanying child to hospital. Old adhesions; operated for adherent uterus . . . . .	Negative	Negative
			75 D. F. Ascending gonorrhea, two months' duration . . . . .	Positive	Positive
			76 E. D. Double pyosalpinx. No other data . . . . .	Negative	Negative
			77 A. L. Chronic salpingitis. No other data . . . . .	Negative	Positive
			78 L. M. Chronic salpingitis. No other data . . . . .	Negative	Positive
			79 E. G. Inguinal adenitis. No clinical or microscopic data . . . . .	Negative	Positive

to say that it gives eighty per cent. more information than the older method, and that, when positive, the reaction certainly indicates the existence of gonorrheal antibodies in the blood. When the reaction is negative, which has occurred frequently with both kinds of technic in manifest gonorrheal cases, one cannot necessarily eliminate the possibility of the

existence of gonococci in the given patient's system. As a matter of fact, we found seven male cases with active foci, in which the new test, as well as the older method, failed to give a positive reaction. We also found eight female subjects with chronic lesions in which a reaction was to be expected, but in which both methods failed. We found in seventy-seven

cases, of which thirty-six were males and forty-one females, that the reaction was negative with the old method and positive with our method. The seventy-seven cases all displayed clinically signs of active foci of infection. Adding these fifteen cases, in which there were clinically active foci, to the seventy-seven cases in which we found a positive with our method and a negative with the other method, plus the sixteen cases in which we found a positive with both methods, the result is a grand total of 108

TABLE 2.—COMPARISON OF RESULTS IN USE OF OLD AND NEW METHODS.

	Cases.
Males .....	79
Females .....	79
Total .....	158
Results:	
Negative in both methods .....	63
Negative in old method } .....	77
Positive in new method } .....	16
Positive in both methods .....	156
No index .....	2

clinically positive cases of gonorrhea in which the complement fixation test should have been positive. Expressed in terms of percentage, both methods failed in 12 24/27 per cent. The older method gave a positive reaction of 14 22/27 per cent. only. Our method gave a percentage of positive reaction of 71 8/27 per cent. Expressed in terms of comparison, the new method yielded 56 13/27 per cent. better results than the old method in all cases of gonorrhea in which gonorrheal antibodies occur. This serves to explain the statement just made, that we did not wish to be understood as stating that the new method yielded 100 per cent. positive in all gonorrheal cases in which reaction was to be expected. There is still a percentage of 28 19/27 per cent. of clinical gonorrhea, according to our figures, in which both methods failed to give a positive reaction. Whether this is due to the fact of the fluctuation of the antibody, or to the fact that still more strains of gonococci must be added to the antigen to make it absolutely ideal, we cannot say at this writing.

We wish to go on record here with respect to proteotropic or false reactions, both in regard to this gonorrheal technic, and in regard to the Hecht-Gradwohl method in syphilis, by stating that we have never seen such a condition, and that, in every

TABLE 3.—CASES NEGATIVE IN BOTH METHODS.

	Cases.
Males .....	31
Females .....	32
Total .....	63
MALES NEGATIVE IN BOTH METHODS.	
Clinical cures and controls .....	20
Anterior urethritis (infection under 4 weeks) .....	5
Cases with apparently active foci, where test failed .....	7
Total .....	32
FEMALES NEGATIVE IN BOTH METHODS.	
Clinical cures and controls .....	21
Acute infections (no reaction expected) .....	2
Chronic cases reaction expected (failed) .....	8
Total .....	31

instance in which we have found the positive reaction with this new technic, and a negative with the older methods, there is ample clinical evidence of the disease whose immunologic reactions we have been studying. We do not offer this technic as a supersensitive one, nor as a technic that shows antibodies that are not present. We offer it as one

that catches the antibodies that are actually destroyed by the older technic before the test is applied, just as the Wassermann reaction destroys syphilitic antibody before the test is under way. Again we wish to emphasize the fact that while the Wassermann test is actually a test of scientific accuracy to limited extent, the gonorrheal complement fixation test is a true antigen-antibody phenomenon, which is capable of more lucid scientific explanation than is the Wassermann reaction.

## INTERPRETATION OF RESULTS.

The interpretation of these positive and negative results brings us to a discussion of the character of the cases with which we have been dealing. In the male, the positive reactions were obtained on persons with a definite history of gonorrhea. The infection had existed from periods of time varying from four weeks to seven years, and the cases were uniformly complicated by prostatitis, seminal vesiculitis, epididymitis and orchitis. We have failed to obtain a positive reaction in the male in

TABLE 4.—CASES POSITIVE IN BOTH METHODS.

	Cases.
Males .....	9
Females .....	7
Total .....	16
MALES POSITIVE IN BOTH METHODS.	
Cases with clinical foci .....	8
Cases with no clinical foci .....	1
Apparently cured .....	9
Total .....	18
FEMALES POSITIVE IN BOTH METHODS.	
Cases with clinical foci .....	6
Cases with no clinical foci .....	1
Total .....	7

any case of anterior urethritis of less than four weeks of infection. We are inclined to believe that the reaction never occurs in the male except when a "complication intervenes," when the gonococci penetrate more deeply into the urogenital tract than they do in case of a mere surface or subsurface infection. The fact that we have repeatedly obtained negative reactions with both kinds of technic in persons with gonococci in smears in posterior urethritis speaks either for the fact that the reaction cannot be caught even by our most sensitive method, or that the reaction never occurs unless there is a deep migration of the gonococci into recesses admitting of lymphatic absorption into the general blood stream. In the female, we are convinced that the same condition obtains, namely, that the advance of the gonococci into the fundus uteri, the tubes, or ovaries, or into the Bartholin glands is necessary before any reaction is set up.

In discussing some of our findings we find that we obtained a positive reaction with the new method, and a negative with the older method, in two cases of vaginitis in young children. We do not recall having seen any data on this particular

TABLE 5.—CASES NEGATIVE WITH THE OLD METHOD AND POSITIVE WITH THE NEW METHOD.

	Cases.
Males .....	36
Females .....	41
Total .....	77

group of cases in the literature in regard to gonorrheal complement fixation. We also obtained a clear negative reaction with both kinds of technic



in the blood of a child with clinical ophthalmia neonatorum, whereas the mother gave a strong positive reaction with the new technic, and a negative with the older technic. We also have a record of four examinations of the blood of one patient extending over a period of one year, with a uniform positive reaction with the new technic at each test, and a uniform negative reaction with the other technic. This was a case of gonorrheal prostatitis not under treatment. It might be added that in a number of cases there was a Wassermann positive reaction, that is to say, in which syphilis and gonorrhea coexisted. No difficulty was experienced in obtaining a complement fixation for both diseases.

#### CONCLUSIONS.

From the foregoing study, which is presented simply as a preliminary report, we wish to be understood as concluding that this new technic offers possibilities of greater accuracy in respect to gonorrheal complement fixation than is obtainable with the methods now in vogue. We believe that a continuation of the work will still further strengthen these figures, and that ultimately later studies will in every particular bear out our contention, namely, that the use of unheated serums for complement fixation in microbic diseases in general is the ideal method; that the utilization of the natural amboceptor and natural complement is also the procedure of choice; and that the technic utilizing heated serums must finally be judged inadequate, and capable only of demonstrating the grossest examples of infections, rather than the moderately severe and lightest degrees, so far as antibody production is concerned.

I cannot refrain from emphasizing what has been said before regarding the identification of the gonococcus by microscopic and cultural methods that the finding of the coffee bean diplococcus in a very acute stage of urethritis in the male, in its intracellular habitation, with its gram negative tintorial characteristics, is fairly good evidence on which to base a bacteriological diagnosis of gonorrhea; but that cultures in this group of cases are advisable, especially in forensic cases. Further, the normal urethra and the normal and abnormal vagina may harbor gram negative diplococci that are not gonococci. Also, it is unusual to find intracellular diplococci in discharges from the female vagina, or cervix, or urethra. Cultures from these organs require prolonged and careful study for the purpose of identification of the gonococcus. Therefore, the diagnosis of gonorrhea in the female by microscopic methods is a most difficult procedure, and one should be cautious in either excluding or including gonorrhea by these methods. Complement fixation, especially by this new method, offers possibilities that should be investigated before the investigator comes to a conclusion regarding the absence of gonorrheal infection.

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628 NORTH GRAND AVENUE.

## THE DETECTION AND MEASUREMENT OF LATENT OCULAR DEVIATIONS.

*The Inadequacy of the Ordinary Methods Used.*

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Failure to relieve by glasses or other measures symptoms apparently due to eyestrain is of common occurrence. This is true not only of cases in which the symptoms are definitely ocular in character, and definitely associated with the use of the eyes, but also of cases in which the symptoms are more remote, such as headache, vertigo, gastric disturbance, and the other symptoms grouped under the term neurasthenia, in which other etiological factors seem to have been excluded. One of the causes of failure is undoubtedly the inadequacy of the ordinary methods used for demonstrating the presence, kind, and degree, of latent muscle imbalance. The object of this communication is to call attention to the increased knowledge which may be obtained by modifying the so called cover or screen test, by lengthening the time for which it is used.

Ordinarily the test is applied by directing the patient to fix his eyes upon a distant object, usually a small light, six metres away. A card or screen of some kind is held for a fraction of a minute in front of one eye and then shifted to the other. If a deviating tendency is present the covered eye will take up its position of rest, whether that be one of divergence, convergence, or vertical displacement, and on moving the screen to the other eye a movement of recovery will be seen. At the same time, the patient will observe an apparent movement of the object looked at. Though undoubtedly the most reliable of all the methods used for the detection and measurement of latent deviations, and particularly so because it has both an objective and a subjective side, it fails in many cases to reveal the truth, *because the period of time for which it is used is insufficient* to permit its object—the relaxation of the extrinsic muscles—to be attained. Just as in hypermetropia, the whole error or part of it may be kept latent by persistent spasm of the accommodation, so in heterophoria, the whole or part of the deviating tendency may be held in abeyance by spasm of the extrinsic muscles. In hypermetropia, the action of the accommodation can be eliminated by the use of a cycloplegic, but there is no drug at present known which has a similar effect on the extrinsic muscles. By greatly extending the period of time during which the eye is kept covered however, very much more information may be obtained.

In practice I have adopted the plan of making the patient wear a ground glass in front of one eye for several days, usually seven, the other being furnished with a full correction of its refractive error. I have used the method in a considerable number of cases and present herewith a report of a few of the more striking ones, illustrating in particular the three following points:

1. In many cases, but by no means in all, an error is found which had been previously undetected, or the error proves to be of much higher degree than previous tests had indicated.

2. The abduction as measured at preliminary examinations is found to be an unreliable guide to the amount of exophoria present. The degree of exophoria found by the prolonged occlusion test may be greatly in excess of the abduction as originally measured.

3. In some cases the character of the deviation is changed. Thus, an esophoria before may become an exophoria after occlusion, but the commonest incident of this kind is a change from R. to L. hyperphoria, or the converse. This occurs in a notable number of cases, and is commonly associated with the manifestation of exophoria.

The cases reported below have been selected for the purpose of illustrating the advantages to be derived from the use of this method, and the prolonged suffering and repeated failures which may be incidental to such cases, when the ordinary methods for the detection of muscle imbalance alone are available.

CASE I.—Mrs. C. W. A. consulted me first at the age of eighteen, in 1893, on account of headache and asthenopia. Examination showed a low degree of hypermetropia and astigmatism and orthophoria. The correction of the

errors of refraction gave her no relief. She disappeared from my observation and I heard later that she had been greatly benefited by prism exercises. Nevertheless, she reappeared seven years later with the same symptoms, stating that the benefit she had received from prisms had been partial and temporary only. This time she showed more astigmatism and  $\frac{1}{2}^{\circ}$  of right hyperphoria. The refraction was again fully corrected, but with very slight relief. Further test revealed still right hyperphoria  $\frac{1}{2}^{\circ}$  or less, exophoria  $2^{\circ}$ , abduction  $8^{\circ}$ ; adduction,  $15^{\circ}$ .

At a later date she showed exophoria  $1^{\circ}$  for distance,  $12^{\circ}$  in accommodation. Prisms relieved her headache at first. She then disappeared and was apparently in the hands of other oculists until 1912, when she again came under observation. She was then wearing a stronger astigmatic glass over each eye, which repeated tests showed to be an overcorrection. This time there was exophoria  $2^{\circ}$ , abduction  $6^{\circ}$ , in accommodation exophoria  $10^{\circ}$  P. P. C. end of nose. A careful correction of the refraction after cycloplegia and of the hyperphoria again failed to give relief. In January, 1913, she showed, with full refractive correction, orthophoria all over her field. She again disappeared, returning on April 21st, 1915, having been to still another oculist with an aggravation of her symptoms. In the glasses there was  $\frac{1}{2}^{\circ}$  prism base down for the right eye. Up to the present time she had been somewhat insubordinate as to the constant wearing of glasses, but she had finally realized the necessity of wearing them all the time. There was  $1^{\circ}$  of exophoria, no hyperphoria, the abduction was  $8^{\circ}$ . She was advised and readily consented to wear a ground glass over one eye for a week and experienced immediate relief from her symptoms. On removing the ground glass, tests showed L. hyperphoria  $\frac{1}{2}^{\circ}$ , exophoria  $11^{\circ}$ . The last report of this patient was that she was perfectly comfortable with the constant use of glasses correcting her refraction and part of the exophoria.

This case shows that a high degree of exophoria may exist and be undemonstrated by the ordinary tests; that the exophoria may even exceed the abduction, as measured previous to occlusion; that a right hyperphoria before, may become a left hyperphoria after occlusion.

CASE II.—Miss M. E. R., age 19. First seen on April 10, 1915. Symptoms, nervousness, photophobia, frontal and occipital headaches with occasional nausea and vomiting. Has been wearing glasses 5 years, last change having been made in June, 1914.

Wearing R. —1.00 S L. do 150°  
—0.25 C 15° do  
½° Prism b. up. ½° Prism b. down

Examination after cycloplegia showed

R —1.50 S L. —1.50 S  
—0.37 C 35° —0.50 C 142½°  
V 6/6 each

Muscle tests showed exophoria  $4^{\circ}$ , and left hyperphoria  $2^{\circ}$  before and after cycloplegia.

Glasses prescribed giving full refractive correction and prisms and p.  $1\frac{1}{2}^{\circ}$  in up Ax.  $30^{\circ}$ , R. eye, L. in down axis  $30^{\circ}$ , giving very definite but incomplete relief, so that on July 20th she returned on account of headaches. The refractive correction was found to be accurate, and there was L. hyperphoria  $1^{\circ}$  and exophoria  $3^{\circ}$  or  $4^{\circ}$  plus her glasses, the abduction being  $12^{\circ}$ , plus her glasses.

After occlusion of L. eye with a ground glass for eight days, she showed L. hyperphoria  $10^{\circ}$ , and exophoria  $15^{\circ}$ . This seems an ample explanation of failure to obtain relief, but it seems unlikely that a satisfactory result can be obtained except by radical operative correction.

CASE III.—Miss M. H., age 30. First seen July 20, 1915. Symptoms (4 years), asthenopia, photophobia, occipital headaches.

Wearing +1.50 S  
+0.37 C 60° each

Examination showed refractive correction to be approximately accurate. Exophoria  $3^{\circ}$ , hyperphoria  $0^{\circ}$ , abduction  $12^{\circ}$ .

As the errors revealed seemed insufficient to account for the failure of the glasses to give relief, a ground glass was prescribed over the L. eye. On removal seven days



later, there was L. hyperphoria 4°, and exophoria 14°, and a diplopia which was difficult for her, at first, to overcome.

Here again we find a manifestation of exophoria exceeding the original abduction, and of hyperphoria of which the ordinary tests gave no indication.

This patient was greatly relieved by a partial prismatic correction of her imbalance.

CASE IV.—Mrs. E. D. R., age sixty-five. First seen June, 1915. Symptoms, extreme photophobia, asthenopia, constant pain in eyes, dating apparently from change of glasses in November, 1914. Had been to several oculists, without material relief.

Wearing R. +1.00 S. L. +1.50  
+0.50 C. 90° +0.50 C. 90°

On examination R. +1.25 S. L. +1.25  
chose +0.87 C. ax 70° +0.75 C. ax 97½°  
Muscle tests showed exophoria 3° to 4° at 6 m, and 10° for ½ M. R. hyper. ½° or less, abd. 8°.

1° prism base in each eye over hers gave very definite and immediate relief, and on June 30th she was given as a permanent formula:

R. +1.25 S. L. +1.25 S.  
+0.87 C. 70° +0.75 C.  
1½° in down 160° 1° in

These glasses gave her decided relief until she took a ride in very bright light, followed by an aggravation of her symptoms. The refractive correction was found to be accurate. R. hyperphoria ½°, exophoria 1° to 3°, abduction 7° (with her glasses). She was then given a ground glass, which she wore for seven days, and on its removal showed L. hyperphoria 2°, exophoria 10°, having been very much more comfortable while wearing the ground glass.

In this case the character of the hyperphoria was reversed, and the final exophoria exceeded the original abduction. A fuller correction of the muscle error was followed by definite improvement in symptoms.

CASE V.—Miss M. E. T., age thirty-two, nurse. Seen September 14, 1913. Symptoms, granulated lids, severe asthenopia, indistinctness of vision, temporal headaches; had lost sixty pounds in three years, menses regular, but diminishing in amount and color. Thought nose was larger. No change in hands or feet.

Wearing R. +1.00 S. L. -3.00 C. 180°  
-4.50 C. 180°

Examination under cycloplegia gave R. +1.50 S. V=6/9  
-5.50 C. 5°  
L. -2.75 C. 175° V=6/9

Muscle test—Exophoria 7° to 9° L. hyp. 2½°

Glasses correcting the refraction and about 2/3 of the muscle error gave very definite but partial relief. In July, 1915, she reported lids better; nervous symptoms about the same. Examination showed refraction correction accurate. L. hyp. 1½°, Ex. 6° in addition to that corrected by glasses, ground glass was prescribed, and at the end of seven days showed L. hyp. 8°+ somewhat diminished in upper part of field; Ex. 10°

It is obvious that the amount of uncorrected heterophoria is an effective bar to any material improvement in her symptoms.

CASE VI.—Miss R. P., age twenty-three. Seen November 28, 1917. Asthenopia, headaches, stomach trouble. Not wearing glasses. The first examination showed practically no error of refraction, or muscle balance. After cycloplegia accepted R. +0.25 S. L. +0.50 S. and there was +0.12 C. 75

Exophoria 2° and L. hyperphoria ½°.  
Shortly after this, she was operated upon for appendicitis, and three weeks after the operation she returned, still complaining of strain.

Examination gave R. EM. L. +0.25 S. L. Hyp. ¾°  
+0.12 C. 75° Exophoria 2°  
Abduction 7°

A ground glass was prescribed for the left eye, and on removal a week later, there was L. hyperphoria 3°, and exophoria 8°. It will be noted that not only was there a great increase of deviation in both directions, but the exophoria was greater than the original abduction.

CASE VII.—Miss F. B. R., age twenty-two. First seen November 20, 1917. Lifelong subject of headaches,

frontal, temporal, and occipital, occurring three or four times a week, lasting all day.

Has worn glasses one year, but without relief.

+1.75 S. 90° each  
+0.25 C.

After cycloplegia accepted

R. +1.75 S. L. +2.25 S.  
-0.37 C. 10° -0.50 C. 15°

Muscle tests showed exophoria 2°, L. hyperphoria ½° at first examination, orthophoria at second (cycloplegia). Was ordered full correction for refraction less 0.25 S. She returned on January 18, 1918, unimproved as to headaches. Refraction accurate, L. hyperphoria ½°, exophoria 1°, abduction 10°. A ground glass was prescribed. At the end of a week she showed L. hyperphoria 4°, exophoria 8°, having been a great deal more comfortable while wearing the ground glass.

Temporary relief followed a partial prismatic correction of the imbalance. The test was repeated in April and May, 1918. After occlusion for fourteen days, examination revealed L. hyperphoria 4°, ex. 12°.

Operative correction was advised.

CASE VIII.—Mrs. L. J. D., age thirty-two. First seen January 24, 1918. Asthenopia, photophobia and lachrimation. Temporal and frontal headaches, aggravated by wearing her glasses. Had been prescribed for in New York three years previously, following operation, and again more recently in this city; in both cases without relief.

Her glasses were R. -1.12 C. 180°: L. -0.75 C. 180°  
Examination after cycloplegia gave:

R. +0.50  
-1.50 C. 175° Exophoria 1°  
L. +0.25 S.  
+0.75 C. 85° R. hyperphoria ½°

She wore a ground glass for seven days and examination then revealed L. hyperphoria 1°, and exophoria 15°+, evidently amply explaining the previous failures to relieve.

In this case the form of hyperphoria was reversed. The amount of exophoria greatly increased. The original abduction is not recorded.

CASE IX.—Miss G. E. C., age twenty-seven. First seen December 27, 1917. Had worn glasses twelve years, last change being February, 1917, on account of severe headaches and asthenopia, but without relief. Her glasses were +1.25 C. R. Ax. 70°; L. 105°, and were found to be quite accurate. She showed L. hyper. 1°, for which she was given a correction—without benefit. Subsequent examination February 17, 1918, showed no change. A ground glass was prescribed; on removal seven days later there was L. hyperphoria 5°+, exophoria 11°—a more than ample explanation of the previous failures to relieve her symptoms.

Prismatic correction gave marked but incomplete relief and operation was advised.

CASE X.—Mrs. C. D. S., age thirty-one. First seen February 19, 1918. Photophobia and headaches, occipital and mastoid, to which she had always been subject, accompanied by nausea and sometimes vomiting; she had tried to wear glasses eight years previously, but they nauseated her. Examination showed V. 6/6, accepting +0.12 C in each, exophoria 3° to 4°, hyperphoria 0°, abduction 12°. She accepted after cycloplegia R. +1.00

+0.25 C. 100°  
L. do  
do 120°

and showed exophoria 6°, L. hyperphoria ½°.

After wearing a ground glass for seven days, she showed L. hyperphoria 2° and exophoria 11°+.

CASE XI.—Miss S. C., age twenty-four. First seen November 10, 1917. China decorator; nervous breakdown in college three years ago. Headaches with nausea since. Photophobia, insomnia from headaches. Headache occipital, cervical and, since glasses, behind the ears also.

Wearing +0.50 C. 00°  
1° in each

Examination:  
R. +0.50 C. 85° 6/6  
L. +0.25 Exophoria 3°, hyp. 0°, abd., 10°  
+0.62 C. 85° 6/6

## After cycloplegia:

R. +1.00	Exop. 2°
+0.62 C. 85° 6/6	L. hyp. ½°
L. " " "	

Ground Glass one week. Has been unable to work. On removal L. hyp. 2½°, exoph. 11°. Unconquerable diplopia.

Ordered R. +0.75	L. +0.75
+0.62 C.	+0.62 C. 85°
3° in up 10	3° in down 20°

In April, 1918, patient reported that she had had no trouble since commencing the use of new glasses.

CASE XII.—Mrs. L. K., age thirty-six. First seen April 22, 1908. Symptoms, very severe headache, with nausea and vomiting, lasting three days, occurring at intervals of one to three weeks and asthenopia.

Wearing glasses for hypermetropia and astigmatism prescribed to her by a well known Philadelphia ophthalmologist. Examination without, and with cycloplegia, showed some slight variation in the refraction, and also revealed L. hyperphoria 1° to 2°, she was given a full correction for her refraction and a ¾° prism base down L. eye. She seems to have been fairly comfortable with these glasses, except that the headaches continued. I did not see her again until 1915. In the interval she had seen her Philadelphia ophthalmologist, who made some changes in the refractive correction, omitted the prism, gave her a presbyopic correction, and said it was necessary to wear the glasses for near work only.

Some changes in refraction were again demonstrable, L. hyperphoria 1°, the correction of which, and the constant wearing of the glasses made her more comfortable. She was prescribed for by me again in 1917 with only partial relief. In the meantime other possible causes of headaches had been investigated, and as far as possible removed. Tonsillectomy had been done, and some teeth removed, but with no effect upon the occurrence of headaches.

In May, 1918, while in the hospital for the treatment of colitis, having had several headaches of the greatest severity, it seemed worth while to investigate the muscle balance more thoroughly, and a black patch was worn continually over the left eye for a week. At the end of that time, examination revealed L. hyperphoria 4½°; exophoria 8°. A partial correction of the heterophoria by prisms gave great relief, so that no headaches occur unless the patient does much near work.

The patient was so much impressed by her own experience of the value of the test, that she suggested using it in the case of her son.

CASE XIII.—D. K., son of the preceding patient, who had been under my observation since 1909, when he was five years and four months old, on account of twitching of the eyelids and blepharitis. At that time there was a low degree of hypermetropia and orthophoria. I have seen him every year since 1913, examination showing astigmatism gradually increasing in degree, but orthophoria has always been present. He has also been prescribed for by a Boston ophthalmologist, always with incomplete relief, some asthenopia and twitching of eyelids and face persisting. After seven days' occlusion of one eye by a black patch, examination showed L. hyperphoria varying from 8° to 6° and exophoria from 4° to 5°. On removing the patch an unconquerable diplopia was present.

Many similar cases could be cited in confirmation of the statement made at the beginning of this paper that the methods commonly in use are quite inadequate for the detection and measurement of faults of the muscle balance. There are points of interest upon which prolonged occlusion throws light, not dealt with here; for instance, the effect of exercise, of the prolonged wearing of prisms, and of operation. The writer, from an experience with this method now extending over many years, believes it should be used in all cases of asthenopia in which the correction of demonstrable errors fails to relieve symptoms presumably ocular in origin.

CLINICAL OBSERVATIONS IN  
SPLANCHNOPTOSIS.

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Our knowledge of downward displacement of thoracic and abdominal organs is of comparatively recent origin. Before 1889 the term gastropstosis, coloptosis, enteroptosis, visceroptosis, etc., had not appeared in the medical literature. Organs were often spoken of as being prolapsed in the same manner as we still speak of prolapse of the ovary or uterus.

Glenard at that time described in detail some well marked cases of enteroptosis that had been studied by him, and showed that there was a well defined group in which proper treatment would replace the displaced organs in their natural positions with complete relief of symptoms. Still and his coworkers about the same time clearly described a certain type of individual, with developmental defects in the osseous, somatic, and nervous systems, in whom organs were almost always not in the position described in the anatomies. Because of their generally lowered strength, the term congenital asthenia universalis was given to this class. Lane and his followers, a little over a decade ago, did considerable research work in this field, confining their attention particularly to the colon. The frequency with which the colon was found in positions other than customary, and the kinks in its course at the various curvatures caused much speculation in their minds. Many varied systematic manifestations in the cases studied were suspected to have resulted from the pathological conditions described, and in some cases operative measures, which eventually spread to this country, were instituted. From his work and that of other able investigators we have been made to realize that displacement of organs may markedly interfere with the carrying on of their normal functions. The recent advances in röntgenoscopy and röntgenography have confirmed the work of the early investigators, in so far as the shape and position of the organs is concerned, and have raised many questions of a clinical nature.

With our well established methods of physical examination, so ably assisted by x ray evidence, we have had no difficulty in discovering organs in a prolapsed position. The difficulty has been in deciding to what extent the symptoms might be attributed to these conditions, and often the truth has only been supplied by end results in treatment directed along suspected lines. One author has arranged a working classification which he applies to these cases as follows: First, one or more organs may be displaced but the subject enjoys good health; second, the patient is sick but symptoms can be relieved without special reference to prolapse of the organs; third, the patient is sick and cannot be relieved without reference to prolapse of the organs. There is much of merit in this arrangement, for it prohibits the prompt classification of the cases and requires a more thorough clinical study. For the



purpose of making this discussion with some degree of completeness I think we should accept the classification which seems to be the most applicable and affords the most accurate working basis, viz.: Group I, congenital visceroptosis; Group II, acquired visceroptosis.

#### CONGENITAL VISCEROPTOSIS.

Some authors may object to a consideration of this class of visceroptosis on the basis that it is not a true form, but it would seem that a very limited view of the subject would be given if the type so ably portrayed by Stiller were not included. His original description I shall give, together with additional information which has been gathered as a result of time and study.

The subjects are of a definite type and encountered in all walks of life, often enjoying the very best of health. They are of long, lean build, and when stripped, will be seen to have steeply falling ribs, wide intercostal spaces, and an acute epigastric angle. The thorax impresses one as being unusually long, and when the distance from the lowest rib to the crest of the ileum is measured it will be found to be much less than in a person of average contour. This factor alone will produce a smaller abdominal cavity, and the pelvic cavity will appear large with the organs accommodated therein. In some well marked cases one cannot but recall that the chest compares favorably with a type that has long been recognized as being predisposed to tuberculosis. If the cardiac area is observed it may be noticed that the impulse is lower than usual and sometimes there is a cardiopiosis, but more often it only appears so from the steeply falling ribs and wide spaces. The recent army examinations have shown a number of the men examined to have harmless systolic functional murmurs. An examination of the spine may show scoliosis or kyphosis. As has been stated, the panniculus is poor. With the bowels thoroughly evacuated, the right or both kidneys may be quite frequently palpated, or moveable, this becoming more marked in the upright position. The spleen or liver may also be palpated, but this is not so usual. Gastric and colonic inflation, with percussion, will reveal the organs to be displaced.

To the radiographer we owe much, for his contribution relative to the size and conformation of the stomach, as well as its location. Having seen this work, we no longer believe in one stereotyped stomach for all. There appear to be two large groups. First, the cowhorn; second, the fishhook; and there may perhaps be a third or more exaggerated form of the latter—a water trap form. Our observations in fluoroscopic screen work have shown that types one and three are found most frequently in the class of subjects we have under discussion. It may be concluded that if there is no retention of a meal over six hours, and motility, peristalsis, and contour are normal, the functions, in so far as one is able to discover, are being carried on in a normal manner regardless of the position of the organs. Such a case will cause much speculation as to the cause of gastric symptoms and will give the poorest results in the way of treatment.

From a rather close analysis of the literature, together with the opportunities I have been fortun-

ate in having for the studying of such cases, I have been led to consider these patients as not suffering from symptoms dependent upon the position of the organs. They often complain of various complexing manifestations with reference to the gastrointestinal tract that are difficult to explain, unless they have some connection with the neuromuscular or endocrine system, of which we still know far too little. The latter system may have had something to do with the development of the anatomical contour. It should be borne in mind that the etiological factors which are much better known in the second, or acquired, group are more virulent in action in this predisposed group, and they may fall easily into a true type, and relief will be obtained when the causative factors are removed. Their recognition will not be difficult then, as abnormal functioning, which I will take up under the subject of acquired splanchnoptosis, will be apparent.

#### ACQUIRED VISCEROPTOSIS.

In order to form some idea of how displacement of abdominal organs may come about in a previously healthy person to such an extent as to produce symptoms, a description of the natural factors that support the organs might be helpful. The abdomen may be regarded as a flattened cylinder with the spine, sacrum, ribs, and muscles passing from the pelvis to the lower ribs, forming a strong barrier which cannot yield. The ribs are also lower at the sides than at the front, where they curve sharply upward to join with the sternum. In front the condition is somewhat different and a longer distance is present from the thorax to the pelvis, which is not supported by framework. The muscles are the only supporters. Anything that weakens the anterior abdominal support will allow downward displacement of the organs to the extent of their supporting ligaments. Likewise if the barrier yields, i. e., the centre of gravity changes from fatigue, defective balance, etc., there will be displacement to the extent of the relaxation of the ligaments, which are nothing more than bands of peritoneum with fat enclosed, and it is doubtful if they are ever a primary factor. An additional and important factor in holding the organs in position is abdominal fat. Its greatest rôle is seen in maintaining the kidney in place, but it also acts as a pad in filling in the interspaces between abdominal organs. It can now more plainly be seen how important it is to preserve the strength of the anterior abdominal muscles during confinement, as any well marked weakening of the muscle fibres which form the sole support in front may lead to a ptosis of the abdominal organs severe enough to produce symptoms. It is not an uncommon experience, when examining women who have had multiple pregnancies, to discover that the muscle fibres of these muscles feel like tissue paper. If much adipose has accumulated in the abdomen it is difficult to palpate the muscle fibres, but the protuberant abdomen below the navel and concavity above, when in upright position, will be of some assistance in forming an opinion. It is just as common an experience to palpate displaced viscera; and in any case where gastrointestinal symptoms have their origin very shortly after con-

finement these findings should have most careful consideration. Another very frequent factor is the weakening of the abdominal muscles and decrease of intraabdominal tension after the removal of large tumors. The following history will illustrate a case of this nature:

CASE.—A. G., age forty-four years; single and unoccupied; of good physical build and health. Was operated upon ten months before coming under observation and a large fibroid of the uterus removed. At that time her weight was 150 or 155 pounds. Since the operation she had been constipated. Anorexia was quite marked and after eating there was considerable distress in the epigastric region and under the costal margins. At varying intervals there were crampy pains across the epigastric region and at other times across the abdomen below the umbilicus. One article of food after another had been discarded in the hope of improving digestion, but the symptoms had grown steadily worse. Insomnia, depression, irritability, headache, cold extremities, and weakness were complained of. Recently there had been some pain in the left hip joint, but there were no local findings. Examination showed that there was a loss of weight of thirty-five pounds. The skin and mucous membranes were pale. There was a relaxation of the abdominal muscles and the abdomen was protuberant below the umbilicus. Both kidneys were freely movable. Blood examination showed hemoglobin of fifty per cent. and red cells 3,880,000. Urinalysis was negative except for a large amount of indican present. Fractional gastric contents showed a slight diminution in acids of the stomach. Under the fluoroscope the stomach was seen to be quite low in the pelvis with a great deal of sagging of the greater curvature, making it U shaped. Peristaltic waves were slow. At the end of seven hours a slight amount of the barium meal remained in the stomach. When the meal reached the colon ptosis was noted, and after seventy-two hours it still remained. With rest in bed, high caloric feeding, daily enemas for the first few days and an occasional dose of mineral oil the patient reached her former weight in two months, and since then has gained an additional five pounds, with complete relief of symptoms. At the end of this time the stomach was found to be completely above the umbilicus and empty inside of six hours. The colon was also in much better position. The patient was instructed to lead an outdoor life and follow exercises which required the use of the abdominal muscles.

Other very important factors that will be discovered are faulty habits and attitudes, anemia, decrease in intraabdominal tension following the removal of large amounts of fluid or after the removal of large abdominal tumors. Long, exhausting diseases will produce the condition.

When posed organs are known to be present operations should be instituted with a great deal of consideration, with a view to the possibility of relieving the symptoms. Just recently a patient was seen in whom the symptoms are dependent upon prolapse of organs. This patient has been operated on two different occasions without relief. On the first occasion the symptoms were of a gastric nature, and on the second, the appendix was removed. The mistake of operating upon a floating kidney without knowledge of the position of the other abdominal organs and conclusive proof that it is developing symptoms is not very frequently made at present. It should also be kept in mind that colicky pains in the abdomen may simulate gallstones, appendicitis, or renal colic.

The diagnosis of posed organs offers no particular difficulties, and the methods mentioned under congenital visceroptosis will give complete information. If there is doubt about the findings being sufficient to account for the symptoms the patient may be placed at rest in bed for a few days and the

comfort afforded will help in making a decision. Tuberculosis develops easily in a weakened condition, and a very thorough examination of the lungs should be made in every case.

#### TREATMENT.

In deciding on the course of treatment it is well to keep the fact in mind that the symptoms have arisen from the displacement of the organs, and before any measures can be taken to increase their power and strength they must be replaced, as nearly as possible, in their normal positions. This can be accomplished most thoroughly by keeping the patient absolutely at rest in bed, with the foot of the bed slightly elevated; also, although less satisfactorily, by the use of suitable abdominal supports. After the organs have dropped back give small amounts of food having a high caloric value at frequent intervals. If the feedings are carried on according to the subject's ability to assimilate them and the total calories carried are above 4,000, the patient will make a steady gain in weight and within a very short time assume a cheerful and cooperative attitude. I have followed the plan suggested by Williamson in this respect and have met with complete success. In several months the patients should regain their normal weight and healthy digestion.

Following this the etiological factors should be considered. If the abdominal muscles have lost their power of support through any of the causes mentioned attention must be directed to strengthening them or the patient will soon revert to his former condition. This is done by appropriate exercises. A few of the simple ones follow: The patient lies flat on his back, on the floor, and slowly flexes the thighs on the abdomen, alternately, then together, ten times, and as strength is gained the frequency is increased. Sometimes the power of the abdominal muscles is weakened to such an extent that the thighs can hardly be raised from the floor. After this has been carried out the thighs may be flexed on the abdomen and abducted and adducted alternately and together. These same exercises should later be carried out against graded resistance, with the hands, which, though a rather crude way of estimating the amount, will answer for most purposes. Later the bear walk may be done, i. e., walking on all fours. The ear tickler exercises, which consist in touching the lobes of the ear with the knees, are also of benefit. If such procedures are carried out for a suitable length of time the pendulous abdomen, if due to weakened muscle fibres, will assume a more rigid character. Measures have been suggested to increase the supporting strength of weak perineal muscles which may play a minor rôle in supporting the organs. They consist of voluntary efforts, as if attempting to restrain an urgent bowel movement. If the attitude is faulty exercises should be instituted to correct it.

Before dismissing the patient instructions should be given to live a life with plenty of outdoor exercise, and above all to follow a highly nutritious diet which will maintain the weight up to standard. In the event of any complicating illnesses a close observation should be kept in order that the strength and weight may be maintained.



## NONSURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

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As the clinical manifestations of hyperthyroidism or Graves's disease, are largely those of the nervous and circulatory systems, in which there is overexcitation with resulting chronicity of effects and often consequent fatal fatigue of the elements constituting these systems, it is obvious that the primary indication in a condition of such aberration of function is rest—physical rest and mental rest. The heart runs, and occasionally gallops away at the rate of one hundred and forty cycles per minute, undergoing at first hypertrophy of its musculature to enable itself to properly do twice as much work as it was formerly wont to perform; this hypertrophy continues on to the hypertrophic dilatation as a sequence to the ever persistent whipping of the heart by the thyroid substance surcharging the blood; and finally, in the course of a year or more, as is the case in all other vital organs and tissues in the presence of continued marked stimulation, degeneration occurs, degeneration of the myocardium with marked dilatation. Last of all, there is relative insufficiency, until loss of compensation closes the scene. During all this time the blood-vessels, large and small, even to the most minute capillaries, including also the lymphatic and venous systems—since they are a continuation of the heart, acting in a manner somewhat similar to the outgoing and incoming ramifications of a large water system, the heart of course acting as the motive centre—also partake of this pathological state. The pressure within these vessels is altered; the constituents and their contents are modified; the walls of these vessels undergo a degree of pathological change, not unlike those occurring in the myocardium, and as a result of all this, the body nutrition and every unitary cell of the bodily tissues are more or less neglected in the matter of anabolic and catabolic changes.

For the same toxic reason, the nervous system is in a state of extremely high tension—the sensory-motor, the sympathetic, and the mental. The tremor of the outstretched fingers and the toes and also of the tongue; the markedly increased reflexes; the extreme insomnia; the high tensioned mental state of the patient as evidenced by his readiness to flare up in anger, fear, grief, and other emotions on the slightest provocation; the ease with which lacrymation and hysteria occur; and not infrequently the marked change in disposition, with recurrent periods of melancholia and mania; these all present a picture of a kind of delirium, so to speak, of the various nervous centres, through the medium of the irritating thyroid substance issuing from the hyperplastic thyroid gland. We cannot here ignore mention of the disturbed nervous control of other organs. The stomach suffers with the evidences of the nervous aberration as manifested by the typical symptoms of "nervous dyspepsia"; there is alter-

ation in the tonus of the intestines giving rise to diarrhea, constipation, or a periodic alternation of the two; the excitability of the bladder reflex is evidenced by the frequent diurnal and nocturnal micturition; and even the sweat glands are not forgotten, for in most cases there is marked hyperhidrosis.

All this indicates nothing less than a turbulent state of the various vital functions, directly and indirectly induced by one of the most potent, though least understood, biochemical substances known, which has been dubbed "the active principle of the thyroid gland." And the most important element in the management of conditions where irritation and hyperexcitability predominate is rest—rest of the body and the mind; not mere sleep nor mere reclining, but a prescribed kind of rest outlined carefully by the scientific medical attendant, embracing not only the matter of rest in the abstract, but, more than that, the quality as well as the quantity of rest and the variations of this same rest which merge into a kind of activity when the latter is indicated. The writer of this paper is aware of the obtruseness of these remarks and for that reason proceeds to elucidate:

Some observers send their patients to the hospital for the "rest cure" as a routine procedure. My experience proves that this is not only unnecessary, but even harmful in some cases. We are dealing with a patient who has lost a considerable fraction of the body weight. What is indicated in a case of this sort? Is it to make the vital functions, especially the digestive organs, sluggish by keeping the patient inactive in bed? In the average case the rest cure rests neither body nor the mind. The mind, entirely unoccupied and left to itself, becomes introspective and, as a result, more turbulent than ever; the body, because of this mental state, becomes even less stable than ever. Thus, rather than a reduced tension of body and mind, an increased tension—a tension the strain of which occasionally leads to the breaking point—is induced by the rest cure. Hence patients who have been kept in bed for six, eight, or ten weeks at a time often leave it in a worse condition than they were formerly. Except in cases of extremely dangerous cardiac insufficiency, I have found complete rest in bed strongly contraindicated in the treatment of Graves's disease. Patients can rest quite as satisfactorily by sitting in an armchair, and surely feel more comfortable and contented; this comfort and contentment, though, at first thought a trivial matter, means the difference between the presence and the absence of a sharp appetite. Moreover, patients need not be deprived of the pleasure of sitting at the family dinner table and even of a nice slow walk in the open. All these, instead of further devitalizing the patient, as is the case with the complete rest cure in bed, strengthen the circulatory, nervous, and respiratory systems, improve the appetite, enhance the digestion and nutrition, and help the patient to take and assimilate greater quantities of food, besides rapidly increasing the body weight. I am therefore strongly opposed to hospital treatment in the usual sense. The congenial home is

the ideal place where proper results are most promptly achieved; and if the home, for some reason, is not congenial or is otherwise objectionable, then a sanatorium with environments as near like home as possible is the next best choice. In the latter instance we assume, however, that the attendants of the institution possess the qualifications herein implied.

However, where the patient's mentality is such that response to reason is not forthcoming to the satisfaction of the doctor—instances in which the patient is really suffering with a degree of dementia or melancholia, and in a household which is lacking in proper moral fibre, where its members could not be brought to the point of recognizing the vital importance of strict discipline and indomitable adherence to the doctor's orders—a nurse or two must be put on the case. The nurse in attendance must be capable of being trusted with a difficult charge; she must have complete control of the patient in the absence of the doctor, notwithstanding what the members of the household may say or think. The nurse must be diplomatic, tactful, kind, and sympathetic, yet firm as steel; under no circumstance must there be the slightest yielding to unreasonable demands of the patient or relatives. At a stated moment, precisely, must the patient retire, and at another precisely stated moment must the patient rise. The bath must be given at exactly this or that temperature; meals must be taken at the very moment indicated by the doctor; their duration and manner of chewing must also be carefully supervised. The transactions of the day, including the afternoon nap, rest, exercise, conversation, reading, light games, etc., must all be under the eye of the nurse in these difficult cases if we would win the battle for health. This rigid plan must be adhered to for as long a time as is necessary to bring the heart beats down to normal, and until the nervous manifestations of the disease have disappeared. Not until then may the nurse be discharged and the patient be permitted to follow the doctor's orders alone.

Friends, in cases of this sort, had better stay at home. Subjects of hyperthyroidism are peculiarly susceptible to suggestion or suggestive influences. Most of them are hysterical neurasthenics, more or less. Friends are often inclined in their sympathetic attitude to overdo matters, and, in their talkativeness to recall the patient's past experiences, which would manifestly be harmful. Moreover, the patient in the presence of friends cannot be at ease, since he will feel that his duties as host are obligatory, and this situation, of course, is incompatible with complete physical and mental repose, and hinders convalescence.

The matter of an oversupply of sympathy and extreme indulgence with the petty whims of the patient must also be considered from the angle of the immediate relatives, especially the fond helpmeet or the parent. It must be firmly stated in the household that sternness in obedience to orders shall and must characterize the treatment, and the physician must take the trouble to elucidate clearly the reasons for his stand. Regularity of sleep, rest, exercise, feeding, proper attention to bathing, the

quality and quantity of foods and beverages, the kind of recreation to be indulged in, each and all must be given careful attention, lest the patient step back from a greatly improved state to his former miserable condition. To become the least bit slipshod or indifferent to the strict regimen outlined by the physician is to play with fire and invite a serious, if not fatal, relapse.

It is assumed, of course, that the doctor who undertakes the cure of a case of exophthalmic goitre is sincere in his willingness to leave no stone unturned in his efforts to find what will benefit his patient—for all cases are benefited by one or the other combination of remedial measures. The doctor will not only keenly desire to restore the proper relationship between the organs involved as quickly as possible, but he must be fully equipped with an armamentarium of the recent researches in glandular experimentation and therapy. He must be keenly alive with regard to the variations which present themselves in a disease which is rarely typical in manifestations; he must be a broadminded student of human nature and especially of the psychology of a brain continually stimulated by an excess of potent thyroid secretion surcharging the blood; he must treat his charge as he would a mental case, and must therefore be, in part, a sort of alienist, and as such capable, through proper suggestive influences, of bringing pressure to bear upon the necessary emotional channels, with a view to inspiring complete willingness and determination to cooperate, in order to secure as prompt and complete a result as possible. The essential point, then, is implicit, unconditional confidence of the patient in the doctor; the patient must consider his medical caretaker as his truest friend, at least until recovery is achieved. The patient must look up to and respect the doctor as one who is superior in knowledge and wisdom, and to be consulted whenever the slightest question in any phase of the treatment arises. The patient must not take the slightest chance in this respect, but if there seems to be the least doubt concerning diet, medication, or any other particular, and if the doctor is not due for some time, rather than risk an unwise step, the medical adviser should at once be consulted by telephone.

#### CONCLUSIONS.

In conclusion, I cannot resist the impulse to say a word or two concerning the fallacy of surgery in the treatment of exophthalmic goitre. Except in cases where malignant changes are evident in the thyroid gland or where there are dangerous pressure symptoms, surgery is distinctly contraindicated in Graves's disease. But the exceptions in which surgery in Graves's disease is indicated are very rare indeed, so that we may feel justified in making this generalization: Hyperthyroidism is not a surgical entity, but is a disease which belongs strictly to the realm of the internist, for the following reasons:

1. Recent researches prove that Graves's disease is not a local condition, nor has it a local etiology.
2. Though surgeons report very favorable surgical recoveries, clinical recoveries are rare, and in a vast majority of cases there is a postoperative return, occasionally with even greater vehemence of all the signs and symptoms of hyperthyroidism.



3. The patient who has been operated upon, and who does recover clinically, gets well because of a carefully outlined system of postoperative nonsurgical treatment or because of the fact that the case in question is one of those instances of spontaneous recovery and would have terminated favorably in spite of treatment.

4. Internists who specialize in thyroid gland therapy cure more than seventy-five per cent. of their cases of hyperthyroidism by dietetic, hygienic, medicinal, and electrotherapeutic measures.

In my series of cases, to be reported in another paper, I have been able to cure nearly every case of hyperthyroidism that came under my care, and this was accomplished by nonsurgical and remedial measures.

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## CONGENITAL FISTULA OF THE LACRYMAL SAC.

### *A Report of Three Cases.*

BY WALTER BAER WEIDLER, M. D.,  
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There have been reported in the literature, up to 1908, according to Tyson (1), only seven cases of congenital fistula of the lacrimal sac, including his own. It is difficult to say whether all of these were genuine cases of congenital fistulous openings into the lacrimal sac or whether some of these were not the direct or indirect result of an inflammation of the lacrimal sac, which may have occurred some time after birth. No satisfactory theory has yet been advanced to explain the formation and presence of these congenital fistulae of the lacrimal sac.

Manz (2) is doubtful whether any of these fistulae are congenital in their origin. If they are congenital, they must be due to an arrest of development and an imperfect closure of the groove, which in the embryo runs from the eye to the olfactory pit.

Harman (3) writing of this condition calls it *fissura facialis* and thinks that it is due to a small deficiency in the union of the lateral, nasal, and frontomaxillary processes, which, with the fronto-nasal process form the face. These depressions or *fissura facialis* are exactly in the line of the normally obliterated fissures. The small variability in their position is covered by the extent of the fissure.

It was formerly thought that the tear duct was formed by the persistence of the part of the cleft between the lateral, nasal, and maxillary processes; but Born has more recently shown that in many animals the duct arises after the closure of the fissure, by the formation of a cordlike thickening of the rete mucosa, which sinks into the dermis, and later becomes canalized.

Harman explains his two cases in the following manner: There was first the closure of the fissure; then the formation of the tear duct; and later on, the reopening of the fissure and communication with the duct.

De Wecker (4) in reviewing the reports of the case of Scarpa and Baer, says that the openings were of the capillary variety and that the lacrimal

fluid did not discharge through the defect in the walls of the sac, except when the subject cried or when gentle pressure was made over the region of the sac itself.

In some of the cases the patient was not aware of the presence of the opening until it was observed by some member of the family. There are no definite groups of symptoms associated with this condition. There may be a troublesome epiphora which is always more pronounced when the patient is exposed to high winds. Occasionally these people are aware of the presence of a tear drop exuding on the face at the side of the nose, and this is especially brought to their attention after laughing, when the contraction of the facial muscles causes the tears to be pressed out of the fistulous opening. In rare cases there may be chapping of the face with a slight degree of eczema from the continued irritation of the skin, due to the presence of the tear.

CASE I.—Miss A. E., age three years; born of Italian parents. Birth normal; no history of any inflammation of the eyes or lacrimal sac. Parents noticed at times a small drop of water on the right side of the face, alongside of the nose, the presence of which they could not explain. When seen at the Manhattan Eye and Ear Hospital a small fistulous opening about 1.5 millimetres in diameter was observed on the right side of the nose, at the lower margin of the lacrimal sac. There was a small tear blocking the opening of the fistula most of the time, and on massage or gentle pressure upon the sac there occurred an increase of the flow of tears from the fistula. The fluorescein test was not made and operation was advised, but up to the present time the parents have not consented.

CASE II.—Mrs. J. W., age forty-two years; born of American parents. Birth normal; slight degree of epicanthus, with no history of inflammation of the lacrimal apparatus or conjunctiva at the time of or after birth. Patient thinks she has had the condition all her life. Remembers being conscious of the presence of tear drops on right side of face, alongside of the nose, which she was especially aware of when she laughed, thus causing a great increase in the flow of tears from the fistulous opening. When a probe was passed into the sac by way of the puncta it could be touched by the one entered through the fistula. There was no opening found on the left side, and there was no family history of such a condition in any other member of the family. Her two children showed no similar defect.

CASE III.—Mr. J. B., age twenty-four years; born of Irish parents; family and personal history negative for congenital defects or abnormalities, except for the presence of the small opening on the right side of the nose near the lacrimal sac. No definite history as to the possibility of any inflammation of the lacrimal sac was available. The patient had had this condition as long as he could remember. The test was made with the probes and it was possible to get direct contact of the probes in the sac. Cauterization of the fistula opening was advised, but refused.

CASE IV.—Miss M. C., age six years; born of Irish parents. Mother stated that two months after birth there was some slight inflammation of the conjunctiva of the right eye, which was treated at the Babies' Hospital. The child had one treatment and the eye got well. The fistula on the face was not noticed until at a later time—the exact time she did not remember. There was a small depressed opening at about the lower margin of the lacrimal sac on the right side. The tears ran out of the opening without pressure, and the fistulous opening was always filled with a tear. The fluorescein test showed the colored fluid at the opening in about three seconds. A cauterization of the opening with silver nitrate done two years ago did not close the opening. Cauterization with the actual cautery partially closed the opening.

This condition as a rule does not give a great

<sup>1</sup>This case was reported before the Section in Ophthalmology of the New York Academy of Medicine, December 21, 1914.

deal of discomfort to the patient; neither is it very disfiguring. It no doubt exists for years without the person being aware of its presence. The general physician, the pediatricist, and the surgeon must see this anomalous condition quite as often as the ophthalmologist, and it is my opinion that it occurs much more frequently than the number of cases reported in the ophthalmic literature would lead us to believe.

There seem to be two methods of treatment for this defect: The use of the actual cautery which was entirely satisfactory in Tyson's case and partially so in my own; and the dissecting of the margin of the fistulous opening with a pair of scissors and the bringing together of the edges with a purse string suture.

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131 EAST SIXTIETH STREET.

## MECHANICS OF DEFECACTION.

By C. D. SPIVAK, M. D.,  
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Thirty years ago Dr. A. W. Abbott, of Minneapolis (1), and Dr. Edward T. Williams, of Boston (2), advocated the squatting posture as the natural and proper attitude to assume in defecation. They sang its praises as a *sine qua non* in the relief of constipation, in healing hemorrhoids, and in the prevention of uterine displacements. "The squatting position," asserts Doctor Abbott, "is naturally assumed by monkeys and apes and by man in the savage state and on the frontier." "Watch any of the lower animals," exclaims Doctor Williams, "the dog, the cat, the pig, the ape at the menagerie, even the horse and cow when hard bound—always an approach to the same attitude." Doctor Williams is dissatisfied with the lavatories of his day, and makes the following suggestion: "One of the best arrangements, for men at any rate, would be to abolish the seat altogether, and have merely a stone or marble slab with a hole in it, as is often seen in Europe, at or near the level of the floor." Horace Fletcher (3) is also a believer in the virtues of squatting. He writes: "Z is the form! the body must assume to render emptying of the digestion residue natural and easy. Man was built to squat on his heels in defecating, and sitting erect on a modern seat is like trying to force a semisolid through a kinked hose." Even the Bible was drawn upon to prove that such is the correct position to assume. "Covering one's feet"<sup>1</sup> is considered by all commentators, except Kimchi, to be a euphemism for defecation (4).

Man is a luxury loving creature. He gave up the primitive mode of squatting and "covered his feet," at first, by supporting his thighs on a protruding branch, a stump, or a stone. Later the edge

of a plank laid the foundation of the modern chamber, and as man continued to fall from grace, his indolence and love of comfort degraded him to such an extent that his toilet room has become of so much concern to him hygienically and esthetically that it vies with his drawing room, as regards air, sunshine, cleanliness, and beauty. Even after he was warned by three eminent men of the dire calamity which would befall mankind if it did not take up open air squatting, man, the gregarious stubbornly refused to run ten miles daily to the next open field there to "cover his feet," or to expose his nether anatomy to the subterranean draughts issuing beneath the

"perforated slab." As sinful man dines on things that are an improvement on nature's raw products, so does he wish to respond to the "calls of nature" amidst surroundings no less elegant than those of his dining room. Of course if a seat were designed which would conform to the posture of squatting, the problem, it was hoped, would be solved.

Dr. Zan D. Klopfer, of Chicago, after an interval of thirty years (5), suggests a modification of the seat of the lavatory chamber which is described as follows: "The horizontal seat is raised under the

thighs, while the projected step assists in elevating the legs." In other words, the perforated seat and the rim of the basin upon which it rests, instead of being placed horizontally, as those in vogue in our day, are made to slant from above downward and forward, at an angle of about forty-five degrees. This arrangement, according to Doctor Klopfer, makes the body assume the squatting posture. I constructed a seat according to Doctor Klopfer's plan, and tested the effect of the fusion of the primeval and the artificial. As a result I am convinced that the raising of the thighs is a faulty procedure because the body assumes an unnatural position.

The foregoing authorities are under the impres-

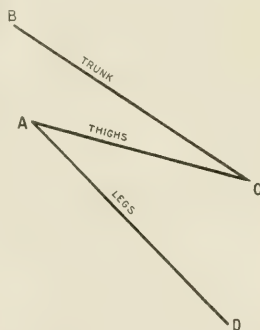


FIG. 1. — Anatomically incorrect schema of a squatting man. A, knees; B, first cervical vertebra; C, coccyx; D, metatarsal bones.

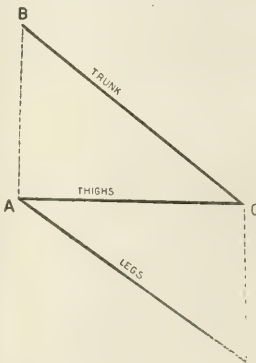


FIG. 2. — Anatomically correct schema of a squatting man. A, knees; B, first cervical vertebra; C, coccyx; D, metatarsal bones.

<sup>1</sup>The letter Z represents the kneeling posture, not the squatting posture. The Hebrew letter Lamed is the nearest to represent squatting.

<sup>2</sup>"And he came to the shepherds by the way, where was a cave; and Saul went in to cover his feet." (I Samuel 24, 4.) "And they (the servants) saw and beheld, the doors of the upper chamber were locked; and they said: 'surely he (Eglon, king of Moab) is covering his feet in the cabinet of the cool chamber.'" (Judges 3, 24.)



sion that the thighs, with the body in a squatting posture, are at an acute angle to the trunk, but when the body is seated on a straight cover the thighs are then at a right angle to the vertical line of the trunk. It is obvious that if their assumption is correct, the modern posture must be changed.

From careful measurements and observations we have become convinced that the thighs in squatting naturally assume a horizontal position, and consequently the seat of the toilet now in vogue is physiologically perfect, and needs no improvement. The only difference between primeval and modern positions is in the *point d'appui*. In primeval squatting the whole weight of the body is supported on the limited surface of the metatarsal bones; in modern squatting the weight of the body is supported upon the whole length of the thighs. In modern squatting the support of the legs is unnecessary. A man with both legs amputated can now squat on a modern toilet chamber—a feat which he cannot perform primitively.

What is the end to be attained in squatting? To increase the intraabdominal pressure by compressing the abdominal viscera between the vertebral column and the thighs. In order to accomplish this it is necessary to bend the body forward at an angle of forty-five degrees, which position, according to my observation, is assumed unconsciously. In primitive squatting, it was compulsory to bend the back and keep it at this angle during the whole process of defecation; in modern squatting, the bending of the back is voluntary and resorted to only when necessary. In short, the modern position is an improvement on the old, and squatting is not a lost art.

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206 METROPOLITAN BUILDING.

## CEREBROSPINAL MENINGITIS.

### *A Case Treated by Ten Serum Injections.*

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A case of cerebrospinal meningitis was recently treated at a Rochester hospital by ten daily injections of Flexner's serum; 450 c. c. of the serum being employed. The number of doses given is larger than is required in the average case, but injections were indicated by examinations of the fluids taken.

The patient entered the hospital on May 5th, having been ill for five days, and complaining chiefly of intense headache and weakness. He had been on duty until the last of April, when he noticed soreness of the throat. On examination, the patient was evidently in severe pain, the face was drawn,

eyes sunken, and color poor. The headache was described as violent, and the patient also told of pain in the back and down both legs, and of indefinite abdominal pain. On physical examination, general muscular rigidity was noted. There were increased reflexes, a definite Kernig sign, and marked Brudzinski's phenomena. The pupils were dilated and reacted to light. The lungs were negative; heart sounds somewhat irregular. There was no definite opisthotonos. Purplish blue hemorrhagic areas were made out over the abdomen. Pulse, temperature, and respiration were registered as seventy-eight, 102, and twenty, respectively. Vomiting occurred without previous nausea in three instances. Herpes appeared on the tenth day.

Thirty c. c. of a slightly cloudy fluid under increased pressure were withdrawn and examined. The fluid contained many pus cells; globulin and albumin were positive and many meningococci were found, both intracellularly and extracellularly. Thirty c. c. of antimeningococcic serum were injected into the spinal system and fifteen c. c. were introduced into the blood stream. Lumbar puncture was done each morning, checked by examination of the fluid and during a period of ten days amounts of fluid approximating forty c. c. were removed and a like amount of serum injected intraspinaly. The temperature reached 102.6° as a maximum and showed a definite rise of about 2.6° approximately eight hours after each treatment.

The fluid was returned negative for organisms on the eleventh day after admission, and the patient was discharged well on the twenty-fifth day. On the eighteenth day of care in the hospital, the patient complained of pain and tenderness in the right lower abdominal quadrant. There were no definite physical signs coupled with these symptoms and they disappeared within a week. There were no other complications.

**Placenta Prævia.**—A. Lakshmanaswami (*Madras Medical Journal*, March, 1918) in speaking of this condition, says the interests of the mother and child are diametrically opposed. When a pregnant woman bleeds in the seventh or eighth month of pregnancy, the safest thing is to end the course of labor as soon as possible; but, so far as the child is concerned, if the hemorrhage can be stopped and the pregnancy allowed to continue, the prognosis improves with the length of the period of pregnancy. Palliative treatment should be undertaken only where the patient can be constantly under observation, as she may collapse in a severe flooding before medical help can be had. Women are so accustomed to the periodical loss of blood that they scarcely recognize the seriousness of the condition in its early stages. The third stage of labor should be conducted with great caution as postpartum hemorrhage is very likely to occur, owing to the situation of the placenta. Even a small amount of bleeding, which would seem insignificant to the ordinary patient, may be sufficient to turn the scales against her in a case of placenta prævia. It is wise also to give an intravenous injection of saline solution before any symptoms of collapse are seen.

# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.

By CHARLES GREENE CUMSTON, M. D.,

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### TREATMENT OF INFECTED WOUNDS.

The purpose of this article is to outline the treatment of wounds of warfare as carried out in Germany and Austria, in the early fall of this year. First of all, be it said that the Huns have come to the conclusion, for a long time denied by them, that the large majority of wounds resulting from bursting shell and hand grenades are generally profoundly infected from the start, and that the same applies to injuries from shrapnel. Likewise bullet wounds are more frequently the seat of an initial infection than the learned Hun was at first inclined to suspect.

It is evident from the reports coming from Germany during the past four years that the majority, if not all the surgeons, had absolutely no idea of what the effects of modern missiles would be, and this fact shows that from the start they were quite as ill prepared to deal with injuries of modern warfare as were the French and English.

The first result attained from their observations was a loss of confidence in aseptic treatment, and many surgeons began to resort to antiseptic methods. Now, as the requirements of an antiseptic are that it shall have an elective bactericidal action, that it possess a continued action, and, lastly, that it shall have no injurious effect on the tissues by direct local destruction or interference with the local defensive force of the organism and shall not cause toxic symptoms when absorbed, they at once perceived that neither carbolic acid nor sublimate could fulfill these requirements. There were many cases of poisoning from carbolic solution in the German army during the early days of the war, and from the intensive or even reckless fashion in which the Hun surgeons used it. The wounds did badly on account of the destruction of tissue which naturally ensued.

The Germans did not discover, as did all other surgeons in the various countries, that the sooner a wound was submitted to the action of an antiseptic, and particularly that when the case was one of a closed cavity, such as a joint, it should be freely exposed by one or more incisions. They instead resorted to the ancient method of puncture and injection of tincture of iodine! Some Hun surgeons even claimed and still maintain that they have obtained good results by the prudent use of Chlumsky's solution (carbolic acid, camphor, and alcohol) injected into cavities. Others have obtained successful results with a four per cent. solution of carbolic acid in camphorated oil. Some Germans speak well of Morestin's solution, which is composed of formalin, alcohol, and glycerin, equal parts, but I am under the impression that its use has been given up by the French surgeons on account of the severe pain caused through its use.

Balsam of Peru is considered a good and harmless disinfectant, for surgical use, if it is carefully prepared, but it only envelops the bacteria just as glycerin or honey does, and all three have been employed by the Huns in wound treatment. They believe that oxygenated water principally develops a purely mechanical action—and only a temporary one at that—and they prefer medicated pencils containing hydrogen dioxide in a solid form, which are introduced into the wound in which the action of the oxygen lasts for quite a long time.

At the beginning of the war von Eiselsberg employed various aniline dyes which, when well diluted, he considers very strongly bactericidal and without any injurious action on the tissues. But he was obliged to give them up on account of the staining caused to the linen and hands, and especially because it was not proven that they did not exert an untoward action on the renal parenchyma.

Von Eiselsberg also points out that tincture of iodine has no antiseptic action, its value being that it sets up a hyperemia. But its real indication is for painting over the integuments surrounding a wound for the purpose of fixing the bacteria present on the skin surface. In this respect it acts in the same way as mastisol, a patent preparation much used in Germany since the war.

In respect to iodoform, both in powder or gauze, the Germans believe that it gives off iodine in a constant way, although in small quantity, in the form of gas, and thus penetrates the tissues in the wound. Likewise it develops a constant action. For these reasons it is very largely employed both in the German and Austrian hospitals, particularly in infected wounds. The consensus of opinion seems to be highly favorable to this old surgical friend, and the Huns maintain that when employed in moderate quantities, either as powder or as gauze, it does not give rise to toxic effects and that the fear of iodoform poisoning has been greatly exaggerated in the past.

The Huns have adopted the Carrel-Dakin treatment very generally, it seems, from all the information I can gather, and among those who have particularly sung its praise recently are Dobbartin and Winkelmann.

The Austrian War Office a year or more ago issued an order to powder wounds with a mixture of one gram chloride of lime to ten grams of bolus alba, particularly in cases of recent wounds in which the development of gas gangrene was suspected. Several Austrian surgeons have employed this powder as a prophylactic means with, they state, great success.

At von Eiselsberg's surgical station, I am told that for over a year the Carrel-Dakin treatment has been carried out, not only in recently wounded men coming directly from the front but those who offer infected wounds of even serious nature, the receipt of the injury dating back for at least three days or more. He is loud in his praises, believing that the results obtained are remarkable in as much as the solution attacks the bacteria but with only a mild



action on the tissues and the production of hyperemia.

Some fifteen years ago you will remember that von Mikulicz introduced injections of nucleic acid as a prophylactic measure against suppuration following operations. This treatment has been revived in Germany during the war but has been given up since E. von Graff showed that it was devoid of any real value and also because of the untoward effects to which nucleic acid gave rise—particularly a high elevation of the temperature.

Among other substances having a more or less bactericidal action, the Germans have used subcutaneous or intravenous injections of collargol, and find that besides inducing leucocytosis, this product has an undoubted action on mild infectious processes.

Heliotherapy, particularly in infected wounds, has given good results, either by the solar rays or with the quartz lamp. The irradiation may be increased by covering the wound with dressings soaked in an eosin solution as Wiesel has lately pointed out. From the same viewpoint potassium iodide has been given to the patients, after which the wound is exposed to the solar rays with the object of liberating free iodine vapor in the wound under the influence of the active rays.

The use of venous stasis against infectious processes has also been put to test on a large scale, and Bier himself has of late resorted to his procedure in cases of gas phlegmon, but the results do not appear to be at all convincing. Von Eiselsberg tried it in one case of gas phlegmon resulting from a bullet wound accompanied by suppuration in the joints, and the result was fair, but in numerous other instances of acute suppurative processes, particularly in the joints, results were unsatisfactory, and the Vienna surgeon discontinued this treatment.

It is evident that from the large number of products and methods recommended for the treatment of infected wounds that no one of them has been found perfect, and it seems safe to say that in both Germany and Austria more faith is placed in the Carrel-Dakin treatment and iodoform dressings than in any other treatment. At all events, the Huns do not appear to be convinced that chemical disinfection applied alone possesses any certain action upon which one may rely, but they appear to be unanimously in favor of the French and English methods of mechanical disinfection, although as a matter of course a certain surgeon, Friedrich by name, is given the credit of devising this treatment. Not only does the Boche want to loot the world of its goods, but as in the past he loots the scientific discoveries of others in the most shameless barefacedness imaginable.

Therefore, they are now busy with knife, scissors, and curette in cleaning up their wounds and, as might be expected, their results in recent wounds have been as good as those obtained by our French and English confreres. Their technic appears to be about the same, namely, the excision of all necrotic tissue and such as is in danger of becoming devitalized, this being followed by drainage in the most declivous portions of the limb. But they insist on the fact that the best results are obtained in fresh wounds—a fact well established for some time.

For the treatment of gas phlegmon, Schäffer recommends the introduction of small gauze bags filled with a preparation called hyperol into the wound, likewise powdered crystals of potassium permanganate. Springer, after freely incising the tissues insufflates a ten per cent. iodoform-carbon powder in the wound. Denk, who has noted an odor of acetone in these phlegmons, has successfully employed intravenous injections of sodium carbonate (a treatment useful in diabetes) in doses of from 500 c.c. to one litre of a five per cent. solution. But the consensus of opinion is that gas phlegmon should be treated above all by free, deep incisions, and if this is unsuccessful, amputation must be done.

And speaking of amputation, the following seem to be the rules generally adopted by the Huns. Amputation is indicated: 1, when there is extensive crushing of the limb; 2, when the limb is cold and no pulsation can be detected or when gangrene is already manifest; and 3, when the patient's general condition is bad and the radical removal of the diseased focus can only be attained by removal of the involved member.

In all other cases long, deep incisions should be resorted to, followed by excision of all necrotic or suspicious tissue, and, if necessary, deep incisions into the muscles are to be made. The wound is kept open by gauze plugging in order to prevent the edges from coming in contact with each other.

The Huns also insist upon the importance of making an early and exact diagnosis of gas phlegmon. For this they rely upon the clinical symptoms, such as the expression of the patient's face, the sensation of tension complained of, and the tympanic note obtained by percussion, the latter sign being particularly insisted on by Bier. However, some surgeons quite rightly point out that crepitation may only occur when the process is advanced and that gas production in a wound is not of necessity a proof that gas phlegmon exists.

The results obtained with Conradi's perfringens serum are doubtful, and the Hun surgeons about this time were singing a hymn, not of hate, but of hope that some prophylactic serum might be discovered for gas phlegmon, as well as for suppurative processes in general.

Since their fearful losses from tetanus during the early months of the war, the Germans have become convinced of the necessity of prophylactic immunization against the tetanus bacillus, and now admit that the French were correct in their practice of immediate injection of antitetanic serum in every case of injury, no matter how trifling.

It seems to be the general practice of the Huns not to interfere with wounds at the dressing station except to control hemorrhage. Instead of irrigation they prefer to apply an aseptic gauze dressing and then transfer the patient to the field hospital.

The Germans have also adopted the viewpoint of the Italian surgeons, namely, that experienced surgeons should attend to the wounded at the field hospital and not to have the cases attended to by young and inexperienced men. It is apparent that we have nothing to learn from German *Kultur* in the surgery of warfare.

## MODERN MILITARY ASPECTS OF LUNG SURGERY.

*Views of French, Italian, and British Surgeons.*

Several distinguished surgeons were detailed by the French, Italian, British, and American armies to attend the Clinical Congress of the American College of Surgeons, which was to have been held in New York in October. On account of the epidemic of influenza prevailing at that time, plans for holding a congress this year were abandoned. The delegates visited several of the larger cities of the United States and the training camps for medical officers. Several of them delivered addresses before the College of Physicians and Surgeons on Wednesday afternoon, November 6th, a report of which appeared in the *NEW YORK MEDICAL JOURNAL* for November 9th, and a dinner was given in their honor by the New York Fellows of the American College of Surgeons, at Delmonico's, in the evening. At a stated meeting of the New York Academy of Medicine, held on the evening of November 7th, surgery in the war zone, with special reference to surgery of the thoracic cavity, was discussed by them. Dr. Walter B. James, president of the academy, occupied the chair.

Doctor JAMES in introducing the speakers, said he felt that this was an exceptional occasion, even for an academy audience, and occurring on an exceptionally interesting day, in which the outbreak of cheers and enthusiasm in New York that greeted the announcement of the advent of peace must be echoing around the world. Everyone knew what the Allies had suffered during the past four and half years of war and what it would have meant if their line of defense had broken down. There were many who liked to think that the medical men, not only those fortunate enough to be in khaki, but those who stayed at home and did their part, had had a share in the winning of the war. There had been dreadful losses from disease alone in previous wars and unless a different state of affairs had existed during the last four and a half years than that which existed during the Civil War, the Boer War, and other wars, it would have been impossible for armies the size of those engaged in this last great struggle, to have endured so long. Those who carried stethoscope and scalpel instead of sword had lent a good hand in the glorious outcome. It was very gratifying to have here a group of men representing surgical science among the Allies, a group standing at the very top of the medical profession. It was a pleasure also to feel how closely this war and its accompanying trials had drawn the members of the medical profession throughout the world together, that is, that part of it which was worthy. The closeness of the ties that had been created had reached even those who had not been able to go to the front, and there now existed so strong a fraternal feeling among the surgeons of France, Italy, Great Britain, Belgium, and America, that it was with strong emotion we viewed the presence of some of them on the platform. We had lived to see the peritoneal cavity handled with impunity under the protective influence of modern surgical methods, but it came as a surprise to learn that the thoracic cavity had been con-

quered and that surgeons no longer hesitated to treat the contents of the thoracic cavity any more than they did the abdominal cavity. The first speaker was a man who had done much to develop lung surgery, Major Pierre Duval, consulting surgeon to the French Army.

Major DUVAL expressed his pleasure at the opportunity to present a few of his views on thoracic surgery which had developed greatly during this war. At one time the chest was considered inaccessible, but now it, as well as the lung, was dealt with the same as the organs of the peritoneal cavity. This development had passed through several stages. At first it was thought that these wounds should be treated expectantly, but it was soon recognized that the mortality was very heavy, the death rate, for the French, reaching forty-five per cent. Then they tried the experiment of treating chest wounds according to the same principles which had been found useful in the treatment of wounds of other parts of the body. In the French army this principle had been extensively applied, though perhaps less extensively than in other armies. Almost any war wound could be cured by the treatment conducted according to one principle, the excision of all traumatized tissue and primary union. With this, one could expect to have results in fifteen days. This principle could be applied to lung wounds, for a technic was soon devised which permitted access to the lung and the treatment of it in a very safe way, which had been a great revelation in chest surgery. It was hindered in the beginning of the war by the slowness in abandoning the principle derived from German schools, that the lung should not be touched except with special appliances which made it safer, but in time the method was adopted of opening largely the chest wall and not being afraid of the production of artificial pneumothorax. The lung was seized, pulled out of the wound, inspected and sutured, the same as might be done with the intestine. Having this technic well started lung wounds had been treated under three conditions. First, when death threatened because of severe hemorrhage which usually brought a man to death in a few hours; secondly, when asphyxia menaced; thirdly, when the lung wound itself did not seem dangerous but might bring about dangerous infection. In hemorrhage the results had been the following: In these cases the rule had been to open the thorax, check the hemorrhage and suture the wound, and the result was a saving of sixty-five per cent. of the men who had severe hemorrhage. In the cases of torn open chest, not only was closure of the chest wall resorted to but also the lung was inspected and its wound treated. The results had been about the same as for the cases of hemorrhage. In the chest wounds with lung lesion the chief complication was infection which came from the lung itself or from a foreign body lodged therein. It was clear that the best way to prevent such infection was to remove the foreign body, treat the wound according to the general principles of war wounds by the excision of the margins of the wound, check the hemorrhage, and suture the lung wound and chest wall. The general results obtained with this method showed that while, previously in army



hospitals, the general mortality was about thirty per cent. for chest wounds; after the adoption of this method the mortality was lowered to nine per cent. It had been a total revelation in chest surgery. The method was based on two principles; first, large opening of the thoracic wall, producing pneumothorax, total and complete, with prolapse of the lung; secondly, taking hold of the wounded tissue and pulling it out and treating the wound the same as any other wound of the body. The creation of pneumothorax was not dangerous in itself; the production of artificial pneumothorax was without danger; part of the technic lay in the large opening of the chest wall and deflating the lung so that one could get easy access to the cavity. This was the technic which Willy Meyer devised for access to the esophagus. The lung was seized with forceps, each lobe pulled out of the wound, one by one consecutively, and the wound was treated according to existing conditions. The thoracic wall must be closed completely and no drainage inserted. The pleural cavity was rendered aseptic by the measures taken and would take care of itself. The results had been very good and very encouraging. In the last thirty-three operations performed by the speaker not a case was lost. In addition, the cure which was obtained by this treatment was superior to any other cure obtained by any other means because it left the function of the lung perfect; the man came through not only with his life but with perfect lung function. In other words, he was a new man.

Lantern slides were then thrown on the screen illustrating some of the remarkable results obtained in the lung and pleural cavity after this method of treatment of the most serious wounds.

Lieutenant Colonel RAFAELE BASTIANELLI, professor of surgery, University of Rome, and consulting surgeon to the Army of Italy, called attention to the fact that this sound principle as outlined by Major Duval, would bring good results in civilian practice as it had in war wounds. In Italy, the evolution of chest surgery had been the same as in the other armies of the Allies. In the beginning of the war, interference with chest wounds had been prohibited, but it was very soon noticed that the percentage of mortality under the expectant treatment was very heavy, from missiles coming from both long and short range. They learned that infection came from the lung wound as well as from the external wound. The external wound attracted their attention first and they began to treat it first, by the removal of the splinters of fractured rib and suturing for primary union. They tried to bring about a union which would be air tight. This was the first principle and it proved very sound, for the patients so treated improved at once. Secondly, their attention was drawn to the lung wound itself and in this respect they adopted the same procedure which Doctor Duval had described. Chest wounds could be divided into two categories: First, those in which the wound was closed naturally and did not permit of air coming in, and secondly, those in which the wound was open. The question of treating the second series of cases by the Duval method, called the complete operation, was very easy, especially if the chest wall was largely opened, for in

this case it was natural to inspect the cavity and examine and clean the lung. But in those with closed chest wounds it was for the purpose of preventing infection from the lung itself that the principle was adopted of examining the lung wound, and for this a more simple method had been adopted than that used by Duval in the French Army and Gask in the British. Their method was easy for them but it was not easy for every one, in particular for the inexperienced surgeon, and it was better that the wounded man should go home with an imperfect lung than that he should not go home at all. A few words might be apropos about the wound itself. The lung wound, as was well known, was sometimes a perforating one and sometimes not. There were also contusions of the lung which were very important. The lung wound bled, and the bleeding was so intense that sometimes the man arrived at the hospital almost bled to death. Another kind of wound was the one where there was a small amount of blood in the cavity on first examination, but the next day the amount was larger, and the next day still larger, exploratory puncture removing pure blood which meant that hemorrhage was still going on. These prolonged hemorrhages were more frequently encountered than one would expect. Respiration acted as a pump causing constant suction on the wound and the torn vessel was kept open. The chest wall was naturally not immovable which was unfortunate for the healing process of a wound. Nevertheless, when a man had a wound of the lung with hemorrhage in the pleural cavity it was many times observed that a cure was effected by nature. The factors which stopped the hemorrhage were thrombosis of a vessel, or pressure exerted on the vessel by blood in the pleural cavity, or by air—the pneumothorax. That the blood might exert favorable pressure, however, was not admitted. As soon as the chest cavity was opened the lung could be seen to collapse, becoming very small; the vessels did not appear and the hemorrhage did not show. If artificial collapse of the lung could be produced hemorrhage could be checked by putting it in a condition of immobility which was essential for any wound. If the blood was left in the cavity it sometimes clotted extensively and this was a favorable medium for infection and the lung took on adhesions from the partial expansion. If the lung was completely surrounded by air it could not take on adhesions. If the pressure of the air was increased the lung would be effectively compressed. When the air began to be resolved the lung expanded and even if there was no inflammation there would be adhesions, and these adhesions would correspond to the position of the lung. This kind of adhesion was not unfavorable for function. From these principles came the consequence that when a patient presented a closed wound and lung wound it was necessary to remove the blood from the cavity of the pleura and introduce air in the cavity, putting the lung at rest. This was called artificial pneumothorax and was introduced by the late Doctor Murphy, of Chicago, for the treatment of tuberculosis. The procedure could be summarized in a few words. Close any case of wound of the chest wall which was open and close it air tight; if

there was a big gap, suture the muscle as well as possible, put a plug on top and suture the skin on top of the plug for a few days, and if expansion had followed the plug could then be removed. In an emergency rubber bags had been found useful; they could be inflated and the man was at once changed to another condition, breathing quietly, and the rest of the treatment could be done later. Secondly, as much blood as possible should be removed. Thirdly, air should be put in with some apparatus, or in other words, artificial pneumothorax should be done. There were a few contraindications, for instance, when the lung was adherent, and if there was extensive emphysema, it was advisable to free the lung; when the chest wall could be closed totally or when through the lung wound the air escaped into the trachea. In these cases one had to resort to complete operation. There was no danger in removing the blood from the pleural cavity. The lung tended to expand and the wound to break open and produce infection, but if air was introduced just preceding or at the time of removing the blood, this was obviated. Suppose there were adhesions and one went into the lung with the needle, there was no danger of air embolus if the apparatus of Professor Morelli was used. In 290 cases of penetrating wounds the mortality was only eighteen; 206 of these patients had closed chest wounds and of these seven died; eighty-four had open chest wound and of these eleven died. This low mortality rate convinced the speaker that artificial pneumothorax in these conditions was worthy of being studied.

Sir THOMAS MYLES, consulting surgeon to the British Army, agreed with Professor Bastianelli that there were not many surgeons at the front with the skill of Major Duval or Colonel Gask who had been most successful in the early treatment of chest wounds, and there had been sent back many men, injured in the chest, who still had projectiles imbedded in their lungs. The fact that these patients escaped the surgeons at the front and reverted to the surgeons at home was due to the exigencies which were so dreadful in wartime. It was impossible when one had 500 to 600 patients waiting for attention to pick and choose, and if a man was not losing very much blood or suffering too much from shock, the surgeon could not sacrifice the time necessary to look into that lung when another man beside him was bleeding to death from a wound of the femoral artery. So when these patients reached the base hospital they presented a variety of conditions. Some of them might have a bullet in the lung but giving no trouble. The majority had physical signs, though some had none. Nearly all had symptoms, such as pain in the chest or shortness of breath on effort. When called upon for extended effort of any sort they complained of shortness of breath and frequently of pain in the side. So that one had to deal with men who, in addition to the x ray evidence, presented objective symptoms. Added to that was another phenomenon; many a man with a vivid imagination developed a "bullet in his mind" and every time he got short of breath he attributed it to the bullet in his lung. There were two schools of thought as to how this latter problem should be approached. In regard to the extraction

of projectiles, Moynihan believed they could all be reached from one spot, but Turner believed that it was not justifiable to adopt the customary method of approach and was certain that one should approach the projectile in the lung by the shortest route. The operation devised by Moynihan and practised by many surgeons in the British Isles was as follows: It was first necessary to make a careful examination of the chest with the cooperation of the radiographer and with the physician by auscultation, palpation, percussion, etc. Incision was made along the fifth rib along the lateral line of the sternum and extending about five inches. The rib was lifted up through the intercostal space. The next step was to divide the pleura and periosteum. If the lung collapsed it presented a picture different from that to which one was accustomed. When a lung was inflated it was very large, but when it was collapsed it shrank to a very small compass; it was no bigger than a hand. It was also no longer vascular; it was practically bloodless. One was now dealing with something that was quite mobile and which could be handled with perfect freedom. All that was necessary was a rather large forceps. The lung could be moved from the thorax in whole or in part. On the other hand one might come to a series of cases in which there was partial adhesion and it was advisable to break these down when possible to do this with safety. This could be done by gentle manipulation in some cases and in other cases with the scissors, but one could generally succeed in detaching the lung from the pleural parietes. If the cause of the persistent symptoms were the adhesions then one should try to cure these adhesions and this could be done if one could keep the surface of the pulmonary pleura and the parietal pleura apart for a few days. When the adhesions were broken down the next step was to swab out the thorax thoroughly, it being especially necessary to remove all of the blood found in the cavity. It was possible to leave the cavity quite clean. The lung was then put back into place, the rib replaced in its normal position and sewed there, the edges of the muscle drawn together and the skin completely closed and no drain was ever applied. Pneumothorax was of great value in promoting recovery.

Now one came to cases where the lung was believed to be adherent and where just from a *priori* evidence the shortest route was not from the fourth rib. If there were extensive adhesions one could understand that it might be easier to reach the bullet from elsewhere than the fourth rib. If the bullet could be extracted more easily from below this was done. Many American soldiers would come back with fragments in the lung and American surgeons would probably find improvements in method and technic over those developed abroad in the last few years, but they had done what they could over there and with a fair measure of success. Here in New York was the home of the greatest experimental institutions in the world, and the speaker suggested that it would be well to start experimental work in many directions along the line of after war surgery, particularly on the brain, and he suggested as excellent subjects for experimental work in the latter branch, the Hohenzollern family.



# MEDICAL NEWS FROM WASHINGTON.

*Permanent Commissions in Army and Navy.—Admirable Work by Medical and Hospital Corps.—Appointments in Medical Corps.—Activities in Public Health Service.—Military Rank for Army Nurses.*

WASHINGTON, D. C., November 26, 1918.

Some consideration has been given in both the army and navy to the subject of keeping permanently in the Medical Corps of those services some of the physicians and surgeons who have been serving under temporary commissions for the period of the war. Of course, it is not believed that many members of the medical profession who had large and remunerative practices in civil life would be willing to stay in the army. For one thing, the salaries attached to the commissioned grades are too low, as compared to their civil incomes, so that generally they could not afford to accept permanent army commissions. On the other hand, there are many serving temporarily in the Medical Corps, some of whom had extensive practices in civil life, who like army life and would be glad to stay.

It will be necessary to change the law to permit permanent appointments to be made in grades above that of first lieutenant in the army and junior lieutenant in the navy, and to permit appointments to be made to these lower grades in cases of those over thirty-one years of age.

Legislation in this connection now is being drafted for the navy. If the plan is approved by Congress, all medical officers of the navy now serving in a temporary status may be authorized to appear before examining boards to determine their qualifications for commissions in the permanent establishment in the grades now held by them, and reserve officers in grades not higher than that of lieutenant. In case the bill becomes a law, those temporary medical officers and medical officers of the naval reserve force who desire to enter the permanent Medical Corps will be expected promptly to signify their wishes to the Surgeon General of the Navy. It is contemplated to examine the candidates for the grades they now are holding—except that reserve officers are limited to the grades of lieutenant and junior lieutenant; but, if a candidate fails to qualify for his present rank, the examining board may recommend appointment to a lower rank.

\* \* \* \* \*

Brigadier General Jefferson R. Kean, Medical Corps, recently on duty with the American Expeditionary Forces in France, is on sick leave.

\* \* \* \* \*

Colonel Charles R. Darnall, Medical Corps, has been assigned to duty as executive officer of the Office of the Surgeon General of the Army. He was chief of the division of supply and finance up to the time the duties of that division were taken over by the general staff.

\* \* \* \* \*

The following promotions have been made in the Public Health Service: Passed Assistant Surgeon French Simpson to surgeon, and Assistant Surgeons Robert L. Allen, Ora H. Cox, Marion S. Lombard, Carl Michel, William F. Tanner, and William C. Witte to passed assistant surgeons.

The Commander in Chief of the Atlantic Fleet, Admiral Henry T. Mayo, has taken occasion, in a letter published to the fleet, to express his appreciation of the work performed by the officers and men of the Medical and Hospital Corps during the recent epidemic of influenza. The admiral commends the personnel of the medical department for their untiring care of the sick, in the restriction of the spread of the epidemic in the fleet, and an entry has been made upon the record of each of them embodying his commendation.

\* \* \* \* \*

Deficiency estimates aggregating \$2,054,000 for the Public Health Service have been sent to Congress. The appropriation is urgently needed for the following reasons:

The increase in the officers of the higher grades of the service becomes necessary at this time, so that important health activities may be satisfactorily directed and directors assigned to sanitary districts.

An appropriation of \$2,000,000, to become immediately available and remain available until expended is required to enable the service to carry out the responsibilities with which it now is charged by existing law and by the executive order of July 1, 1918, placing all public health and sanitary activities due to the war under the direction and control of the Secretary of the Treasury.

Among the duties with which the Public Health Service now is charged, are the following: Sanitary supervision of areas adjacent to cantonments and of other areas to which the soldier and sailor have free access; sanitary supervision of government works and adjacent zones; cooperation with State and local health authorities in sanitary work; sanitary supervision of shipyards and shipyard personnel; cooperation with the Department of Labor and with the Army Ordnance Department in the hygiene of war industries; medical and surgical care of seamen of a greatly increased merchant marine, patients of the War Risk Insurance Bureau, and injured federal employees; operation of a national system of maritime quarantine; control of interstate spread of disease; control of venereal diseases; and railroad sanitation.

\* \* \* \* \*

Efforts to secure military rank for army nurses have been renewed. A pending bill provides the relative rank of major for the superintendent of the Army Nurse Corps; rank of captain for assistant superintendents, directors, and assistant directors; first lieutenant for chief nurses; second lieutenant for ward nurses.

It is proposed that they shall have authority as regards medical and sanitary matters, in and about hospitals, next after the medical officers of the army, and shall wear the insignia of their rank. The proponents of the legislation claim that nurses are handicapped by lack of authority and consequent conflict with enlisted men on duty at the hospitals. Thus far, no official endorsement of the measure has been forthcoming from the War Department, although at a hearing before the House Military Committee Colonels V. C. Vaughan, Franklin H. Martin, and William J. Mayo expressed approval.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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### DEMON OR GERM.

"There, I told you so thousands of years ago—it's all due to the demons." Professor Jastrow, who is well able to translate for us what they said and how they said it in ancient Babylon and Assyria thousands of years ago, hears this word out of the past shrieking itself today into the ears of the "ultra-modern pathologist." He brings together a great number and variety of interesting facts out of such early records and foreshadowings of medicine and surgery [Morris Jastrow: *Babylonian-Assyrian Medicine, Annals of Medical History*, October, 1917].

On the one hand, the believer in demon possession as the source of disease who lived in those past days may seem himself, could he return, to have long ago discovered the same truth to which science has laboriously progressed. On the other hand, we may consider unspeakably absurd the ancient explanation in the light of exact science and its investigations. If, however, evolution of thought and knowledge as of material forms is conceived in its essence, will there not be found a something which is the same, existent under two dissimilar forms of

expression? Language is an external garment which thought wears. True, that it conforms largely to its inner vital content just as the child's carelessly dropped glove is eloquent of the interests, the activities, the very moods in which that child is accustomed to pursue its aims.

Demonology, therefore, or bacteriology, become the two ways of expressing the same thing, divided by centuries of experience and growing exactitude, but activated by the same need to search and find not only health but knowledge and interpretation of processes and events which so vitally concern the race. This point of view puts a new value upon such studies as these because it finds that the history of medicine and its progress, even through mistake and seeming absurdity, has been continuous, and so there is greater illumination of the essential nature of the art of healing in its relation to human need.

The beginning of the study of anatomy among these ancient peoples lies, according to this writer, in the practice of divination, and that expresses just as strong a need for safety, success, and efficiency generally as does the healing of sick bodies. The observation of the livers of sheep, the sacred animal, brought to light the great number of differences in their structure and condition. These variations were held to be indicative of the accord between the liver as the seat of the soul of the animal and the god to which it was consecrated. Specialists therefore had to be trained in liver anatomy and in the interpretation of the differences discovered. Out of such an earlier beginning an elaborate and detailed study and anatomical system of names, at least, arose. The accuracy of the anatomy is somewhat obscured by the, to a large extent, figurative nomenclature, but there is evidence among the many terms of an extensive following out of anatomical study along the lines which actual practice demanded. The surgeon was not held in high repute, for dealing as he did with external evidences of disability, his failures could not be shoved off, as in the case of medical practice, upon the demons of possession, and therefore he had to stand or fall by the more than obvious.

The medical man, however, was the representative of the deity who presided over the water cure, a purifying rite directed against the possessing or infecting demon. Gradually he passed over into the true physician when actual medical remedies were added to the mere symbolic treatment. The continuation of the use of remedies, together with the incantation, is interestingly pointed out to exist



still among those who consider the mysterious prescription as efficacious as the actual ingredients prescribed or at least an essential supplement to their virtue. The list of medicines which gradually form an extensive pharmacopœia include many herbs, parts of certain trees, rock salt, and ammoniac, and also many substances from the human and animal body. The latter probably constituted not so much a means to drive forth the demon by their disgusting qualities as the author believes, but, we can readily believe, had in themselves some particular virtue by reason of their symbolism and the homeopathic magic therein contained to work in a more positive manner their effect upon the ills which the possession created. These substances were administered internally or applied in various external ways. With all this there is a gradual building up of a medical science through all the vagaries and obscurities of superstition and demonotherapy and magic use of natural means. The incentive behind and within it lies in the ceaseless effort and necessity of man to discover and apply, not merely the means of healing his diseases, but that power over his environment and his own ability to exercise himself in the fullest use of himself, which is the very essence and complete meaning of health. We may have called it a demon yesterday, and may call it a germ tomorrow. Our effort against it is the same, our strife arises out of the same necessity operating without interruption. It stimulates the gathering of more knowledge, digging deeper in investigation. It values also in this spirit the acquisitions of the past, and recognizes necessarily a psychology which makes all this actual, and in continuing the struggle, makes it progressive. The continuity of such historical study represents therefore the continuity of that which exists within.

#### NAPOLÉON AND MEDICINE.

The physician and patient are made up of the same sort of clay, and have experience with the well or ill working of the same sort of bodily machine. Save for a little technical knowledge, their mental traits and degree of clairvoyance of truth average much alike. But many laymen have far keener mental insight into the general working and management of the body than many physicians, and are, besides, untrammelled by the traditions of the trade. Tradition does not hold sway in medicine as it once did, but undoubtedly it blinds many of us more than we realize. A century or two ago the rôle and rule of tradition were far stronger, and, prior to the nineteenth century, the best ad-

vice on health matters was, with some rare exceptions, found not in books by physicians, but in the teachings of Locke, in the essays of Bacon and Montaigne, of Addison and Franklin, in the sallies of Molière and the talk of Samuel Johnson. The routine medical practice of the times was not held in high esteem by these seers, nor did it deserve more at their hands.

No keener Gordian knot cutting mind than that of Napoleon ever looked into medical practice, and his remarks on the subject were significant. Like two great contemporaries, Washington and Jefferson, he looked indulgently upon physicians as necessary to society and he always had several in his service, but he was exceedingly wary of their advice and preferred his own drugless treatment to the powerful physic of the time.

Napoleon liked to converse with physicians about their art, and he was so much interested in the body that he had his professional attendant, Corvisart, bring him some wax models of the heart, stomach, and other organs. His anatomical studies were cut short, however, by the fact that the models made him sick, for, strange to say, though when in camp he could be callous to all disagreeable sensations, in the palace he was extremely sensitive to offensive sights and smells.

Napoleon considered that bleeding—a treatment for wounds as for all other ills—was the withdrawing of so much life fluid, and he believed that the use of physic “only led to the need for more physic.” He rightly summed up the current use of drugs as mostly conjectural and too often harmful. He himself was seldom ill before his imprisonment at St. Helena, and when so it was only from hasty feeding. His cure for this was to fast, to drink large quantities of barley water, to ride on horseback at high speed thirty-five or forty miles, and to bring on violent perspiration by hot baths and many blankets. After great fatigue he always condemned himself to twenty-four hours of absolute rest. On one occasion he went for five days and nights without sleep, but afterward slept continuously for thirty-six hours.

He had a high opinion of surgery. “Surgeons,” he said, “do not work in the dark as do the physicians. There you at least have daylight, and your senses to guide and assist you.”

Napoleon had a great regard for Larrey, head surgeon with the army, of whom he said that “in the most inclement weather, and at all times of the night or day, Larrey was to be found among the wounded. He scarcely allowed himself a mo-

ment's repose, and kept his assistants eternally at their post. He tormented the generals, and disturbed them out of their beds at night whenever he wanted accommodation or assistance for the wounded or sick. They were all afraid of him, as they knew he would instantly come and make a complaint to me."

Corvisart was the only member of his numerous medical staff in whom Napoleon felt much personal confidence, and that confidence seems to have been aroused, not only by his high reputation but by the thoroughness of his physical examinations and by the simplicity of his means of cure, which, in the case of his first treatment of his illustrious patient, consisted in the application of a mustard plaster to his chest.

We are indebted for much information, in regard to Napoleon's last years, to O'Meara, the British naval surgeon who served him at St. Helena. O'Meara seems to have been far more useful for his society than for professional purposes; for Napoleon suffered most in his island prison from scurvy, and the medicine of the times was as helpless in its treatment as it is today in the cure of the disease of which the Emperor died—cancer.

#### DOMINION LEGISLATION FOR VENE- REAL DISEASES.

Education in Canada directed toward the people, for two decades, in regard to many matters of public health, has brought about a profound change in the mental orientation of the public. Formerly they were apathetic, indifferent, suspicious even of professional advocacy of a measure looking to the good of the public. They could not quite understand how it came about that the doctors who profited by much sickness were the first to call for medical officers of health, notification of disease, isolation, quarantine, medical inspection of school children, ministries of health, etc. For many years the people stood aloof, complacently looked on, and wondered where the "nigger in the fence" was, but they could not see him. Gradually some really public spirited citizens were brought around, and even the newspapers, at first decidedly chary, began to publish isolated items of public health news; now they tumble over one another in their eagerness to make a "scoop." Not only that, but ever with a watchful eye, woe betide the medical officer of health who makes a mistake, or appears to be derelict in his duty! Why and wherefore the change? Large sums of money are now being spent by federal, provincial, and municipal gov-

ernments and the taxpayer simply wants to know if he is getting the worth of his money. That the people are prepared to go the limit in expense in order to protect communities from communicable diseases seems assured; and the now active interest on the part of many citizens, both among the educated and wealthy, points to a brilliant future for preventive medicine. Quite recently they have become vitally interested in the venereal disease problems and their prevention and eradication.

While several or most of the provinces in Canada have enacted legislation to govern the venereal problem, the Dominion as a whole has not yet manifested any particular desire or interest to cooperate. Dr. Peter H. Bryce, Ottawa, chief medical officer of the immigration department, in a letter published in the *Canadian Medical Association Journal*, points out that, in view of the diversity of provincial health laws, some federal legislation is essential to the fullest control of venereal diseases throughout all of Canada; the situation demands a central authority at Ottawa. To make a slight digression, the Canadian people were probably more seized of the desirability and practicability of a ministry of health in the Canadian cabinet during the progress of the epidemic than ever before as, so far as is known, no attempt whatever was made to keep the influenza out of the Dominion—and the full returns will show that the scourge took a toll in deaths that was appalling. Any such public health authority must of course dovetail in with the administration of public health matters in all the provinces.

To quote from Doctor Bryce: "What the situation seems to demand is a resolution setting forth the dangers to the public and to the nation of the presence and continued prevalence of venereal diseases among the people, the existence of well attested means of treatment and cure, and a statement both of the need for federal legislation to coordinate official action between the federal and provincial authorities, and some indication of how this can best be brought into effect."

Canada, like other nations, has learned much from war. To back up those at the front, the Dominion has just shot past its objective in the fifth Victory Loan by \$100,000,000. To war against diseases at home the people will never again whine against large expenditures where human life and health are concerned. Will they not rather demand of governments that they raise special loans from the people for these purposes where the money is not forthcoming from ordi-



nary revenue? With Canada's depleted population and diminution in man efficiency on account of war mutilation, the country will need by every means in its power to conserve efficiency, health, and life in every way. The people can have as much health as they are willing to pay for.

### TORPEDO SHOCK.

It would be surprising if during the four years of the world storm just subsiding, great searchlights were not thrown upon the psychology of the people, revealing them as "all too human," to quote the half mad prophet of the superman. The emotional strain incident to halting civilization forth from the path of peace and thrusting it into the ways of war has had the same effect upon individual psychology that the gradual strain accompanying years of ineffectual adjustments and unappeasable demands would have had; and acute manifestations of psychoneuroses came into being, to which the euphonious and alliterative name of shell shock was given.

Analogous cases have lately come to the attention of the military surgeon where the fright and fear due to ships being torpedoed have given rise to symptoms suggestive of shell shock. Doctor Clunet, in a communication to the Neurological Society of Paris, has described the mental effects observed when on board a ship which was torpedoed. He divides the phenomena somewhat arbitrarily into four stages, but this classification has no psychological value. He distinguishes a first stage, from the time the ship was struck until it sank; a second, on the life rafts; a third, on the rescuing ship; and a fourth, a return to normal.

After the first stupefaction following the attack, it was observed that several passengers discharged guns into the air or into the sea. In other words, the pentup nervous energy found release in letting loose the immense energy concentrated in explosives. Similarly it is well known at the front that a long day of waiting in the trenches is productive of more cases of shell shock than a day of active engagement with the enemy.

Next cases noted, chronologically, were a few cases of suicide among the passengers. These passengers were on the whole calm enough, even on the life rafts. It was only when they were on the rescuing ship that psychoneurotic phenomena began to develop, including mutism, spasmodic weeping, laughter, tremors, spasmodic movements of the limbs, etc.

All the symptoms shown disappeared after a short time, which is what we should expect. In shell shock recoveries are much more difficult to effect, and many cases go on to actual psychoses.

### THE ANTISCORBUTIC PROPERTY OF DESICCATED VEGETABLES.

Resort to the desiccation of vegetables on a large scale during the past year has given importance to the question of whether or not vegetables thus treated retain their antiscorbatic properties. The answer is of serious import since desiccated vegetables are issued to the Army under certain circumstances. The subject has been studied by Holst and Frölich, who found in experiments on guineapigs that the antiscorbatic properties of carrots, of dandelion, of cabbage, and of potatoes were destroyed by prolonged drying. Chick and Hume stated that the antiscorbatic vitamins were deficient in all dried foodstuffs, the temperature used being a matter of indifference. The subject has been given further study by Givens and Cohen [*Journal of Biological Chemistry*, October, 1918] in the Sheffield Laboratories of Physiological Chemistry at Yale, who found that cabbage dried at a low temperature, from 38 to 52 degrees C., appears to retain a great part of its antiscorbatic value and that some of these virtues are retained even after drying in a current of air at 40 to 52 degrees C. Cabbage cooked for thirty minutes and then dried for two days lost all its antiscorbatic virtues. The same was true of potatoes. The authors do not agree with McCollum and Pitz that the texture of the foodstuff is a factor in its antiscorbatic value, in so far as guineapigs are concerned. These experiments are of very great interest at this particular time when the question of the dietary of large bodies of troops is under consideration.

### News Items.

**The Navy Wishes to Retain the Medical Staff.**—The Bureau of Medicine and Surgery of the Navy is formulating a bill under which all temporary medical officers of the navy shall be offered an opportunity to qualify for an appointment in the permanent establishment in the rank now held.

**General Gorgas Heads Yellow Fever Commission.**—Major General William C. Gorgas, recently retired for age from the office of Surgeon General of the United States Army, has resumed his position as chief of the Rockefeller Commission on Yellow Fever and will soon sail for Central America to supervise the studies which are being carried on there by the Rockefeller Commission.

**The Discharge of Emergency Officers.**—All the emergency officers in the Medical Corps have received circulars from the War Department requesting that they state whether they wish for (1) immediate and complete discharge from the army, or (2) appointment to the Reserve Corps, inactive, or (3) appointment to the regular army. The wishes of the officers will be complied with in so far as is consistent with the good of the service.

**Guarding against Infectious Diseases.**—The War Department announces that all troops returning from overseas will be kept in observation camps for at least two weeks prior to embarkation and that suspects will be detained until all possibility of the development of infectious diseases is over. The health of the troops on the whole is excellent, and the returning troops will be made much more comfortable than on their outward journey.

**Navy Hospital Ships in Army Service.**—The Navy hospital ships *Alcey* and *Comfort*, which can accommodate from 300 to 500 patients, are now in French waters and have been turned over to the army since there were so few casualties in the navy that they were not needed.

**American Physicians Elected to Honorary Membership in French Medical Society.**—The Société médicale des Hôpitaux de Paris at a recent meeting elected the following American physicians as honorary members of the society: Dr. Beverley Robinson, of New York; Dr. William S. Thayer, of Baltimore; Dr. Alexander Lambert, of New York; Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, New York; Professor Morton Prince, of Tufts Medical College, Boston; Dr. James T. Case, chief of the radiological service of the American Army in France. At the same time five British physicians were elected to honorary membership, as follows: Sir Bertrand Dawson, Sir Almoth Wright, Sir William Leishman, Sir Thomas Barlow, and Sir Dyce Duckworth.

**Personal.**—Captain Philip Leach, Medical Corps, U. S. Navy, will be retired for age on December 28, 1919.

Captain Francis S. Nash, Medical Director, U. S. Navy, reached the age of retirement on November 23, 1918. His last assignment to duty was in Washington as a member of the naval examining and retiring boards. His retirement will create no vacancy, as there is an additional number in his grade.

Lieutenant James G. Hall, M. C., of Toledo, Ohio, has been cited for bravery in action near Montauville, on September 12th and 13th, while serving with the 36th Infantry.

Lieutenant Colonels G. E. Brewer and A. Lambert of New York were promoted on November 12th to the rank of Colonel, M. C. (Emer.).

**Demobilization Problems.**—A general demobilization order was issued by the War Department on November 16th to the effect that the men in the United States will be demobilized as rapidly as is consistent with the needs of the government. It is explained by the Secretary of War that every man who is discharged from the army has to undergo a physical examination and have a very careful record made for statistical record and instead of furloughing and then discharging, they will be discharged so that there will be no subsequent claims against the government. All of those men will have to be examined by the doctors and the Medical Department is prepared to take over the question of rapid examination and discharge. This will be done as soon as it conveniently can. Presumably this will do away with the indefinite furlough for industrial purposes provided for in General Order 94, Section IV.

**Debarcation Hospital No. 3 Opens.**—On Saturday afternoon, November 23, Debarcation Hospital No. 3, which occupies the Greenhut and Cluett buildings, on the east side of Sixth Avenue from Eighteenth to Nineteenth Streets, received its first patients. This hospital, which has a capacity of over three thousand beds, is under the command of Major W. J. Monaghan, Medical Corps, and is one of a group of thirteen in or near New York city which come under the supervision of Colonel J. M. Kennedy, Medical Corps, Surgeon of the Port of Embarkation. The first patients to arrive were a group of eighty-eight, only four of whom were litter patients. It is expected that the hospital will quickly be filled to capacity. The hospital is complete in every detail, including two moving picture theatres and recreation rooms. When operated at full capacity, the complete staff will comprise about seventy officers, seven hundred enlisted men, and two hundred nurses. An escort detachment of about seven hundred men is also quartered in the Cluett building. The nurses are quartered in the Trowman Inn, at Abingdon Square and Twelfth Street, which has been taken over for that purpose by the government. This and the other debarcation hospitals at the port will be used as evacuation hospitals, where patients will be received on arrival from overseas, assorted, and forwarded as promptly as possible to the special hospitals best suited for their respective cases and nearest the homes of the patients. Major Monaghan has been showered with invitations from patriotic citizens who desire to entertain such of the patients as are able to leave the hospital.

**Praise for the Medical Corps of the Atlantic Fleet.**—Albert W. Grant has issued a circular as Vice-Admiral of the Atlantic Fleet giving expression to his appreciation of the work performed by the officers and men in the medical and hospital corps and praising the skill, the untiring energy and the self-sacrificing effort displayed in caring for the sick and in restricting the spread of influenza under very trying conditions.

**American Women's Hospitals to Stay in France Six Months.**—It is reported that the three units of the Women's Overseas Hospitals will continue in active service in France for another six months. One unit, known as Doctor Finley's unit, will spend the winter in the vicinity of Nancy. The gas unit, the last to go over, will stay where it is at present, while another unit, at work among the refugees in the south of France, will continue its work of caring for the refugees until they can be taken back home. At the request of the French War Department, this unit recently added a one hundred bed unit military hospital to its civilian work.

**Meetings of Medical Societies to Be Held in New York.**—The following medical societies will hold meetings in New York during the coming week:

**Monday, December 2d.**—Society of the New York Polyclinic Medical School and Hospital; Brooklyn Hospital Club.

**Tuesday, December 3d.**—New York Academy of Medicine (Section in Dermatology and Syphilis); Medical Society of Harlem Hospital; New York Neurological Society; Society of Alumni of Lebanon Hospital (annual).

**Wednesday, December 4th.**—New York Academy of Medicine (Section in Historical Medicine); Bronx Medical Association (annual); Harlem Medical Association; Psychiatric Society of New York; New York Urological Society; Society of Alumni of Bellevue Hospital (annual); Brooklyn Society for Neurology (annual).

**Thursday, December 5th.**—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society.

**Friday, December 6th.**—New York Academy of Medicine (Section in Surgery); New York Microscopic Society; Practitioners' Society of New York; Society for Serology and Hematology; Alumni Association of Roosevelt Hospital; Brooklyn Gynecological Society.

**Saturday, December 7th.**—Benjamin Rush Medical Society.

**American Public Health Association to Discuss Influenza.**—The annual meeting of the American Public Health Association will be held in Chicago, December 9th to 12th, under the presidency of Dr. Charles J. Hastings, of Toronto. The program will consist principally of a symposium on influenza and an effort will be made to bring out all the available information concerning the management of epidemic influenza, as public health officials fear a recurrence of the epidemic. The various phases of the disease will be discussed as follows: Etiology of Influenza, by Major W. H. Welch, Dr. W. H. Park, Lieutenant Commander Keegan, U. S. Navy, and others; Mobilization of Medical and Nursing Forces, by Assistant Surgeon General J. W. Schereschewsky, United States Public Health Service, Dr. W. C. Woodward, and others; Influenza and Pneumonia Vaccines, by Dr. E. C. Rosenow, Dr. G. W. McCoy, Dr. Timothy Leary, and others; The Use of Sera in Influenza, by Doctor McGuire, Doctor Redden, Dr. H. E. Hasseltine, and Dr. Joseph Goldberger; The Face Mask, by Colonel Charles Lynch and Dr. George W. Weaver; The Value of Open Air Treatment, by Surgeon General W. A. Brooks, Massachusetts State Guard; Organization of State and Federal Forces in Epidemics, by Assistant Surgeon General A. W. McLaughlin and Dr. E. R. Kelley; History and Statistics of the Epidemic, by Assistant Surgeon General E. S. Warren, Dr. W. H. Guilfoxy, Dr. W. H. Davis, Dr. Lee K. Frankel, and others. Reference committees will be appointed who will report on the various phases of epidemic influenza both at the annual meeting and during the year 1919. While extensively devoted to influenza, the program also contains papers on other aspects of public health; mental hygiene, industrial hygiene, social problems, sanitary engineering, etc. Headquarters will be at Hotel Morrison, Chicago. Inquiries may be addressed to the association at 989 Boylston Street, Boston, Massachusetts.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### STROPHANTHUS AND ITS ACTIVE PRINCIPLES VERSUS DIGITALIS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Concluded from page 914)

The value of and indications for intravenous administration of the strophanthins, in the light of recent clinical reports, have been discussed in preceding issues. Evidence suggesting that under some conditions these principles, when introduced directly into the circulation, are of greater therapeutic assistance than digitalis was also referred to, with special emphasis on the possibility that at times the strophanthins may exert actions qualitatively different from those of digitalis. There remain to be considered certain recent observations concerning the oral and hypodermic use of strophanthus and the strophanthins.

The most interesting of these reports is that of E. E. Cornwall, 1918, who believes he has found reason to establish a clinical distinction between the indications of strophanthus and those of digitalis, when used by mouth or hypodermically, somewhat similar to that already ascribed to Vaquez and his co-workers in relation to intravenous use. It is a fact easily verified by experimentation that in the lower animals strophanthus exerts its pressure and toxic actions in amounts far smaller than those required in the case of digitalis. In frogs, for example, strophanthus, when injected, is lethal in doses about 100 times smaller than digitalis, and among mammals the difference is about equally striking. One might expect that in the oral employment of these drugs in man a similar discrepancy in the necessary dose would prevail; yet as a matter of fact, in the official doses of the tinctures of these agents—0.5 and one mil, respectively—only a one to two ratio is recognized, while in the case of the powdered drugs the official doses are alike, viz., one grain in each instance. This difference in the relative activities of strophanthus and digitalis when injected in the lower animals and ingested by man has been attributed to imperfect absorption of the former drug from the alimentary tract. Again, it has been asserted that the active constituents of strophanthus are so decomposed in the gastrointestinal canal as to lose part of their activity. Some have laid stress on the variability and uncertainty of the absorption of this drug, and have been fearful of possible harmful results in individual instances in which, owing to some altered local condition, the drug might enter the system in a larger proportion than usual.

In Cornwall's clinical experience, the view that the active principles of strophanthus undergo impairment in the alimentary tract has not been substantiated. In fact, the dose he has found most effective is smaller than that officially recognized; he generally administers but one and a half to three minims of the tincture every four hours, well di-

luted with water. As a direct augmentor of the cardiac propulsive function he has found strophanthus to have a wider range of applicability than digitalis. In young adults with a relatively normal myocardium digitalis may prove the more effective, but in all types of heart disease in children requiring direct stimulation, in mitral stenosis, in aortic insufficiency, and in acute or chronic myocardial degeneration, strophanthus has proved of greater value in his experience. In a child of three or four years, the usual dose is one half minim, and in older children, one minim or a minim and a half. In diphtheritic myocarditis, in which the myocardium responds but sluggishly to heart stimulation when it is required, somewhat larger amounts are used. In typhoid fever with notable signs of myocardial degeneration, Cornwall gives strophanthus tincture in two and a half minim doses every four hours. Especially manifest, in his estimation, is the superiority of strophanthus over digitalis in advanced chronic myocardial degeneration. Ambulant cases of this class are given one or two minims, and cases confined to bed, one to three minims every four hours. It should not be overlooked that experimental evidence now available does not support Cornwall's opinion of a regular and dependable absorption of strophanthus from the alimentary tract.

In common with Vaquez and many others, Cornwall deems intravenous injection of strophanthin an efficient procedure; but he resorts more frequently to hypodermic injection because of the greater convenience of the latter mode of administration. The statement frequently made that hypodermic use of strophanthin causes intense pain locally has not been borne out by his experience; not infrequently local irritation has been complained of, but this was usually slight. One patient received three injections of strophanthin daily for eleven months without any local disturbance other than a tingling sensation. As with other remedial agents, the local irritation from strophanthin is minimized by injecting deeply. A definite brand of strophanthin, made by a well known firm, is used by Cornwall in doses of from 1/1,000 to 1/250 grain, every four hours or less often. Larger amounts, up to 1/100 grain, are given under certain conditions, but never oftener than once in twenty-four hours. Diarrhea, anorexia, or nausea, while occasionally noted after oral use of strophanthus, have never been observed by him from hypodermic injection of strophanthin. The sublingual method of strophanthin administration, in which a hypodermic tablet is placed under the tongue and allowed to dissolve and become absorbed, also proved feasible.

As mentioned in the preceding installment, Cornwall includes various forms of acute cardiac failure among the indications for hypodermic use of strophanthin. Even in the course of chronic heart affections, however, he frequently resorts to this procedure. Thus, in valvular disease with considerable decompensation strophanthin is given hypo-

dermically in the dose of 1/1,000 grain every four hours. In extreme decompensation in mitral stenosis, with auricular fibrillation, it is similarly used in doses of 1/500 or even 1/250 grain, usually in conjunction with enough morphine to alleviate dyspnea and restlessness. At times, to maintain compensation after it has been restored, strophanthus in reduced doses is continued for an indefinite period.

On the whole, it would seem that enough data have been presented in this series of communications to suggest, rather strongly, that there exist definite differences in the clinical actions and indications of digitalis and the strophanthin bodies. These differences, if substantiated by additional studies, will manifestly enlarge the already extensive and important field of application of the digitalis series and their active principles, and augment further the clinical utility of this valuable group of drugs.

**Teeth and Tonsils as Causative Factors in Arthritis.**—Roland Hammond (*American Journal of the Medical Sciences*, October, 1918) thus summarizes the mooted question of the relation of the teeth and tonsils to arthritis. Billings and his followers point to the careful work of Rosenow and others on the bacteriology of arthritis and to the numerous cases of improvement and cure of arthritis following removal of diseased teeth and tonsils. They believe that this proves the accuracy of their contention that a focus of infection exists in the head in many of these cases. On the other hand, many trained pathologists and reputable clinicians have been unable to reproduce either the laboratory findings or the clinical results of the Chicago workers. Consequently they either reject the theory as a whole or accept it in a greatly modified form. It is probable that the pendulum has swung too far in the direction of the wholesale removal of teeth and tonsils. The truth will probably be found in a middle ground somewhere between these divergent theories. There is undoubted improvement in numerous cases of arthritis following the removal of an abscessed tooth or a diseased tonsil or when a case of active pyorrhea has received proper treatment. On the contrary, many such cases are given similar careful treatment without affecting the progress of the joint condition in the slightest degree.

One reason for the failure to obtain successful results in arthritis by treatment of dental and tonsillar disease is that the cases have been selected without knowledge of the exact pathological condition present in the organ in question. Many apical abscesses in which nature has effected a cure by walling off the disease have been treated by extraction of teeth. This has resulted not only in the loss of valuable teeth, but has at times been the cause of a dissemination of the infection to other parts of the body, with dire results. In the same way the crypts in certain areas of a tonsil may overcome an existing infection. These crypts are perfectly harmless. A tonsil in which the crypts are seared over by scar tissue, perhaps as the result of an incomplete tonsillectomy, may be a source

of potent danger if the crypts contain an active focus of infection. Success in treatment of these foci lies with the men who can distinguish the apical abscess and the diseased tonsil which are overcoming their infection by nature's methods. They must know by careful and special training when a tooth or a tonsil is an active agent of infection. Such knowledge must be supplemented by accurate interpretation of dental roentgenograms and skillful laboratory work. Trite as the saying is, cooperation in such endeavor is the keynote of success. Another reason for failure in arthritic cases is due to the fact that the focus of infection lies in some other part of the body. It may be discovered by further careful search in the lungs, heart, kidneys, genitourinary or gastrointestinal tracts, ductless glands, the nervous system, and elsewhere. A certain number of cases are due to syphilis and to tuberculosis. Unfortunately in many cases it is never brought to light. Many cases of arthritis are believed by thoughtful physicians to be due not to a localized collection of microorganisms but to an entirely different etiology. This class of cases is supposed to result from some disturbance of the metabolism, probably chemical in nature, which produces joint changes not always to be distinguished from those caused by bacterial agency. They compose a fairly large share of the cases of chronic progressive arthritis seen in the daily routine of practice. A general flaccidity of tissues and relaxation of important organs accompanied by ptosis of the abdominal viscera often characterize these cases. In acute arthritis the probability of producing a cure or improvement by the removal of a supposed focus in the teeth or tonsils is greater than in cases in the chronic stage. It is unreasonable to suppose that a restoration of function can be brought about in joints where extensive pathological changes have taken place. One very suggestive fact brought out in this investigation has been the marked improvement in the general health of the patients when diseased conditions of the teeth and tonsils have been properly treated. This was often noted even when no change was apparent in the joint condition.

#### **Operative Treatment of Ankylosis of the Jaw.**

—M. S. Henderson and G. B. New (*Surgery, Gynecology and Obstetrics*, November, 1918) describe a method of operative treatment of ankylosis of the jaw. The operation is an arthroplasty, because it has as its object the establishment of sufficient motion to permit function of the part affected. It is pointed out that the facial nerve and the internal maxillary and superficial temporal arteries are the structures the surgeon must bear in mind and familiarize himself with before undertaking the operation. Hartley has described an operation very similar to that used by Henderson and New who believe that the essential points of this method of treating articular ankylosis are: 1, It removes sufficient bone to make a space one half an inch between the skull and the ramus, thus obtaining a stable functioning joint; 2, it is an incision that gives good exposure to the joint and does not injure the facial nerve; 3, it approaches the joint from above by removing part of the zygoma.



**Treatment of Gunshot Wounds of the Face Accompanied by Extensive Destruction of the Lower Lip and Mandible.**—V. H. Kazanjian and Harold Burrows (*British Journal of Surgery*, July, 1918) describe several cases of gunshot wounds of the face in which extensive destruction of tissues occurred. With regard to early treatment they say that, apart from urgent complications, the amount of surgical interference required in the early stages will be small and will be limited to the removal of dirt, loose fragments of bone, teeth, and roots. A little later, when the wound begins to show healthy granulations, a certain amount of early secondary suturing may be done. This will be effected under local anesthesia, and will be limited to sewing up the outlying radiations of the wound, and closing as much of the main wound as may be done without impeding drainage. With regard to dressings, the authors think there is not much to be said. The wound is widely open, and is continually washed with an abundance of the patient's own saliva. This necessitates frequent changes of dressing, and on each of these occasions the mouth is syringed with antiseptic solution, usually listerine or a solution of potassium permanganate. The principal points of treatment to be observed are: 1, The preservation of the surviving portions of the mandible in the desired position; 2, the substitution of lost bony tissue by vulcanite appliances before the performance of plastic operations on the soft parts; 3, postponement of the main plastic operation until suppuration has ceased and the patient is in good physical condition; 4, the use of a similar scheme of flaps in all the cases. The authors conclude by saying that an ideal restoration of a lost mandible would involve re-establishment of bony continuity by grafting. They hope that means will be found to achieve more perfect results by such a method. At the present time, however, it is satisfactory to know that an artificial jaw can be both a useful and a practical substitute for one that has been lost.

**Saline Solution with Organ Extracts in Shock.**—Descomps and Clermonthe (*Presse médicale*, August 22, 1918) treated thirteen cases of shock, chiefly cases of hemorrhagic or toxic shock coming under observation six to twenty-four hours after injury, by intravenous injections of a fluid consisting mainly of Hédon's solution—a hypertonic solution of about the same composition as Ringer's and Locke's solutions—together with a few mils of soluble extracts of the thyroid, hypophysis, adrenals, testicles and spleen, and a little strychnine and digitalin. The object of this preparation was to make up, in the shocked cases, for the reduction or temporary absence from the blood of the main secretory products of the endocrine glands. The latter, controlling the functional activity of the sympathetic and maintaining the action of the vasomotor centres, play an important rôle. In all forms of shock, circulatory disturbances occupy a preponderant place in the symptomatic picture. In hemorrhagic shock, furthermore, a sudden lack of endocrine products in the blood is to be apprehended. Of the thirteen patients treated, eight recovered, while in five the procedure failed. In the former, the pulse became more regular and forcible within

six or eight hours after the injection. The blood pressure rose rapidly. At the same time a persistent diuresis, sometimes very considerable, was noted, and the daily output of urea increased above the average to twenty-nine up to forty-two grams, apparently showing an action of the solution on the functions of the liver. The chloride estimations were always low—0.2 to 0.5 gram per litre. The specific gravity of the urine, where tested was always normal or above normal, suggesting excitation of the various glandular activities. Elimination by sweats following the injections was observed in three cases, and likewise the sedative effect of the fluid on the brain centres, restlessness, delirium, and mental disturbances diminishing and then disappearing in the cases treated.

**Treatment of Paresis by Inunctions of Mercury and Drainage of the Cerebrospinal Fluid.**—Alan D. Finlayson (*American Journal of Insanity*, April, 1918) reports the intensive treatment of fourteen paretics, the method used being the daily inunction of mercurial ointment (fifty per cent.) with the withdrawal every ten days of from twenty to forty c.c. of spinal fluid. In half the cases the blood Wassermann reaction became negative and remained so for varying periods; in six cases the spinal fluid showed a like behavior. In no instance did either fluid become permanently negative. The cell count showed an irregular decrease in every case. In four cases the colloidal gold reaction became negative, but did not remain so. One case showed a good remission mentally, and another patient a fair one, but the remaining cases showed no apparent change attributable to treatment. Doctor Finlayson concludes that there is so little correlation between serological and psychological results that the apparent great improvement in the former does not inform us as to the value of the treatment.

**Operation for Paralytic Genu Recurvatum.**—Willis C. Campbell (*Journal A. M. A.*, September 21, 1918) makes a linear incision through the skin and superficial tissues in the middle line for a length of five or six inches, exposing the patella and its ligament. The tendon above the patella is cut with a Z shaped incision like that used for lengthening the tendo Achillis, and through this incision the capsule is opened. The cartilage is then removed from the lower third of the patella, exposing the spongy bone, and the periosteum is stripped up for one eighth of an inch on the anterior surface. A cavity is next made on the upper anterior aspect of the tibia to receive the lower third of the patella. The patella is placed in this cavity and united to the tibia by suture of the periosteum of the two bones along the margin of the denuded patellar surface. The tendon above the patella is then sutured at neutral tension after closure of the joint cavity, the fascia and skin layer is closed, and the extremity put up in plaster at an angle of 20° of flexion at the knee. After eight weeks in this dressing a brace is applied and worn for six months. The two thirds of the patella projecting above the articular surface of the tibia acts as a positive mechanical stop to hyperextension of the knee. The operation gives excellent results where it is desired to produce bony ankylosis of the knee in paralytic patients.

**Atrophy of Denervated Muscle.**—J. M. Langley and M. Hashimoto (*Journal of Physiology*, April, 1918) have made a study of the effect of treatment upon denervated muscle and conclude that neither the use of the galvanic current, production of contraction, passive movements, nor massage—which include all of the present modes of treatment of such muscle—can do more than slightly delay atrophy. It would seem that any one of them might be supplanted by a method equally beneficial but not requiring such expenditure of time or money. It is especially difficult in man to measure the effect of other treatment since it is too much obscured by variability in time of recovery as well as by unascertainable conditions at the point of suture. Measurements of the limbs at intervals of stimulation cannot be relied upon, since connective tissue growth may have been caused. Growth of muscle would moreover mean that atrophy could altogether be prevented, which is more than one can at present claim. The only other method of testing, to which these experimenters could resort, is that of comparing the electrical irritability of the muscle that has been treated with that which has been left alone. In order to minimize the errors that must arise a great number of experiments were made upon animals and careful watch was kept for error. The experiments were made only during the earlier stage of atrophy, when it would seem that treatment would be more likely to produce its effect. Still in the later stage conditions are different, since the arteries gradually recover tone and there may be a change in the quantity of blood flowing through the muscles. Only one experimental method of treatment appears to offer any hope of considerably reducing the rate of atrophy, and this is ionization with a potassium salt, and even this gave a positive result only once out of three experiments.

**Treatment of Rectal Fistula.**—Charles J. Drucek (*Texas Medical Journal*, October, 1918) states that if the abscess has not yet ruptured it should be freely opened away from the rectum and the cavity thoroughly and carefully drained. The incision should be made in a line radiating from the anus. Palliative treatment is not very effective. The bowels should be kept open—enough to allow a soft uniform movement. After every bowel movement the rectum should be flushed out with an enema of warm water. Tuberculosis is, as a rule, not a contraindication to operation. Operations are divided into tentative and radical. Tentative operations include the injection of astringents and the several methods of dividing the tissues with a ligature. Of the astringents, iodine, zinc, sulphur, carbolic acid, and ergot are the best. The injection is made with a hypodermic needle, which should be three inches long, with a blunt tip. The injection is made in and around the sinus, the left index finger being placed over the internal opening as a plug to prevent the escape of the fluid. In applying a ligature, it is passed through the external opening, along the fistula and brought out at the anus. A knot is then tied and the ligature allowed to slough through. Silk, or an elastic rubber band, may be used. The fistula may be divided with a Paquelin cautery. The radical operations are incision and

excision. The advantages of a radical operation are: 1, Every sinus can be hunted out; 2, overlapping edges may be removed; 3, free drainage is obtained and abscesses are prevented; 4, the operation is quickly and thoroughly done. In the after-treatment the bowels are moved by a cathartic on the fourth day, the movement being immediately preceded by a copious enema. The wound should not be dressed too frequently, the packing should not be too light, and antiseptics should not be applied too energetically.

**Use of the Douche Pan in the Second and Third Stages of Labor.**—C. J. Andrews (*American Journal of Obstetrics*, October, 1918), observing that the third stage is usually conducted under the disadvantage of having the patient's buttocks more or less immersed in a pool of blood and liquor amnii, and sometimes feces, has been using a sterile douche pan under the buttocks during both delivery and the third stage. It is placed in position usually when the head is on the perineum. Occasionally, in multiparæ, it is adjusted before the bag of waters ruptures. A folded sterile towel is placed under the sacrum. If there has not been opportunity to sterilize the pan, it is thoroughly covered with sterile sheets or towels. By this procedure not only are all discharges received in a pan and soiling avoided, but the amount of hemorrhage can be accurately observed. Examination of the perineum is rendered much easier and small tears can be more conveniently repaired. The vulva may be freely bathed with antiseptic solution, and vulvar dressings applied before the patient is moved. Often it is not necessary to change a sheet.

**Effects of Intravenous Saline Infusion after Severe Hemorrhage.**—Richet, Brodin, and Saint-Girons (*Presse médicale*, August 5, 1918) studied the action of various kinds of intravenous infusions in severely bled dogs. Placing at the arbitrary figure 100 the volume of blood and the number of red blood cells remaining in an animal succumbing to simple, untreated hemorrhage, the authors observed that the blood volume and cell count might vary greatly according to the nature of the intravenous injection administered. Thus, the effects of horse serum varied with the animal supplying it. In the most favorable instances there was a reduction up to twenty-three per cent., while in the less favorable there was an increase up to 125 per cent. An isotonic solution of sodium chloride with five or ten per cent. of glucose added proved clearly more effectual than simple physiological salt solution. Unexpectedly, Locke's solution proved greatly inferior to normal saline solution. After hemorrhage followed by therapeutic injection the mean variation between different animals, both as to blood volume and cell count, was much less than after hemorrhage without injection. It may be maintained that where the amount of blood remaining exceeds thirty per cent. of the original blood volume, and where the cell count exceeds five per cent. of the initial number, some toxic action on the heart has occurred in the event of death. The general conclusion reached is that copious saline injections may enable the system to recover from hemorrhages which, in their absence, would have entailed immediate death.



**Shell Shock—Psychoneuroses of War.**—C. S. Holbrook (*New Orleans Medical and Surgical Journal*, October, 1918) tells us that at the beginning of the war the psychoneurotic cases were all sent from the trenches to the base hospitals, and then to England. Recently this plan has been much altered and these unfortunate men were treated comparatively close to the firing line. Special hospitals were organized in the zone of activity and psychiatric wards were added to the large general hospitals. The trend of treatment was to give intensified therapy near the front and to send to England only such patients as were not expected to recover in a few weeks or months. Psychoanalysis has a place in the treatment of shell shock cases, but, owing to the time required and the considerable experience required on the part of the physician, this method of treatment could be used in only a few cases. The results are excellent. Hypnotism had many advocates during the first years of the war and the results were good, but recently this practice has lost much of its popularity. There are three principles involved in nearly all methods: suggestion, reeducation, discipline. The aim of suggestion is to make the patient believe he will be cured, and to lead him on from this to the belief that he is cured. Reeducation brings the desired function back to the normal by directing it until the bad habit is lost, and disciplinary treatment breaks down the unconscious resistance of the patient to the idea of recovery. The results of treatment have been quite variable. Percentages of cures have ranged from twenty-six to ninety-eight per cent. With appropriate treatment, given shortly after the neurosis develops, over ninety per cent. of these patients should recover, but should be discharged or assigned to home duty.

**Treatment of Pseudarthrosis.**—Chutro (*Presse médicale*, August 5, 1918) presents conclusions reached after experience with seventy-five cases resulting from war wounds. Apart from the cases in which union may be obtained by a mere freshening of the bone fragments and adequate immobilization, the metallic plate remains the best method in the involvement of single bones such as the clavicle, humerus, and femur, while in the case of the bones of the forearm and leg, bone grafts should be used. In a few cases, however, in which the humeral or femoral fragments are in contact, bone grafts after the method of Albee may be resorted to. In osteosynthesis by the plate method, the author adopts Sherman's technic and instrumentation. In transplanting bone, he has discarded Albee's saw, which liberates too much heat, thus entailing a risk of killing the transplant, and also occludes the pores of the bone with bone dust. He prefers the Murphy chisel. The transplants, always from the tibia, are made thin rather than thick. Fixation of the transplant with wire is considered unnecessary; the grafting is carried out by contact, as in horticulture, and the periosteum of the graft is placed in continuity with that of the bone fragments. The time of immobilization in a plaster cast is never less than three months. Later, x ray examinations are made from time to time, and as soon as the cortical layer gives a distinct shadow, massage is begun.

**Experiences with the Kondoleon Operation for Elephantiasis.**—W. E. Sistrunk (*Journal A. M. A.*, September 7, 1918) records seven cases of elephantiasis in which he has performed this operation, slightly modified from the original, with very favorable results. He finds that the results are rather more favorable in the lower extremities than in the upper. The modified operation consists in making an elliptical incision including the skin to be removed, extending nearly the entire length of the extremity. The skin is then reflected from the fat for one to one and one half inches from the outer margin along the entire circumference of the incision. Retracting this skin, the fat and aponeurosis is incised as far out as possible and in a line parallel to the skin incision. The two lateral incisions are then connected at their upper ends by a similar transverse incision, the end is grasped, and while traction is made the entire mass of fat and edematous tissue, including the aponeurosis, is dissected free from the underlying muscles. Bleeding is checked with clamps, and the wound is closed by suture of the skin margins with interrupted silk-worm gut stitches. After eight or ten days in bed an elastic bandage is applied and the patient allowed to get up. This bandage should be worn for several months.

**Conservative Surgery of Chronic Intestinal Stasis.**—Frank C. Yeomans (*New York State Journal of Medicine*, September, 1918) contends that the surgery of this condition cannot be standardized, but that in each case the patient must be made the subject of separate study and treatment applied, which is designed to eliminate the causes. Thus anal fissure or irritable rectal ulcer will cause obstruction through the production of a hypertrophic and spasmodic sphincter muscle. Excision of the ulcer and superficial division of the sphincter will cure the condition. Fibrotic Houston's valves may also produce obstruction, and this can be relieved promptly by division of the valves through the application of a spring clip. Flabby and atrophic sigmoid may be the cause of the stasis and this can often be overcome and the sigmoid restored to normal by the frequent instillation of warm olive oil or liquid petrolatum, which is retained over night. Spastic enterostasis is usually due to some local inflammation or to reflex irritation, and removal of the inflammatory process, such as the appendix, or cure of putrefaction by medical means will cure the spastic condition. General enteroptosis is another frequent cause of intestinal stasis and can be much benefited by the performance of relatively simple operations for the replacement and fixation of the dilated and prolapsed portions of the gastrointestinal tract. Many cases of stasis are found to be due to peritoneal bands and omental adhesions, and the removal or section of these often cures the patient. Ileosigmoidostomy should be abandoned, for it violates the cardinal surgical principle of leaving the entire colon open above the stoma. Total colectomy should also be given up on account of its danger. On the other hand, cecosisigmoidostomy may be employed in certain obstinate cases with good results in about two thirds of the operations.

# Miscellany from Home and Foreign Journals

**Indications and Limitations of the Induction of Labor.**—R. C. Norris (*American Journal of Obstetrics*, October, 1918) believes the termination of pregnancy for grave systemic disease of the mother, diseases or accidents of the product of conception, and serious disproportion of fetus to pelvis, is becoming more and more restricted. There remain, however, several important indications for which it should be more frequently used. Among the early complications is tuberculosis; pregnancy in a woman who has recently contracted this disease should usually be terminated. In grave chronic nephritis, spontaneous abortion is the rule; mild cases should be watched constantly, and often the interruption of pregnancy will be indicated. Early induced abortion is advisable in all cases of true diabetes, in hydatid mole, and in acute hydramnios with dyspnea and marked interference with the circulation. In pyelitis, if ureteral and renal pelvis irrigations with a silver preparation fail to relieve promptly, labor should be induced. In insanity, the family history, failure of eliminative and sedative treatment, and especially suicidal mania, justify termination of pregnancy. In a series of 140 cases, labor was induced for pelvic deformity in eighty-three instances; toxemia of pregnancy, thirty-six; prolongation of pregnancy, fifteen; grave cardiac disease, three; exophthalmic goitre, acute hydramnios, and fetal death, one each. There was no maternal mortality. In pelvic contraction, induced labor should be restricted to conjugates above 8.5 centimetres, and most frequently to multiparæ with histories of difficult labor and lost babies. Primiparæ with conjugates below 8.5, unless the fetus is distinctly under size, are best treated by Cæsarean section.

**Röntgenographic Studies in Chronic Mouth Infections.**—Arthur D. Black (*Journal A. M. A.*, October 19, 1918) draws his conclusions from a study of 6,000 films from 600 mouths. Definite areas of bone destruction about the teeth were found in seventy-eight per cent. of the cases. The frequency of these areas of bone destruction in different age periods ran as follows: Between the ages of twenty and twenty-four, seventy-five per cent.; twenty-five to twenty-nine, sixty-four per cent.; thirty to thirty-nine, eighty-eight per cent.; forty to forty-nine, ninety per cent.; and above fifty, ninety-eight per cent. The percentages for persons over forty years old were probably too high. The areas of destroyed bone were of two types: The one located along the sides of the teeth from infections in the gingivæ, called periodontal infections; the other at the apices of the roots, called alveolar abscess. The periodontal infections were very seldom found in persons less than twenty years old and were specially lesions of adult life, increasing in frequency with increasing age. On the other hand alveolar abscess was found at all ages and would increase in frequency with increasing age, were it not for the fact that extractions tend to preserve a balance. Ten per cent. of all the teeth in the mouths of the persons examined contained root canal fill-

ings and these were studied with reference to their bearing upon alveolar abscess. Of 343 good root fillings in large root canals only thirty-one were abscessed, while of 570 poor fillings in similar canals 356 were abscessed. Of the small canals 184 were well filled and showed only nineteen abscesses as compared with 271 abscesses among 413 poorly filled small canals. The totals showed only nine per cent. abscessed among all the good root canal fillings and sixty-three per cent. among all teeth with bad root canal fillings. Improvement in dental practice has been taking place with an increase in the number of extractions to eliminate infections and a decrease in crowns and bridges. This change in practice also includes a determined effort on the part of progressive dentists to free all mouths of infection and to take every possible means of preventing the occurrence of infection. This in turn is a very great factor in reducing serious systemic infections.

**Drink and Its Control in Relation to Work and Health in Great Britain.**—Sir Robert Armstrong-Jones (*American Journal of Insanity*, April, 1918) comments on the third report of the Central Control Board for Liquor Traffic. This board is charged with diminishing the accessibility of drink and also its alcoholic content. Typical of this work was the case of Carlisle, a quiet cathedral city, whose male population was suddenly more than doubled by the incursion of highly paid ammunition workers, with the result that drunkenness increased 800 per cent. The board bought five breweries and all licensed places in town, closed two of the breweries and one third of the taverns. The keepers of these latter were informed that their profits would depend upon the amount of food sold and that they would make nothing from the sale of beverages. The board reports a marked diminution in convictions for drunkenness, an improvement in the condition of the street and, in general, better public order.

**Rôle of Ascariasis in Gallbladder Disease.**—J. Aviles (*Surgery, Gynecology, and Obstetrics*, November, 1918) concludes, on the above subject, as follows: 1. The diagnosis of gallbladder or of biliary duct disorders due to migration of *Ascarides lumbricoides* is not easy. 2. Such disturbances are rare. At times the prognosis is grave, and in some instances cases end fatally in a very short time; in others death comes suddenly. 3. A person who is seized with hepatic coliclike pain, accompanied with vomiting of *Ascarides lumbricoides*, has the syndrome necessary for suspecting that the case is one of migration of the parasite or parasites into the biliary ducts or gallbladder; and unless the symptoms subside, surgical intervention is indicated. 4. Anthelmintic remedies must be administered as a prophylactic measure in those cases in which a history of ascariasis accompanies disorders of the gastrohepatoduodenal system. 5. In those cases in which surgical intervention has been practised, anthelmintic remedies must be given to avoid new serious complications.



**Intestinal Protozoal Infections.**—Doris L. Mackinnon (*Lancet*, September 21, 1918) made routine examinations of the stools for intestinal parasites in a series of 1,680 consecutive, unselected cases, in 1,549 of which six examinations were made on as many consecutive days. Nine hundred and fourteen of the cases were admitted to the hospital as convalescents from dysenteric or diarrheal conditions, and 766 were admitted for other conditions. Only 447 of these men had ever been outside of France or England, that is, in tropical or subtropical countries. Over fifty-one per cent. of the total number of men were infected with protozoa, *Entameba histolytica* being found in 12.4 per cent., *Entameba coli* in twenty-six per cent., *Entameba nana* in eighteen per cent., *Giardia intestinalis* in 13.4 per cent., *Chilomastix mesnili* in five per cent., and *Trichomonas hominis* in 0.7 per cent. There was a slightly larger proportion of carriers of *Entameba histolytica* among the cases giving a dysenteric history than among the others, and a considerably larger proportion among the men who had been in the tropical or subtropical regions at some previous time than in those who had not. One man who had never been out of England harbored *Entameba histolytica* cysts, but he had been in attendance upon dysentery patients for some time. Sixty-nine carriers, out of 131 who received treatment with emetine bismuth iodide for twelve days each, relapsed and at least fifty-eight per cent. of the relapses occurred within the first week after treatment.

**Biopsy in Cancer.**—Jerome M. Lynch (*International Journal of Surgery*, 1918) says that he is very much opposed to biopsy, that is, the removal of a portion of the tumor for histological diagnosis, as it tends to disseminate the growth and serves no useful purpose. He maintains that the liability to err is just as great as it would be with one unfamiliar with the characteristics of the growth. Abbe, in a paper read before the New York Academy of Medicine, on the Influence of Radium in Cancer, stated that the last part of the tumor to heal was that from which a piece had been removed. It is known from experience that even the rough handling of a tumor is very often sufficient to disseminate the cells; how much more is the cutting into it apt to be harmful. There is only one condition for which carcinoma can be mistaken, excluding sarcoma, and that is an inflammatory nodular tumor, due to a nonspecific inflammation, but when one is uncertain it is almost always benign rather than malignant. As a general rule the inflammatory condition referred to is much more extensive and not as prominent as a carcinoma, and the patient gives a history extending over a long period. Now while cancer may exist for two years without making appreciable inroads into the health of the patient, in an inflammatory tumor the history is of much longer duration, and there is greater undermining of the patient's constitution than there is in a malignant tumor. One might be justified, under such circumstances, in resorting to biopsy, but it happens so infrequently that one has to make this decision, that it may be considered almost negligible.

**Importance of Blood Cultures in Pneumonia.**—J. E. McClelland (*Journal A. M. A.*, October 19, 1918) finds that septicemia, as shown by positive blood cultures, is more frequently associated with the more virulent strains of pneumococci and with the *Streptococcus hemolyticus* than with the less virulent strains. The taking of blood cultures as a routine in pneumonia cases is of value in prognosis and in the use of serum therapy. The septicemia due to Type I pneumococcus responds very promptly to the intravenous use of the corresponding immune serum. Septicemia due to Type IV pneumococcus may be recovered from rapidly and spontaneously, while that due to the *Streptococcus hemolyticus* is extremely fatal, though this organism may at times cause a slight and transient septicemia.

**Serological Test in Typhus Fever.**—C. M. Craig and N. Hamilton Fairley (*Lancet*, September 21, 1918) record their observations on the Weil-Felix reaction, and conclude that this agglutination test is an invaluable aid in the diagnosis of typhus fever, the reaction commonly appearing only in that disease. Using Garrow's agglutinator, a rapid agglutination of the proteuslike organism in a dilution of one to ten of serum is sufficiently suspicious to justify the isolation of the patient. This degree of reaction is especially indicative of typhus in persons previously uninoculated against the typhoid paratyphoid organisms or cholera. That the proteuslike organism giving this reaction is not the cause of typhus fever, or even a necessary constant secondary invader, seems to be indicated by the inability to cultivate this organism from the urine or blood at any stage of the disease, save in very exceptional instances; also by the absence of any immune body against this organism in the serum of typhus cases, as shown by the absence of complement fixation. The test, though wholly nonspecific and of the nature of a pseudoagglutination, is still of the utmost clinical value and can be compared in this respect to the equally nonspecific Wassermann reaction.

**Complications of Senile Nephritis.**—Malford W. Thewlis (*Medical Review of Reviews*, September, 1918) says that senile nephritis causes many symptoms in other organs, while displaying little evidence of disease in the kidneys. The causes of complications are: Toxins from the diseased kidneys affecting other organs; increase in blood pressure due to kidney disease; cardiac complications resulting from overwork of the heart due to renal disease. Minor symptoms which may become severe and classed as complications are dead fingers, cramps in the calves of the legs, deafness, sensation of electric shock on lying down, sensitiveness to the cold, and nocturnal micturition. Uremia may affect one organ only, as gastric, renal, or cerebral uremia. Other complications are indigestion, gastrointestinal disorders, pyorrhœa alveolaris, neuritis and neuralgia, cerebral symptoms, and uremic fever. Many of these conditions improve when attention is given to the diseased kidneys. Senile nephritis is very treacherous and frequently is diagnosed only on postmortem examination. The urinary picture may be clear on some days and obscure or entirely hidden on others.

**Hemophilia.**—Harry Lowenburg and A. I. Rubenstone (*Journal A. M. A.*, October 12, 1918) tested the influence of the tissues of a hemophilic boy, who died from uncontrollable bleeding, upon the coagulation time of oxalated normal plasma after the addition of calcium. They also made control observations with corresponding tissues from a normal person. They found that the tissues from all of the internal organs including the brain, thyroid, heart, liver, kidney, suprarenals, pancreas, spleen, muscle, and bone marrow accelerated clotting when derived from a normal subject. All of the same tissues except the thyroid and liver from the hemophilic boy also accelerated clotting, these two tissues markedly prolonging the coagulation time.

**Multiple Neurofibromatosis (von Recklinghausen's Disease) and Its Inheritance.**—Samuel A. Preiser and Charles B. Davenport (*American Journal of the Medical Sciences*, October, 1918) describe the occurrence of von Recklinghausen's disease in a father and son, with the autopsy findings in the case of the father, in whom the disease lasted thirteen years. The presence of the disease in the son was associated with definite mental inferiority and delayed sexual development. The writers give a review and analysis of 243 cases of multiple neurofibromatosis from the literature, and an analysis of thirty cases of the familiar type, with charts of families in which there were two or more affected persons in one family. This establishes the hereditary tendency of the disease, showing the hereditary factor to be dominant, there being something, apparently, in the germ plasma that positively facilitates the production, under appropriate stimulation, of tumors of the nerve sheaths. The tumors at times assume a malignant character.

**Comparison of Immediate and Delayed Suture of Gunshot Wounds.**—In a report (*British Journal of Surgery*, July, 1918) of research work at a casualty clearing station, Forbes Fraser, director, it is stated in the report that while it is evident that, with careful selection of cases and efficient operation, immediate suture may be counted on to meet with a large measure of success, and while immediate suture must be the operation of choice for certain classes of wounds, such as those of the head and chest and those involving joints, yet the investigators incline to the belief that for general use in the average wound delayed suture is safer and more certain in its results. During periods of active fighting, when cases cannot be retained for at least several days after operation, delayed suture is the only means of early closure at disposal. This method has the advantage that the presence of virulent infection can be ascertained before the wound is closed, by chemical evidence and microscopical examination. In this way wounds with virulent infection, the majority of which if sutured would be failures, can be excluded from closure until later periods when the infection has been overcome. In the case of severe wounds, and when the operator is in the least doubt as to whether he has succeeded in efficiently removing dead and damaged tissue, delayed suture should have the preference, as a general rule.

**Blood Pressure in Amyloid Diseases of the Kidney.**—K. Hirose (*Bulletin of the Johns Hopkins Hospital*, August, 1918) studied fifty-nine cases which showed definite amyloid in the kidney, in each instance associated with chronic nephritis. His observations will confirm the general impression, in that the blood pressure was either normal or subnormal in the great majority of the cases and that there was cardiac hypertrophy in only ten instances.

**Seasonal Variation in the Iodine Content of the Thyroid Gland.**—Frederic Fenger (*Endocrinology*, April-June, 1918) reports the results of analyses carried out from 1914 to 1917 on the desiccated thyroids of cattle, hogs, and sheep. This work confirms his previous investigations, showing that there is two to three times as much iodine present in the glands between the months of June and November as between December and May. These fluctuations seem to be due to temperature.

**Laryngotracheal Stenosis.**—Henry L. Lynah (*Laryngoscope*, September, 1918) believes that tracheotomy, when performed properly and with sufficient time allowed, is one of the most lifesaving operations we have in surgery, while the stab emergency tracheotomy has been responsible for much of the high mortality rate. Fatal results are usually attributed to the tracheotomy, when in fact, in many instances, the tissues of the neck are severed only and the trachea not even opened.

**Malarial Mastitis.**—H. de Brun (*Presse médicale*, August 22, 1918) reports six cases of malarial inflammation of the mammary gland. Ten more have been seen by his colleagues. The condition seems to belong more particularly to the secondary phase of malaria, the earliest among his cases showing it three months after the initial fever and the latest, fourteen months. It may begin to appear either during a paroxysm or during apyrexia. Pain persists throughout its course, and obstinately resists treatment by morphine, belladonna, chloral hydrate, antipyrine, etc. Often it radiates to the shoulder or other regions. Pressure on the breast, even slight, is at times extremely painful. At night the weight of the bed coverings proves intolerable and the patient is apt to lie for a time upon the affected side. The standing position is the most comfortable. The degree of mammary swelling is entirely out of proportion to the amount of pain; swelling is sometimes practically absent. The gland itself participates but little in whatever swelling exists, the latter being probably due mainly to infiltration of the skin and deeper connective tissues. Palpation regularly reveals a small, lobulated mass of almost cartilaginous consistency in the region about the nipple. The condition may be unilateral or bilateral; if bilateral, one side is usually affected far more than the other, even though they were simultaneously involved. No constitutional reaction is awakened, but an acute malarial paroxysm often induces local congestion, enlargement, and a great increase of pain. The affection lasts from a few weeks to several months, and always terminates in resolution without fibrosis. All the author's patients had large spleens and livers. Quinine, even in large doses, seemed to have no effect on the mammary condition.



# Proceedings of National and Local Societies

## AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Thirty-first Annual Meeting, Held in Detroit, Michigan, September 16, 17, and 18, 1918.*

The President, Dr. ALBERT GOLDSPOHN, of Chicago, in the Chair.

*(Concluded from page 927.)*

**Gallbladder Disease and Its Differential Diagnosis.**—Dr. JOHN ERDMANN, of New York, said that the sex preponderance was in the female and, as Deaver aptly put it, "Beware of the female fair, fat, and forty, or past, who belched wind." Nevertheless, in the great proportion of his case records, the year of onset, or early visitation of symptoms, was between twenty-five and twenty-seven years, a few as early as eighteen, and in one, a common duct case in which he operated, there was a history of jaundice (following colic) at fourteen years, the operation being done by him when the patient was seventeen. The colic or cramp was described as being in the upper right quadrant, without extension; with extension into the back, lumbar zone; up the back, under the shoulder blade—in the space between the shoulder blades; in the left shoulder and occasionally in the left and right neck. Frequently and usually when the stone was in the cystic duct, the colic was said to travel across the midline upwards—under the left nipple and breast (pseudo-angina). The attacks were very prone to occur between 7 p. m. and 1 a. m.—in markedly different relationship to the pain in ulcer of the duodenum. Jaundice was a symptom or sign made much of years ago but now accepted only as a confirmatory evidence of some obstruction to the outflow of bile, or some destructive blood condition, as in hemolytic jaundice, etc. Frequently a greater loss of weight was seen in a given short period of time in gallbladder involvement than in many cases of malignancy. This loss was to be assigned to several sources—the limiting of diet, improper metabolism due to impaired bile, and also to pancreatic associations. Pruritus was in early evidence in all patients with jaundice and frequently with those in whom the pancreas was involved. In examining these patients evidences of pruritus presented themselves as long scratches or small petechial spots all due to both conscious and unconscious scratching. Upon straining the stools stones might be found, but the infrequency of finding stones and the definiteness of symptomatology led the practitioner of the present day to forego the procedure.

The preponderance of ulcer of the duodenum occurred in the male. In physical make-up, judging from the cases presented, the patients were of the slender, wiry variety, frequently classed as neurasthenics, usually between twenty-five and thirty-five years of age, and nonalcoholic in habit. When obstruction was well advanced, the patient lost weight and was very likely to have a chain of mental symptoms, equal to those of starvation. In addition to these subjective symptoms the analyses of stomach contents might show blood and usually did show

hyperacidity both in combined and free hydrochloric acid, with the other undigested contents, etc. Acute perforation of the ulcer might take place without any preceding symptoms of moment. The onset of the disease was marked by pain of intense character, requiring morphine in liberal quantity; shock, boardlike rigidity in the upper right quadrant; thoracic breathing, and later pain in the right lower quadrant simulating appendicitis. This pain was due to irritation of the peritoneum by escaping contents of the stomach and duodenum. Operative intervention in the early stages might be followed by overlooking the ulcer because of its not being calloused or indurated. Lues, with its abdominal crises, must always be considered as a confusional factor of great weight in upper abdominal disease. Recently in a definite ulcer history, and so diagnosed, a very markedly chronic appendix was removed from under the gallbladder and directly over a duodenal ulcer the size of a twenty-five cent piece.

In acute hemorrhagic pancreatitis, we had a disease that was so acute in its onset and so overpowering in its symptomatology that frequently the patient was seen in shock or collapse. In these instances it was with great difficulty that a history was obtained. Nevertheless, the intensity of onset, pain, shock, collapse, and a peculiar abdominal lividity all pointed to pancreatitis. Should the patient survive, she would tell you that she had had a most severe abdominal pain and, perhaps, a backache, that she might have had a previous mild attack, or gallstone attack, etc.

Dr. HERMAN E. HAYD, of Buffalo, N. Y., stated that perhaps the most important of all signs and symptoms of gallbladder disease and ulcer was the anamnesis. If men would spend more time in getting careful history of their patients they would make fewer mistakes. He believed that mistakes were due to carelessness rather than ignorance. A strong point brought out was that a patient never suffered from acute pain in ulcer of the stomach or duodenum until the ulcer had encroached upon the peritoneal wall. Just as soon as there was a tendency to erosion of the peritoneum and a possible perforation the patient suffered from an acute agonizing pain such as was characteristic of gallstone colic.

Dr. HUGO O. PANTZER, of Indianapolis, Ind., said he had been delighted with the excellent digest of symptoms and signs presented by the essayist in these cases of gallbladder disease. With the present acceptance of bacteriemic disease, the exanthemata, and what not, we were too restricted in our clinical conceptions.

**The Prevention of the Recurrence of Symptoms Following Operations for Gallstones.**—Dr. JULIUS H. JACOBSON, of Toledo, Ohio, drew the following conclusions: 1. Recurrence of symptoms following gallstone operations were more frequent than was generally supposed to be the case. 2. Reformation of stones after cholecystotomy occurred from retention of infected contents, rather than

from leaving gallstones behind at the primary operation. 3. Routine gallstone operations should be made more thorough and complete by the use of adequate incision, by cholecystectomy, and by accurate exploration of the ducts. 4. When the common duct showed marked dilatation it should be opened and explored and special attention should be given to the terminal portion of the duct for the detection of calculi and constrictions. 5. The detached gallbladder from its bed on the liver acted as an efficient tractor, and greatly aided in making the exploration of the ducts complete.

**A Study of Various Cases of Pregnancy Toxemia.**—Dr. GEORGE CLARK MOSIER, of Kansas City, Mo., described the following technic which involved least shock: 1. Preliminary dilatation gradually by Hegar's dilators up to No. 20; 2. Voorhees bag No. 4, if at term, introduced by Reed's method—cigarette roll held by Pean's forceps; 3. lavage of soda bicarbonate, two per cent., after uterus was emptied. Cases of the fulminating type—long hard cervix (in which no vaginal examination had been done) were best treated by classical Cæsarean section. When, after contamination by frequent digital examinations, infection was almost surely to be expected, a Porro or other hysterectomy should be done in the interest of the mother. A woman without a uterus was better than an anatomical specimen.

The results in the series of cases from which these conclusions were drawn, showing ninety-five per cent. recoveries of mothers, and at least eighty-five per cent. of the children at term, warranted the belief that his results were far above the average, since Tweedy's tables showed a maternal mortality of 18; DeLee, 20; Williams, 25; Cragin, 28; New York Lying-In, 30; the average American, 38, and the Royal Maternity of Edinburgh, 66. (These figures were taken from DeLee's Year Book, 1918.) His patients might have been less toxic than those encountered elsewhere, but this was not likely to have been the case. From his own experience and from that of other observers, including a most interesting report just received from Dr. Ben Meyers, who did a large work in obstetrics in Alaska and who found that in the last year, an unusually cold, wet season, twelve per cent. of his patients suffered from toxemia, the conclusion was drawn that the weather did at least aggravate the tendency to this condition. As there was such a close relation between the toxemia and the nervous system, was it not fair also to ascribe to the war an incidental effect as a causative factor.

**Accidental Removal of Intestines Through the Vaginal Vault.**—Dr. EDWARD J. ILL, of Newark, N. J., thought that as a result of his study and observation, the following points seemed important: 1. Any portion of the bowel could be pulled away by traction with a forceps through a rent in the uterus or vagina. 2. The point of separation would be the junction of the bowel with the mesentery. 3. In some subjects the separation would be extraperitoneal in a large measure. 4. The mesentery could not be pulled away from its origin of the spine or elsewhere. He had reported this because of its medicolegal aspect and that it might form a guide for others.

**Clinical, Pathological, and Sociological Observations upon Ninety Interned Venereal Patients.**—Dr. JAMES E. DAVIS, of Detroit, Mich., stated that all patients in the series were examined serologically by the State board of health serologist. Bacteriological examination of the smears taken from the urethral meatus, Bartholin duct meati, cervix uteri, and vagina were repeatedly made under the supervision of Mr. H. L. Clark, hospital bacteriologist. Methylene blue and gram strains were employed using the diagnostic criteria of intracellular organisms of characteristic morphology disposed in definite clusters and having the necessary specific staining affinities. Patients clinically and bacteriologically cured were so judged after the clinical disappearance of all lesions, and after obtaining negative Wassermann reactions before and after provocative salvarsan injections and after five consecutive smears, preceding which provocative doses of gonococcal vaccine had been administered.

## SUMMARY.

Average age of patients seventeen years:	
married .....	14
Average number of weeks patient was confined in hospital.....	13
Average cost to the State per patient.....	\$105.00
Gonorrhea and syphilis, total number of cases .....	96
Syphilis, total number of cases.....	46
Gonorrhea, with positive laboratory findings	72
Gonorrhea, clinically positive, laboratory findings negative .....	10
Extent of involvement:	
Urethritis .....	49
Bartholinitis .....	45
Vaginitis .....	49
Cervicitis .....	63
Endometritis .....	14
Salpingitis .....	37
Oophoritis .....	30
Treatments:	
For syphilis:	
Novarsenobenzol, average number of treatments for each patient .....	4.3
Mercuric salicylate, average number of treatments for each patient.....	11
For gonorrhea:	
Silver nitrate, 10 per cent. solution, average number of treatments.....	14
Iodine, 3.5 per cent. solution, average number of treatments.....	11

**Vertigo of Menopause.**—Dr. K. I. SANES, of Pittsburgh, Pa., stated that in most of his patients the vertigo was of the objective type, i. e., they experienced a sense of rotation around them of the visible or palpable environments. In some of them the vertigo was of a subjective type, i. e., a sensation of motion of the body itself. A few of his patients described the vertigo as a sort of swimming movement, a feeling of being intoxicated, an extremely embarrassing condition (the pseudonarcotism of Tilt).

Vertigo was seldom the only prominent menopause symptom; it was almost always accompanied by such disturbances as hot and cold flashes, cold perspiration, palpitation, blurred vision, flickering before the eyes, headache, nausea, tinnitus, etc. The relation of vertigo to climacteric functional hypertension was of interest, and it was asserted by some that it was responsible for the menopause vertigo. Excluding as far as possible the cases of organic hypertension (cardiovascular and renal) he found



that in 102 subjects with vertigo whose blood pressure had been specified on the records, only forty-five, or forty-six per cent., had blood pressure above 150 and only twenty, or thirty per cent., above 160. The severity of vertigo, of course, varied. In most of his patients, the vertigo was only slight, just a mild dizziness, in others again so severe that they feared walking by themselves on streets on account of the frequent falls and even loss of consciousness during the attacks of vertigo.

In regard to treatment, it was necessary first to make sure that the case was one of climacteric vertigo. Such pathological conditions as lesions of the internal ear or of any other part of the balance mechanism, such diseases as cardiovascularrenal and ocular, especially muscular imbalance of eyes, must be excluded. If the case could definitely be diagnosed as that of climacteric vertigo, the treatment to be outlined must be that for the menopause in general. As the metabolism was always below par in menopause, the nutrition and elimination of the patient must be looked after and, as the insufficiency or absence of the ovarian internal secretion was the underlying cause of the symptoms, ovarian organotherapy was logically indicated.

In the treatment of his cases of vertigo of the menopause Doctor Sanes had been using a preparation, each grain of which represented a grain of the fresh ovarian substance (varium). The dose he used was five grains, two to four times a day. He rarely found any particular advantage in using larger doses. The results that he obtained from the use of this ovarian substance as shown in his records, were improvement in about thirty-seven per cent. of his cases, and complete control in about twenty-five per cent. In some cases relief from vertigo preceded, in others followed, and in others again accompanied the relief from the rest of the menopause symptoms. The length of time the ovarian substance was used by the patients was variable. Some used it just a month or so, others for many months, and in one case it was used for three years before the final cessation of the annoying symptoms. The results obtained from the ovarian substance, while sometimes strikingly good, were so frequently negative as to raise the question whether it had within it the same finished product or products that the internal secretion consisted of; and if it had, whether it was competent to take care of the functional changes of the correlated endocrinal glands brought about by the functional changes of the ovarian secretion.

**Sarcoma of Ovary in a Child Twenty-three Months Old.**—Dr. HERMAN E. HAYD, of Buffalo, N. Y., stated that he had removed from the right ovary of a baby twenty-three months old a small round cell sarcoma about the size of a goose egg. The child who was cutting her eye teeth, had been running a temperature of 101°, was peevish and irritable, had lost considerable flesh and had been sick for about ten days. There were some bronchitic sounds in the chest, with areas of bronchopneumonia in both lungs. The liver dullness was much increased. The bowels and kidneys were functioning satisfactorily. In the lower right quadrant could be felt a large movable smooth

tumor, not painful to the touch. The points which engaged his attention, were the nature of this swelling; what should be done with it under the present condition, and, was it in any way responsible for the symptoms which the child was presenting. She was taking milk and liquid nourishment freely, so it seemed best in his judgment to treat the symptoms, irrespective of the abdominal condition. In the course of four or five days the temperature became normal, the child began to play, took considerable semisolid food, the tongue cleared up, the feverish condition of the mouth and lips passed away, and the mother was told to take the child into the country and return in a few weeks, or earlier if the child's condition did not continue to improve. Naturally several possibilities came into their minds as to the nature of this movable mass; was it a chronic intussusception, an omental tuberculosis, a localized peritoneal tuberculosis, a chronic appendicitis, dermoid cyst, a fecal impaction? The child remained away for ten or twelve days, when she was sent back to him by Doctor Mann, under whose care she had been. The lungs were clear, but the abdomen contained considerable fluid and the mass, which was still movable, was tender. The child looked sick, her temperature was 100° and she was again fretful and irritable. She was prepared immediately for an operation, was given ether, and the tumor, which was free in the abdomen, was removed, with the right tube attached to it, through a central incision. The appendix was long and curled upon itself and it was also removed. The uterus and the left tube and ovary were normal. Quite a little bloody fluid came away when the abdomen was opened. The liver was palpated and found to be very much enlarged and filled with nodular masses. The child suffered very little shock and made an uneventful surgical recovery and left the hospital on the thirteenth day. She died at the end of the fifth week, no doubt from exhaustion and perhaps general sarcomatosis.

Dr. EDWARD J. ILL, of Newark, N. J., said that he disliked to take issue with Doctor Hayd. Tuberculous pus tubes occurred in about seven per cent. of all cases operated on where the tubes were removed for pelvic disease. In his own experience he had found twelve per cent. of the tubes to be tuberculous. There was no reason why a woman should not go through a pelvic illness with peritoneal involvement without pain. It was frequently seen in pus tubes that the women were able to move about and had very little pain.

Dr. THOMAS B. NOBLE, of Indianapolis, stated that his experience with sarcoma of the ovary comprised four cases in children, three of whom were dead, and one, a girl of sixteen, operated on four years ago, who was still living. A gonorrheal infected tube produced an exudate in the cavity to the extent manifested in the specimen exhibited and was associated with a perisalpingeal exudation which gave a much heavier coat than was seen in the specimen. Perisalpingitis existed in gonorrheal infection of the tubes to the extent that there was fixation and fusion with periajacent substance, so that we did not get motility often in the tubes of the uterus such as was seen in this specimen.

Dr. GORDON K. DICKINSON, of Jersey City, N. J., said that Doctor Noble seemed to forget that there were different kinds of gonorrheal pus tubes. The kind he mentioned was common, but once in a while the surgeon met with the sacciform type of pus tubes, with no adhesions. It was free in the abdomen and pelvis, and looked like the very thin walled distended type of tube.

Dr. BERTHA VAN HOOSSEN, of Chicago, said that she became very much interested in the bacteriology of pus tubes in the last five years and could safely say that the tuberculous tube or the tube that had been infected by streptococci always had the fibrillated end open, and that in pus tubes the end was always turned in. If there was any accumulation of fluid in the tube, it was produced by postabortive infection; it was due not to the inturning of the end of the tube but to a collection of material just a little away from the tube. She believed the diagnosis could be made upon the condition of the ends of the tubes and whether they were turned in or not.

**The Heart of a Pregnant Woman.**—Dr. LOUIS BURCKHARDT, of Indianapolis, Ind., said that an early diagnosis was the chief factor in successful therapeutics. The menstrual disturbances, the aversion to physical exercise, and the vasomotor symptoms already described would help to single out suspicious cases. To depend on marked objective changes in the heart and the general system would cause a loss of valuable time. If a heart affection had progressed to a point where drastic measures were unavoidable, irreparable damage had been inflicted on mother and fetus. Under drastic measures, prolonged and absolute rest in bed, the use of opiates, and large doses of digitalis were included. They all would interfere with normal metabolism, however, so essential in this condition.

The first prophylactic step should be to prevent impregnation, by prohibiting marriage or by avoiding conception. If, however, conception had taken place the pregnancy in all but the severest cases must be carried to term. The interruption of pregnancy offered as many chances of a cardiac breakdown as a normal well conducted delivery—excepting an abortion induced before the formation of the placenta had begun. If a patient with a well compensated heart lesion presented herself for our prenatal care we must impress upon her mind the necessity of preservation of energy. Saving alone did not suffice, but working up new vital forces was needed. Not rest alone, but rest and exercise. Regular exercises and careful attention to elimination were demanded in every normal case. We must control both of them most carefully in heart cases. The blood pressure readings were of great assistance, their significance where heart lesions and toxemia coexisted had been pointed out before. Between the thirty-fourth and thirty-fifth week of pregnancy daily observations would be necessary in order to determine the proper time of intervention. During this period such patients were best strictly confined to bed. As soon as settling had occurred a considerable amelioration of symptoms was frequently observed and the patient might be given more liberty of action.

**Do Not Sterilize Women When Operating for Tuberculous Peritonitis.**—Dr. J. HENRY CARSTENS, of Detroit, Mich., stated that there were thousands of tuberculous nodules left in the abdomen which were absorbed and disappeared; hence physicians had a right to believe that the few nodules that were left on the tubes and ovaries would also disappear after the abdomen was opened with or without irrigation or drainage. His conclusions were: 1. The thousands of tubercles on the peritoneum were, as a rule, absorbed and disappeared after laparotomy; 2, there was no use removing the tubes if they were only affected by tubercles; 3, many of the women were young and unmarried, and should not be needlessly sterilized.

**Problems of Urethral Surgery in Gynecology.**—Dr. GEORGE VAN AMBER BROWN, of Detroit, Mich., drew the following conclusions: 1. The problem of transplantation of the ureter is often puzzling. 2. In hysterectomy for malignancy of the cervix, one should always isolate the ureters early. 3. In closure of the ureter one can never tell the destiny of the kidney. 4. X ray and urinary findings are probably the greatest source of error. 5. In urology the solution of choice, opaque to the röntgen ray, is either sodium or potassium iodide. 6. The destiny of a kidney whose ureter has been tied cannot be easily foretold. 7. No form of operation is ever done until as complete an investigation as possible of both sides has been made.

**Recognition and Management of Labor Injuries.**—Dr. ARTHUR J. SKEEL, of Cleveland, Ohio, stated that the use of gas had done much to make more careful work possible. The resumption of gas analgesia, or of anesthesia, if needed, involved very little discomfort to the patient, and rendered the whole procedure simple. The author wished to emphasize four points, viz.: 1. Limiting or entirely avoiding vaginal examinations during labor was a routine preliminary part of the technic of primary repair of labor injuries. 2. Immediate inspection of the cervix, with primary repair of its injuries, reduced the risk of subinvolution and of uterine displacement. 3. The routine use of buried sutures in the perineum for the repair of second degree lacerations permitted accurate coaptation and restoration of the parts. 4. Perineal lacerations were more surely repaired than was subpubic damage. Therefore, slow delivery and skill in directing the small diameters of the head through the vulvar ring should be sought. Forcing the head against the pubic arch produced more damage than it prevented.

**Pancreatic Cyst in Association with Tuberculous Kidney and Intestinal Complications.**—Dr. J. E. SADLER, of Poughkeepsie, N. Y., stated that his object in reporting this case was largely for the purpose of demonstrating the number of varied and serious conditions that might exist in a person who had considered herself in good health. It was true, that pancreatic cysts were rare—this being the very first one it had been his privilege to see—but in this case he had, 1. a patient with acute intestinal obstructive symptoms, which, unquestionably, resulted in a natural anastomosis between the ileum and the transverse colon, thereby overcoming the obstructive



symptoms. 2. He had a condition of tuberculous nephritis, with extensive perinephritic infection—operation for which resulted in recovery from the tuberculous condition—and also the unfortunate establishment of a colonic fistula in the lumbar region. 3. He had the discovery (and treatment) of the pancreatic cyst—a complex condition which required a great deal of careful thought, study, and work, in order, finally, to bring the patient to her present condition of good health.

**Intestinal Actinomycosis.**—Dr. JOHN W. KEEFE, of Providence, R. I., said that actinomycosis of the digestive tract practically never occurred in the stomach or small intestine, possibly on account of the acid contents of the stomach and the fluid secretions found in the small intestine being less irritating to its mucous lining. An acute or chronic inflammation of the appendix might open the door for the entrance of the actinomycotic organism. In general, it might be stated, that actinomycosis was practically never carried by the lymphatics and but rarely by the blood stream. The method of extension was by continuity of tissue. Thus it was that general actinomycosis, unlike tuberculosis and blastomycosis, was extremely rare. Many of the abdominal organs might become involved, as extension of the process usually took place through retroperitoneal tissues, sometimes destroying muscular and even body structures. The early diagnosis of actinomycosis was generally overlooked. A firm swelling, painless on pressure, occupying either the right or left inguinal regions, usually the right, was the sign most frequently found in cases of intestinal actinomycosis. The surgical measures to combat the disease consisted of excision, in some cases; in others, incision, and curetting of disease tissues together with the use of antiseptics and the maintenance of free drainage. Injections of four per cent. formalin solution had been employed with success. Vaccines and serums had been found of value only in a few reported cases. The x ray had not shown any marked beneficial effect. In a few instances radium had been given with marked immediate results. Large doses of potassium iodide, ninety grains three times a day, had been given with success in many cases. Some authors had been so favorably impressed as to assert that it was a specific in this disease. The marked efficacy claimed for this drug was readily explained by the fact that it promoted the absorption of granulation tissue, acting in very much the same manner as in the case of granulomata of tertiary syphilis.

**The Rôle of Congenital Colonic Membranes as a Causative Factor in Disease.**—Dr. J. P. RUNYAN, of Little Rock, Ark., said that colectomy was a radical operation for the relief of intestinal stasis, and in the skilled hands of Lane might be fairly safe, but it had always appeared to him unjustifiable, provided a simpler and a safer operation could be devised. No matter what we might think of the advisability or inadvisability of doing colectomy for its relief, we were doubtless agreed that intestinal stasis was a menace to good health, and that we should endeavor to ascertain the underlying cause, and if possible, correct it. Some patients suffered

in such a slight degree, that it was questionable as to whether they should be subjected to operation, while others were so miserable that even colectomy, with its high mortality, might be preferable, if we could not offer a treatment just as effective without its dangers. Acting upon the hypothesis that intestinal stasis was due to colonic membrane formation, the result of imperfect embryological development, which caused more or less angulation of the bowel, he began dividing or removing this membrane, after the manner of Jabez N. Jackson, with most gratifying results. He submitted it as a splendid, safe, and sane substitute for colectomy in the treatment of intestinal stasis, and an operation devoid of mortality and most satisfactory in its results.

Dr. WILLIAM SEAMAN BAINBRIDGE, of New York, said it would be unfortunate indeed if it should be considered that stasis was not constipation, and constipation was not stasis, and colectomy was not done for the treatment of it by Mr. Lane. Constipation was a symptom just as diarrhea was a symptom. The worst cases of stasis were those in which the condition was accompanied frequently by diarrhea. The frequency of the stools did not mean that the putrifying and noxious material was not there; the retained stool was being absorbed. There was an overflow of retention in the bowel just as there was overflow of retention in the bladder. This point Mr. Lane had emphasized repeatedly, and the worst cases of stasis were of that type. When the intestinal canal was dammed, the body as a whole or in part could not take care of the added amount of poisoning which such retention involved. As to treatment, to say that Mr. Lane or any of those that followed him advocated colectomy for stasis was so radical that it did harm. Lane put himself on record in regard to this in 1901 when he said that nine tenths of the patients with stasis ought never to see a surgeon.

Dr. JAMES E. DAVIS, of Detroit, Mich., said that the body in its development usually followed the law that function determined anatomical form. In cases in which there was some arrest in embryonic development, no interference with normal function occurred. He had seen instances of this over and over again. If one studied a large series of cases he would be impressed with the fact that the functions of the bowel might be performed in an apparently normal manner in a great many cases. Why this was so it was impossible to determine in every instance; but there were a certain number of cases in which the arrested anatomical form did interfere definitely.

Within the past year he had had the opportunity of doing an autopsy upon a child which he thought illustrated this point very well. A child of six weeks died apparently of inanition. The autopsy findings revealed this very interesting condition: The right lobe of the liver appeared displaced well down into the pelvis; in fact, it could not be a true displacement; it seemed to be a development and a displacement. The gallbladder was in a right angled position with the midaxis of the bowel. The lower border of the right lobe of the liver was down in the lowermost part of the pelvis. Through the

right hernial ring the cecum and appendix were herniated. The child gave this symptomatology: For the first four days after birth there was no trouble whatsoever, then there began a train of gastrointestinal disturbances, and a little later metabolic disturbances were found. The terminal picture was that of ordinary inanition. In his judgment this abnormality of position was the etiological factor of the gastrointestinal and metabolic disturbances.

Dr. GORDON K. DICKINSON, of Jersey City, N. J., said that in the June, 1918, issue of the *Annals of Surgery* there was a very interesting article on the anatomy and embryology of this subject, and it looked as though the theory advanced by the author was correct. He had forgotten the name of the author. His observations were based on embryological researches, the literature and otherwise, and the position was taken that all of these bands that were observed and called Jackson's membrane and Lane's kink, were embryonal and could be traced back to the very early period of fetal life.

Dr. HUGO O. PANZER, of Indianapolis, Ind., said he was pleased to see that surgeons were becoming more and more harmonious in their views regarding this subject. In time they would know more of the symptomatology of the disease and go more specifically after it. These conditions were very often associated with a narrow costal angle, visceroptosis, congenital defects, and so on. By percussion one could tell whether the cecum was over the pelvic brim, and by auscultation and percussion one could tell a good deal about the abdominal contents.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Anatomy of the Human Body.* By HENRY GRAY, F.R.S.; Fellow of the Royal College of Surgeons; Lecturer on Anatomy at St. George's Hospital Medical School, London. Twentieth Edition. Thoroughly Revised and Re-edited by WARREN H. LEWIS, B.S., M.D., Professor of Physiological Anatomy, Johns Hopkins University, Baltimore, Md. Illustrated with 1247 Engravings. Philadelphia and New York: Lea & Febiger, 1918. Pp. 1346. (Price, \$7.50 cloth; \$6 leather.)

This twentieth edition of *Gray's Anatomy* marks an epoch in the long life of this greatest of all textbooks on anatomy. Lewis, of Johns Hopkins, has proved worthy of the task of its extensive reediting and revision, and *Gray's Anatomy* is indeed a field worthy of the power and scientific acumen of this living master. This great work has so valiantly stood the test of time and has so consistently attracted masters of anatomy when progress demanded revision, that the most pertinent comment, it seems, includes, almost exclusively, announcement of the new and last changes in presentation and subject matter. It has remained for Lewis to leaven and vitalize this great descriptive anatomy with the physiological conception. In this revision the original plan has been followed in general, with

only such change "as advance in the science made necessary in order that this work may reflect the latest accessions to anatomical knowledge." These "latest accessions" have, however, necessitated changes which students of Gray will recognize as radical and epochal, and it is at once apparent that the newer conceptions of and emphasis upon physiological anatomy are responsible for much of this. New matter on physiological anatomy, laws of bone architecture, mechanics and variations of muscles has taken the place of former sections on applied anatomy. Accordingly, also, sections on the ductless gland and the nervous system have been rewritten, and physiological and pharmacological work has contributed to the presentation of the sympathetic nervous system many new and valuable charts, diagrams, and descriptions. A striking feature of this edition is the marked increase in the frequency of the use of colors to emphasize salient points in the cuts. Improvement in the preparation and selection of illustrations is noticeable, especially in the sections on the central nervous system and muscles. Another important departure is the topical distribution of histological and embryological material. This makes for greater unity and coherence, and adds to the practical value of the work. We have not the previous edition at hand for comparison, but believe that considerable work has been done in the small print sections on relations, mechanism, and movements under syndesmosis and myology and in matter on important related topics not strictly and exclusively descriptive anatomy. All this, of course, quickens the subject and enhances the value of the *Anatomy* as a guide in dissection and later reference. We have here, in short, in Lewis's edition, a real and fundamental strengthening of that keystone of medicine, anatomy.

*Röntgen Diagnosis of Diseases of the Head.* By Dr. ARTHUR SCHÜLLER, Head of the Clinic for Nervous Diseases at the Franz-Joseph Ambulatorium, Vienna. Authorized Translation by FRED F. STOCKING, M.D., M.R.C. With a Foreword by ERNEST SACHS, M.D., Associate Professor of Surgery in Washington University. Approved for Publication by the Surgeon General of the United States Army. Illustrated. St. Louis: C. V. Mosby Company, 1918. Pp. 300. (Price, \$4.00.)

This book, the preface tells us, was translated by the editor when it first appeared in German, he being, at that time, a student in the clinic of Doctor Schüller in Vienna. Needless to say, the subject is one of considerable importance, and it may also be added, has not been entirely neglected in English literature. In fact, no body of more enthusiastic röntgenologists may be found anywhere than in this country. The use of the x ray still lags considerably behind and the present book marks a welcome increase to the literature hitherto made available in this most important field of investigation. The half tones, however, are very unsatisfactory, as most half tones would be on x ray matter, but these are evidently half tones made from other half tones and are therefore particularly confusing. Apart from this, the text is interesting and profitable, and the difficult subject of intracranial diagnosis very much furthered by the appearance of this work which offers almost for the first time, a comprehensive and fairly complete résumé of the extremely scattered



literature of this subject. Typographically, the appearance of the book is all that could be desired and is a welcome addition to the working library of the surgeon, röntgenologist, and the neurologist, also to such internists who enter the neurological field by way of the glands of internal secretion.

*Oral Diseases and Malformations. Their Diagnosis and Treatment.* By GEORGE VAN INGEN BROWN, D.D.S., M.D., C.M., F.A.C.S. With Five Hundred and Seventy Engravings and Twenty Plates, and a Selected List of Examination Questions. Third Edition. Philadelphia and New York: Lea & Febiger, 1918.

In the preface to the first edition of his book the author states that it is designed as a work of reference touching many different medical interests in their oral relation, it being his purpose to "include all important pathological conditions that affect or are influenced by the oral cavity and its immediately surrounding parts; to deal thoroughly with the etiology and symptoms of these affections and to describe the necessary operative procedures clearly and concisely with sufficient detail to give a thorough understanding of the most approved methods of treatment, the risk involved and the probable results." This very ambitious program has, with few possible exceptions, been admirably carried out in the third edition of his work, to which has been added an excellent chapter on war surgery, in which the principles of plastic and oral surgery, as applied to war injuries, are clearly set forth. The volume opens with a study of anesthesia, hemorrhage, and shock, in which the relative value of anesthetics is considered, the classification and treatment of hemorrhagic conditions, together with causes and treatment of shock. Pathological dentition, is comprehensively treated in chapter two, including the surgical treatment of impacted teeth.

Syphilis is given a large place in the chapter on infectious diseases. The statement "that many causes of arrested development, other than syphilis, which leave the record of their occurrence upon teeth in the form of grooves, pits, eroded surfaces," etc., apparently borne out by clinical experience, is positively denied by excellent authority and with very good evidence in support of their claims. Cuspal hypoplasia of the first permanent molars is the most common of these dystrophies, and according to the French school, is unquestionably pathognomonic of hereditary syphilis, quite as much so as is Hutchinson's teeth. Occurring at about the sixth month of intrauterine life, it can only be caused by some profound trophic disturbance affecting the fetus through the mother.

Doctor Brown's statement that "faulty metabolism, due to many causes which may affect the mother, and later the diseases of infancy, may be accountable for the imperfect form of tooth crowns and marks upon their surfaces," etc., is not very convincing. Moreover, no clear distinction is made between those fugitive anomalies of arrested development and those symmetrical erosions which are located at the same level, and always on the same group of teeth, affecting only the cuspal or incisal enamel.

The subject of focal mouth infections is briefly and conservatively treated—too briefly, it would seem, in view of its importance. Diseases of the

glands, maxillary sinus, bones, and mucous membrane of the mouth, are outlined at considerable length, and as a whole the subjects are excellently treated. Most unsatisfactory is the description given of pyorrhea alveolaris and its treatment. The term "interstitial gingivitis" is without justification; it is no more descriptive of the pathology of the disease than is pyorrhea alveolaris and has the added disadvantage of being almost unknown, especially among medical men. Beyond the statement that its causes are "predisposing and exciting, local and general," almost nothing is said about its etiology. Regarding its pathology, the author is wholly silent. The treatment recommended is the use of cathartics, diuretics, diet, etc., care being observed to overcome the acidosis. Except the splinting of loose teeth, nothing is said about local treatment: not a word about the exceeding importance of root surgery and mouth hygiene, without which it is impossible to effect a cure in any case. No distinction is made between malocclusion and traumatic occlusion. Undue space is given to the endameba-emetin scandal, which needed to be referred to, only to be condemned. It is obvious that the author is unfamiliar with present day knowledge regarding the etiology, pathology, and treatment of pyorrhea.

Chapters on nasal deformities and diseases in relation to the maxilla, tumors, harelip, cleft palate and defects of speech, cover these subjects thoroughly and well. The volume closes with an up to date chapter on war surgery. The text is well illustrated with several colored plates of a high order of excellence. The index is good, but could be improved. On the whole, the book is worthy of careful study, and can be highly recommended to all those interested in the subjects under consideration.

## Births, Marriages, and Deaths.

### Died.

BREDIN.—In East Orange, N. J., on Sunday, November 17th, Dr. Stephen L. C. Bredin, aged eighty-four years.

CUDDERACK.—In Rochester, N. Y., on Friday, November 1st, Dr. Willis D. Cuddeback, of Aurora, N. Y., aged forty years.

DICKINSON.—In Des Arc, Ark., on Saturday, November 9th, Dr. Putnam Dickinson, aged seventy years.

FORD.—In Loomis, N. Y., on Friday, November 22d, Dr. James S. Ford, aged thirty-three years.

FORWARD.—In Dubuque, Ia., on Monday, November 11th, Dr. Charles Pulford Forward, aged twenty-nine years.

HITCHCOCK.—In Oswego, N. Y., on Monday, November 11th, Dr. Pherson H. Hitchcock, aged eighty years.

KNIGHT.—In Portsmouth, England, on October 28th, Dr. Frank H. Knight, Captain, Medical Corps, U. S. Army, of Brooklyn, N. Y., aged forty-two years.

MELICK.—In Fort Edward, N. Y., on Friday, November 8th, Dr. William B. Melick, aged sixty years.

MILLINGTON.—In Greenwich, Conn., on Friday, November 8th, Dr. John Millington, aged seventy-two years.

MURRAY.—In Hagerstown, Md., on Sunday, November 17th, Dr. George Edward Murray, aged sixty-one years.

PAINE.—In Brooklyn, N. Y., on Monday, November 18th, Dr. Charles Emery Paine, aged thirty-six years.

RATHBUN.—In Danville, Ill., on Tuesday, November 12th, Dr. James Corbett Rathbun, aged thirty-seven years.

STRASSER.—In Arlington, N. J., on Wednesday, November 20th, Dr. August Adrian Strasser, aged forty-four years.

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## Original Communications

### THE BLIGHT OF THEORY ON THE ACQUISITION OF ANATOMICAL KNOWLEDGE BY THE ANCIENT EGYPTIANS.

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" . . . Long ago they appear to have recognized . . . that their young citizens must be habituated to forms and strains of virtue. These they fixed, and exhibited the patterns of them in their temples; and no painter or artist is allowed to innovate upon them, or to leave the traditional forms and invent new ones. To this day, no alteration is allowed either in these arts, or in music at all. And you will find that their works of art are painted or moulded in the same forms which they had ten thousand years ago; . . . I know that other things in Egypt are not good. . . . This, however, must be the work of God, or of a divine person; in Egypt they have a tradition that their ancient chants are the composition of the Goddess Isis. . . ."—Plato: *Laws* II, 656-657.

Despite daily observation of the skill displayed by the authors of the headlines in one's morning paper, one is frequently at a loss to give such a title to an essay that the reader can at once enter sympathetically into the subject to be discussed. After a prolonged recasting of words into various sequences, I have abandoned hope of setting forth in the title of this paper more than one of the causes of the retardation of medical knowledge in the civilization which arose on the Nile before the dawn of legitimate history. The one I have finally chosen, the pruning hand of the editor will doubtless still further cut down for the running head.

The initial difficulties can only be overcome by a few prefatory remarks, for I wish to make clear at a glance that theory was only one of the blighting factors responsible for the low position of the art of medicine in an empire of many million souls, formerly extending from the Mountains of the Moon far into the plains of Mesopotamia, and from the southern Red Sea straits of Bab-el-Mandeb to the Western Isles along the shores, and thence to the mainland of Asia Minor. The complexity of political organization necessary to hold the congeries of peoples who dwelt in this vast region together, even for a generation or two, can readily be imagined; yet, in a somewhat less expanded area, it lasted for thousands of years—thrice the time of the duration of Imperial Rome. We now know that its general culture was a part only of that which spread far into the hinterland of the shores around

the Mediterranean, but it was by far the mightiest part. The complexity, diversity, and extent of its political and social life was but a counterpart of its religious expansion.

Nowhere but on the continent of Africa has dogma and practice, sincerity of belief and spirituality of tendency, been so developed. It is not a difficult task to trace the magical and religious ideas, which ancient Egypt exhibited in such astounding profusion, back to those which existed in the dawning intelligence of primitive man. In doing so, however, the researcher is keenly conscious of the tremendous mental activity which must have accompanied the formation of that infinite variety of theory, of imagination, of puerile reasoning which imposed on the peoples' consciousness the cults of a thousand divinities, with all their ramifying affiliations and their profound and ever present influence on everyday life and imperial policy. Egypt's marvelous achievement in architecture and in plastic art formed the basis of Greek culture and secondarily of our own, and in certain directions has never been surpassed. I might point out other marvels of the material prosperity and spiritual insight into life which Egyptian civilization exhibited, but as I only desire to contrast the puerility of its anatomical knowledge with the splendors of these records, I have perhaps said enough and may now turn to some of the apparent causes of this backwardness.

This brings me again to my initial complaint—that the modern demand for brevity in titles commits one to the charge of cherishing a faith in the simplicity of etiology, against which I try never to lose an opportunity to protest, whether in the discussion of disease or in the consideration of the causes of phenomena more widely debated in the current of contemporary thought. The focussing of medical thought on bacterial etiology or on serological reactions, like the ancient focussing of thought on demonology and the "pneuma," are but illustrations in present day interests and historical perspective of this striving after etiological simplicity where none exists.

It is perhaps the instinctive conservation of mental energy which gives vent to this universal tendency of human thought, but it is a stumbling block in the path of the pursuit of truth. There are causes for things, but there is no one cause of a thing. Just as the editor of the *NEW YORK MEDICAL*



CAL JOURNAL will be compelled by the exigencies of space to abbreviate a page heading so that it but vaguely expresses the purport of this paper, so is one often compelled to discuss etiological relationship from a false standpoint. Simplicity takes the place of complexity because complexity does not lend itself to clarity of exposition—not because it is a true expression of etiology. So, because of the necessity for economy in space and in demands on the mental powers of author and reader in current literature, a lamentably deficient perspective in the causation of cosmic events results when it is discussed from the simplified point of view of only one of its factors.

The causes of the remarkable idea the Egyptians held of the anatomy of the human frame, most commonly alluded to by those familiar with the subject, centre around the overshadowing power of sacerdotalism; while perhaps the most comprehensive group of causation is expressed by the biological term of the unfitness of the environment for the germination of the seeds of anatomical observation. I desire to avoid the first because of its timeworn conventionality, and the second because of its lack of limitation, though I shall not be entirely successful in omitting either. The "blight of theory" on the advance of positive knowledge is something which in this era appeals to those who believe blindly in the orthodox canons of scientific method, and possesses the further advantage of being a factor in the causation of this particular instance of stagnation of science which has not been discussed. This latter, I confess, is the principal reason why I have chosen chiefly to discuss this one aspect of the causation of the persistence of crude ideas of anatomy in a people of great achievements in other walks of civilization—not because it can be considered the chief factor, nor because it is not entangled intimately in the general mesh of etiological phenomena.

I have alluded to the surprise repeatedly expressed at the backwardness of medicine in the civilization of ancient Egypt; usually perceived as intimately dependent on the ignorance of anatomy that prevailed from the advent of the first dynasty until the empire fell under the sway of the Ptolemys. This surprise is still further deepened by the consideration that during practically all these thousands of years a very large number of the privileged caste—the priests—were daily busy, not only with the care of souls and the art of preserving the health of the body, but with preparing both for eternal life through the processes of embalment, which included much handling of the organs, both internal and external. An incision was made in the left inguinal region and through this the abdominal organs were extracted. These were preserved outside the body in canopic jars. Then a way was made, either by means of this incision or of another through the diaphragm, and the thoracic organs were likewise removed and preserved. The brain, as is well known, was drawn out by a metal hook through the nasal fossæ and the cribriform plate of the ethmoid. This sort of thing was being done daily in the Nile Valley for more than a thousand years, perhaps twice that long, and this is the result

of what the Kher-heb, or head priest, and his minions learned of human anatomy, as given in a translation, by Joachim, of the Papyrus Ebers.<sup>1</sup>

This is the beginning of the secret book of the physician, the knowledge of the pace of the heart and the knowledge of the heart itself. In it are the "metu" to the whole body. As for these, every physician, every sekhet priest, every magician, whether he lay his finger on the head, or the back of it; on the hands, the cardiac region, the two arms, or on the legs—everywhere, he feels the heart because its "metu" run to all parts; hence it is called the centre of the vessels of all parts of the body.

There are four vessels in the two nostrils, two carrying mucus and two blood. There are four vessels inside the two temples. After they have given off blood to the eyes there arise through them all sorts of eye disease, because they are open to the eyes; when water comes out of them the pupils of the eyes furnish it; or another view is that sleep brings it to the eyes. There are four vessels which divide in the head and which spread out to the back of the head, which after a while bring forth a lot of hair. It is the birth of the hair upward (?). When the breath goes in at the nose it flows to the heart and to the rectum; these latter supply the body abundantly with it. When one hears something among them the two vessels bring it about which go toward the clavicle; or if one recognizes them among them, it is those which go to a person's upper jawbones; while it is the raw wind which cuts into a person if he of his own accord inhales its breath. Or if the heart sucks in water the parts all wither up. If the heart is smitten, it is that vessel, the 'clutcher' is its name, which does it; it gives off water to the heart or to the eye, when it is obstructed. If he listens through the opening of his mouth, all his parts are benumbed, after confusion has seized upon his heart. If anger arises in the heart there is an expansion to the divisions of the great gut and of the liver, his ear is pricked up, his vessels collapse, after their expanding heat has loosened everything.

There are four vessels to his two ears, two to the right and two to the left side. The breath of life goes in at the right ear and the breath of death in at the left; or with other words the breath of life enters the right side and the breath of death the left.

There are six vessels that go to the two arms, three to the right and three to the left, and they lead down to the fingers. There are six that go to the two feet, three to the right and three to the left; they reach to the soles of the feet.

There are two vessels that go to the two testicles. There are two vessels to the kidneys, one to one kidney and the other to the second. There are four vessels to the liver, which carry moisture and air to it; subsequently (?) they bring about all sorts of sickness in it, as they are mixed with blood. There are four vessels to the large gut and to the spleen, which likewise give them moisture and air. There are two vessels to the bladder, which carry the urine.

There are four vessels which open out in the anus; they produce and bring to it moisture and air; therefore the anus communicates with every vessel on the right and the left side clear down to the feet and is mingled with the feces.

Before commenting on the physiology that is associated with this conception of the human anatomy channeled by vessels carrying moisture and air, I must now refer in a few words to the theory of the "pneuma." It was first pointed out by von Oefele (1) to have existed in the conceptions of the ancient Egyptians, before it reached its great development in Greece. In previous articles (2) I have attempted to show that the ideas associated with this theory of the cause of life and death, which subse-

<sup>1</sup>I make use of the translation of Joachim not because it is the best possible, but because it is the only consecutive one. Despite its faults, which have been perhaps unduly emphasized by Egyptologists, it has been of great utility in revealing to medical men of today the medical knowledge of the men of the most remote antiquity. We have reason to hope that in the near future Wreszinski will do us the great service for the Ebers which he has accomplished for the Berlin Papyrus.

quently underwent such development at the hands of the Greeks, had a common origin with the ideas of the soul held by many races—especially the African races—of primitive man. Its appearance in Egyptian medicine was due to differentiation and evolution. I have, then, endeavored to make clear the association of the observation of respiratory movements with the existence of a something expelled from the mouth and nostrils, and again inhaled, which is invisible and which became the mystical or spiritual part of the conception of life and death.

Owing to the hopes for the continuation of life entertained by primitive man, his budding reasoning powers early conceived the idea that there is something associated with his corporeal frame which persists after death. That crystallized into his faith in an immortal soul, which became identified with the mysterious something passing in and out during the respiratory movements. At first this doubtless was identified with the respired air itself, but as all such materialistic beliefs (like fetishism) became more or less symbolized, the soul, as the idea of air grew into a material substance, became the spiritual part. This however was a later development. The idea of life itself was also undifferentiated from that of the soul. Both these ideas are still pressing for solution of their mysteries upon the more experienced reasoning powers of primitive man's latest descendant. Something plainly passes out of the dying man with his last gasp and does not return. That was the soul. That was the breath of life which the Lord Jehovah breathed into the nostrils of man when he had made him out of the dust of the earth. In an Egyptian hymn to Osiris he is saluted as "the father and mother of men. They live from thy breath."

In going over the record of observations of the actions of the physician to primitive man, we should find him not infrequently trying to blow the breath of life into the patient's mouth or even into his rectum. We should find him with his blowing cure trying to puff away the evil breath of disease—the breath of death. Enough has already been said in the contributions I have made to the columns of this and other journals to picture the medicine man chasing escaped souls to put them back into suffering patients. In the Scottish highlands the gifted still see the wraith of the departing soul—its film is deposited on the mirror held before the mouth. The columns of the daily paper occasionally give space to the assertion of someone who has seen it, as the last breath leaves the body.

Now there can be no doubt that by the time the primitive Egyptian, floating on the rising tide of civilization, comes into the purview of the archaeologist—and long before he arrives at the pages of history—he has begun to differentiate between not only life and the soul, but, singular to say, both he and the North American Indian (3) began to evolve a multiplicity of souls belonging to each individual to account for various physical and physiological phenomena. We have seen too how, in the Phædo, Plato incidentally refers to the current belief in the soul among the Greeks which plainly harks back to the breath as embodying it, and we can easily find

there traces of a belief in a multiplicity of souls. Even Plato makes Socrates refer to multiple, and more or less independent, functions of the soul.

Finally, we have in previous papers noted the important part that disorders of the soul, the envious acts of the souls of the deceased, demons, and the innumerable spirits of a pantheistic view of nature (all interrelated concepts and close kindred to the "pneuma") play in the causation of disease. Out of this primal concept (which, though almost inconceivably vague, may have been simple at first) there ensued a chaos of differentiating applications which pervaded all social, and especially all religious, life. I think von Oefele has clearly exhibited the trail of the pneumatic theory in Egyptian medical thought, at least of the later dynasties. In ascribing to the earliest dynasties the anatomy above given of the vessels that carry the "pneuma," he has the statements of the book itself to support him, which, if they can be trusted, clearly indicate its antiquity. The Egyptians were so given to lending dignity to their assertions by ascribing them to the remotest times and the holiest and kingliest of men, that I question if such evidence can be unhesitatingly accepted. Into the further support which von Oefele finds for the antiquity of this anatomy I cannot go, nor is it essential to the chief interest of this essay. In outline I have given here a sketch of the evidence, which may easily be filled in by the curious and the diligent, of a way of looking at disease that necessitated the invention of such an anatomy.

Now we can go back to the rendering I have given of Joachim's translation from the original. There has been a statement repeatedly made that the Egyptians in their word "metu," channels or vessels, confounded not only the air passages, the bloodvessels, the intestinal canal, and the various ducts, but the muscles, the tendons, and the nerves. I distrust an explanation which pictures a human being putting the aorta in the same class with the gastrocnemius. They knew the flesh and they saw the intestinal tubes, the bloodvessels, etc. The rest was simply a theory to fit the demands for the access of the "pneuma"—the breath or the soul—to all parts, even as far as the fingers and the soles of the feet. I am far from denying that in their conception also lay the germs of humoral theories, and of much else; but what I am concerned with here is to show that the demands of the primordial theories of primitive man, as they began to develop in ancient Egypt called for the creation of materialistic concepts to accommodate them. The dominant idea was that of the "pneuma," an offshoot of the all pervading theory of the soul in a primitive African people. When this "pneuma" or breath of life went in at the nostrils it had to go to the heart as the seat of life and soul and thought, for this also was a part of the fabric of Egyptian theory.

Let us repeat, then: Before they began to conceive of thought as having any habitation or, indeed, existence, we find the breath, the life, the soul—originally all one—dwelling in the heart. In the course of ages life has been moved about to various organs. The breath has been materialized and transferred to the lungs, but with the old



Egyptians it must go also to the anus, for thence flatus escaped, and life must also be "carried abundantly to the whole body." "Blood is the life" also, but that is another story which does not belong to Egyptian, as it does to primitive African, medicine. Here it is the breath which is the life, and it goes in at the ear on the right side; but there is also the breath of death, which goes in at the left ear. Von Oefele gives a not very good explanation of this which involves an inkling which he intimates the Egyptians had of the carbon dioxide content of the expired air and the assumption that the left ear gave exit to this.

Further along in the Papyrus Ebers text, which after describing the vessels of the body becomes a queer mixture of physiology and psychology, we have other indications of the "pneuma" idea. In the moisture which accompanied the "pneuma" we see the beginning of the moist and dry temperaments. It is chiefly the water here which gives trouble, although no complications seem to arise from that supplied to the rectum; but "when the heart is troubled it is the taciturnity (?) of the heart or its vessels are obstructed and not recognizable under the hand. They are full of water and wind." I translate literally obscure passages from Joachim, because there is evidently a reference in them to the "pneuma" in a connection interesting to us because of the rectal blowing cure I have mentioned, which is told of some doctor among the Indians of the northwest coast of America. When some sort of a disease enters the left eye, appearing perhaps at the navel, "it is the breath (blown through?) the hand opening of the priest, which the heart admits to its vessels." for this rendering is suggested through the reading in another place that "if the heart is ailing, if it is overburdened (*ausser sich gerathen*) it is because of the breath blown through the hand opening of the Kher-heb priest; it penetrates to the rectum in such fashion that the heart appears (?) and loses itself in the disease."

I am unable to pass on the validity of this jumbled rendering, because of my ignorance of the lore of hieroglyphs. The original itself was in von Oefele's view, written in an ancient script unfamiliar to the copyists by whom in succession the manuscript was repeatedly rewritten, finally to be set forth in a modern language and later here transferred to another. I intrude the passages here only for their evident pneumatic bearing—the thought of that Kher-heb priest blowing through his hands into the rectum like the doctors Bancroft (1) tells of among the Northern Indians, who for inward complaints "blew zealously into the rectum or adjacent parts." That unfavorable results should be mentioned by the original recorder does not appeal to our modern sense of the fitness of things, well acquainted as we are with the reluctance of clinicians thus frankly to publish cases they prefer to have pass into oblivion. We must conclude either that some recorder, copyist, or translator in the course of the last 6,000 years has erred, or that the result was a success.

The date of the Papyrus Ebers—the period when (it is supposed) some scribe copied the things it contains—was some 3,400 years ago. The section

of the book containing this idea of anatomy is said to have been deposited under the feet of the god Anubis during the reign of the fifth king of the first dynasty. Now a moderate date for the beginning of the dynasties would make this section, if the old copyist told the truth, about 1,900 years old when the Ebers manuscript in the Leyden Museum was written. This would make the anatomical description date back about 5,300 years.

It is not of much consequence to us whether the scribe told the truth or not. The point is: This is the sort of anatomy furnished the student of medicine through a hand book at the height, or near it, of Egypt's glory and culture. If after enduring for 1900 years it still existed as good copy, then indeed the conservative hand of sacerdotalism rested heavy upon the land, for it compelled an entirely absurd conception of anatomy to persist in order to support a theory. But beyond all that—beyond the theories and the sacerdotalism—is the necessity to recognize that the fabric of civilization is such a close knit one that no fact can be woven into the pattern until innumerable other threads are in place to hold it there.

In conclusion, I think however it will seem extremely probable to the reader that this Egyptian conception of anatomy was invented and preserved to accommodate the theory of the "pneuma," and therein we are justified in seeing a striking example of the "blight of theory."

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## THE SITE OF LESSENER RESISTANCE IN FOCAL INFECTION.

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Through the efforts of the orthopedic surgeons a marked advance has been made in the detection of underlying causes of many painful conditions of the muscles and joints, hitherto of obscure etiology. These have been found to be fostered in a great measure by mechanical conditions such as flat foot, sacroiliac sprain, exostoses of bones, anomalous conditions such as cervical rib, chronic inflammatory conditions of the bursæ such as subacromial bursitis, and other conditions of an orthopedic nature. With the appropriate mechanical and surgical treatment a considerable number of these cases can be helped. The attention being directed toward these lesions, a wide range of painful conditions usually labeled "rheumatic" were gradually recognized as having a more hopeful prognosis and were enthusiastically attacked along these lines.

Due to the attention of the internist and bacteriologist upon the subject, there arose the conception of focal points of infection in the body, often not apparent, nevertheless allowing the absorption into the lymph and blood channels of toxins and bacteria, the latter usually of an attenuated strain.

Because of the obscurity of some of these sites, the term "cryptogenetic infection" was applied to these cases, but since patient search usually reveals the actual area of infection, the term "focal infection" has become more appropriate. These infective areas may exist anywhere in the body, though greatest interest has centred about those located in the head area.

There are certain types of cases in which both mechanical and septic elements cooperate to produce the final disabling lesion. In these cases, trauma, overuse, or mechanical fault in a part render it susceptible and it becomes the elective site for bacteria from a point of focal infection. It is in these cases, on account of concentration upon one or another factor alone, that the results of treatment may not be satisfactory. For example, a too obvious flat foot may satisfactorily explain a painful condition of the foot or leg, until perhaps later an extension of symptoms to other extremities may ultimately show this has only been the expression of infection coming from diseased tonsils. Again, a pain in the sacroiliac region during an attack of influenza may be accepted as analogous to the general muscular pains from which the patient is suffering, though in reality it is the first manifestation of a mechanical fault or strain previously existing in the joint or muscles about the joint.

#### SITES OF FOCI OF INFECTION.

The areas of focal infection are more commonly situated in the head. These may be in the sinuses, mastoid cells, middle ear, the lymphoid tissue of the tonsils and adenoids, especially in the concealed crypts of atrophic and diseased tonsils, in the alveolar spaces of teeth, in gums—particularly in the presence of decayed teeth, crowns or bridgework. The nasal and pharyngeal mucosa in states of acute or chronic inflammation may be avenues of infection. In other parts of the body there must be considered the possibilities of gallbladder infection, chronic appendicitis, intestinal stasis and purulent salpingitis. The importance of infection of the genitourinary tract as a cause of systemic disease has been recently emphasized by B. A. Thomas (1). He includes in the list of conditions, acute suppurative nephritis, pyonephrosis, pyelitis, tuberculous kidney, renal and perirenal abscess, ureteritis, cystitis, prostatitis, seminal vesiculitis, epididymitis orchitis, and urethritis. It must be noted that in diseases of the kidney and pelvis of the kidney that the infection may here be secondary to some other site, such as the tonsil.

In the acute respiratory infections included under the terms grippé, coryza, rhinitis, bronchitis, or "colds," the nasal and pharyngeal mucosa may become temporarily the site for entrance of infection. In influenza the sinuses may remain infected after the subsidence of the attack and subsequently act as an infective focus. Reilly (2) has called attention to the importance of attacks of ordinary "head colds" in the production of painful conditions of muscles and nerves. The attacks of apparent "muscular rheumatism" appear within one or two weeks after the onset of the cold and usually after the subsidence of catarrhal symptoms.

#### BACTERIOLOGY.

The greatest interest has centred about the streptococci. Other pathogenic organisms found in the localities mentioned above are pneumococci, *Bacillus influenzae*, *Micrococcus catarrhalis*, *Bacillus proteus*, and *Bacillus coli*. However, of those harbored in the head area, the streptococcus has been proved to be the most important as regards pathogenic significance in these conditions. It has been claimed on the basis of experimental evidence, that the streptococci found in certain inflammatory lesions of joints, heart valves, gallbladder, appendix, ovaries, etc., have a selective affinity for these organs or structures. That is, a streptococcus found in an appendiceal abscess is one of a special strain having a selective action upon the appendix, a streptococcus producing an arthritis is one having a selective action upon joints. This would necessitate an accurate tabulation of many strains of streptococci. Except on the basis of morphology, length of chain formation, characteristics of colonies on blood agar and the fermentation of carbohydrates such as lactose, mannite, or salicin, which at best are not constant, we have no definite basis for classification beyond large comprehensive groups. However, it is evident that some more certain and probably biologic classification, such as exists in the case of the pneumococci, is to be hoped for. Though the doctrine of selective affinity may be true for a certain percentage of cases, we believe that for the greater number of peripheral lesions the cause for localization in any given case will be found to be due to a state of predisposition of the part. To bring about this vulnerability, there have been acting such causes as trauma, overexertion, mechanical faults producing a condition of strain and previous states of inflammation.

The streptococci found in the blind or closed dental abscesses are usually of the viridans strain. The hemolytic streptococci as a rule are found in those abscesses having some degree of drainage. The Connellan-King diplococcus, a gram negative diplococcus harbored in the tonsils, has been implicated in some types of arthritis. The rôle of a filterable virus in production of colds, has been recently studied by Foster (3). Since, as mentioned before, the mucosa of the nasopharynx may become the site of focal infection due to transient disease, the possibility of a filterable virus is to be considered. We have noted after the passage of cultures of pneumococci through Kitasato and Berkefeld filters, that the resultant fluid could be made, by incubation in blood glucose bouillon over several days, to give a slight turbidity. Stained smears of these cultures would show nothing, but on hanging drop preparations large numbers of organisms could be seen. These were smaller than the original pneumococci, though the morphology was similar, that is, they were diplococci with a distinct halo about them. They could be transplanted and grow somewhat better in the subculture, but still show lack of staining properties. It has seemed rational to regard this simply as a manifestation of attenuation. With the exception that the bodies found by Foster only grew under anerobic conditions, there would be some resemblance to these attenuated pneumococci.



## DIAGNOSIS OF FOCUS OF INFECTION.

By close questioning in the case history, a lead may often be gotten which will facilitate the finding of the infected area. The occurrence of acute infections of the upper respiratory tract before the onset of symptoms, recurrent attacks of tonsillitis, dental treatment followed by undue painful conditions of the gums, actual gum abscesses, pains over the sinus areas, may all be suggestive of infection localized in the head. In a like manner, the history may be made to yield data pointing to the intestinal tract, gallbladder, or genitourinary tract. In the evaluation of the physical findings, it is necessary to have the cooperation of the laryngologist and otologist, genitourinary surgeon, dental surgeon, and roentgenologist. X ray plates of the sinuses, and especially films of the teeth are usually necessary. The outward condition of a tooth often reveals nothing which could give the suspicion of the alveolar abscess shown by the x ray. The seminal vesicles as well as the prostate may be chronically infected though the original gonococcal condition is replaced by an infection due to secondary invaders, such as the streptococcus, staphylococcus, etc. Rectal examination, especially in the hands of a specialist, is usually necessary. A gonococcus complement fixation reaction is at times of value in indicating a gonorrheal etiology. The presence of some other systemic condition must be rigidly ruled out in all cases. Of special importance are syphilis, chronic nephritis, gout, and diabetes. Routine Wassermann reactions, in addition to all other routine laboratory data, are to be made. Toxic conditions due to alcoholism, lead poisoning, or chronic arsenical poisoning are to be considered.

## SECONDARY, REMOTE, OR DISABLING LESIONS.

A variety of painful conditions due to involvement of muscles, bones, joint structures, tendons, and nerves may result in consequence of the combination of strain and infection. Naturally, the sites vary with the particular group of structures affected. There seems, however, to be a preponderance of disabilities localized in the lower extremities, such as sacroiliac conditions, sciatic nerve pain, and painful conditions of the muscles of the thigh and leg. In the explanation for the election of any of these areas as a deposit of infection, we must consider the following factors: 1. Overexertion, either temporary or continued as in occupational conditions; 2. mechanical causes producing a condition of strain; 3. trauma, recent or remote; 4. previous states of inflammation in the part.

Overexertion of acute nature, such as occurs in competitive sports or games, often produces what may be called physiologic pain or soreness. This should, however, subside or improve in a few days. The persistence of the symptoms should lead to the suspicion of some actual lesion in the part, with or without a focus of infection elsewhere in the body. The term overexertion also implies the more insidious and less violent exertions due to repetition of some motions in daily occupation; it may simply be a tendency to bear the weight on one leg or to rest upon one arm. These conditions are especially prone to occur when some new line of work has recently been taken up. At these times new and

varied duties bring into play hitherto unused muscles, often with unfavorable consequences. In eliciting the factor of overexertion, unless apparent, the actual duties of the patient's occupation should be rehearsed. At times peculiar distribution of muscular pain is explained by their overuse in occupation. Thus, in one case, pain confined to the trapezius and deltoid muscles of both sides occurred in a baker, apparently due to his motion in kneading bread. In this connection, I have noted that a number of cases which might have been called simply occupational conditions, are really not entirely so, but are combinations of infection and occupational strain.

In the mechanical causes are included such conditions as sacroiliac disease, flat foot, faults in posture and the like. That is, they are cases that require the attention of the orthopedic surgeon probably both for diagnosis and treatment. In those cases seen at the Philadelphia Polyclinic in which the patient presented possible orthopedic conditions, we have routinely referred them for opinion to the clinic of Dr. James K. Young. Trauma of recent origin is usually not overlooked. The importance lies in not missing avenues of infection when the disability has a tendency to linger unduly. Curiously enough, the factor of remote or previous history of trauma is brought up by the patients themselves in many instances, and they inquire whether this has any bearing on their case. The element of previous disease of the part affected by the disabling lesion has been noted in only a small percentage of cases. Previous pyogenic infections in these areas have constituted the majority of these cases.

It is possible to distinguish three types of cases, on the basis of priority of lesions, as follows: 1. The area of focal infection has existed for some time, but symptoms arise in a remote part, suddenly rendered vulnerable. 2. The factor of strain in the remote part has existed for a variable period of time. The focus of infection suddenly arises, as in tonsillitis or infectious rhinitis, and symptoms begin from this time. 3. The point of lessened resistance and the focus of infection have both existed for some time without any apparent symptoms arising, probably due to the resistance of the subject against the organisms in the infected area. A condition of constitutional strain arises, such as hunger, exposure, other infections, loss of blood, etc., with the consequent letting down of the barriers against infection, which in turn attacks the area of greatest vulnerability.

The following cases are illustrative of some of the points considered in the preceding lines.

CASE I.—C. H., male, age twenty-three years. Patient complained of pain and disability of both feet and ankles. The clinical history reveals the fact that about the time of onset of symptoms he had put on new and extremely tight shoes. His feet became so painful that the next day he had to temporarily discard the shoes, but subsequently put them on again, with renewal of pain, and though after this they were completely discarded the pain persisted to such an extent that the patient practically hobbled about. Gonorrheal infection was ruled out. The Wassermann was negative and the urine and blood pressure showed no evidence of kidney disease. Examination of the feet revealed slight swelling with only a slight degree of flat foot. Large doses of salicylates had previously been

given without market benefit. In search for a causative focus, a history of a severe tonsillitis was elicited, which occurred two months before present symptoms began. Patient had remained pale and had lacked energy since this attack. The left tonsil was found cryptic with scarlike areas suggesting a chronic diseased structure. A culture taken from the crypts of this tonsil gave a pure culture of streptococci, short chained, hemolytic, not coagulating serum water inulin media, though producing a slight degree of acidity. Colonies were minute and grayish in color. After tonsillectomy, an encapsulated abscess was found in the left tonsil, though both were found markedly diseased. A noticeable improvement occurred with the aid of small doses of salicylates, not more than fifteen to twenty grains a day. Large doses of salicylates previously given had been without effect. The general appearance of the patient also improved markedly in a few months with restoration of former vigor.

CASE II.—C. G., male, age thirty-six years. Patient complained of pain in lower lumbar region of back of two weeks' duration. There was a history of sore throat about three days before onset of pain. The painful area was found to be localized at the sacroiliac joint of both sides and the history indicated that the patient's occupation necessitated the lifting of heavy weights, bending over to move heavy barrels, and other duties of a like nature. There was congestion of the pharyngeal mucosa but the tonsils were not enlarged, nor were they atrophied and cryptic; the sore throat had apparently been an acute process. Other causes having been ruled out, it seemed apparent that the tonsils and pharyngeal mucosa had acted as a temporary area of infection, while the sacroiliac strain had no doubt existed for some time as a latent condition. By the use of strapping for the back, germicidal gargles, and salicylates, the sacroiliac disability rapidly disappeared.

CASE III.—L. G., female, age twenty-three years. Patient was unable to walk because of pain and stiffness of right thigh. This condition had existed for two weeks. The pain began in the sacral region and was most severe in the posterior aspect of the thigh, some pain to a lesser degree below the knee. There was no local condition to explain this pain. On inquiries tending to bring out history of a particular strain to the right leg, the patient remembered that, due to a painful condition of the small toe of the right foot, she had for several months been in the habit of walking with a peculiar rigidity of the corresponding leg in an effort to protect the toe from full pressure of the shoe. No undue symptoms were, however, noticeable until an attack of coryza and bronchitis. About the time of subsidence of this attack, the painful condition of the extremity came on suddenly in one day. Cultures of the nose and throat gave pneumococci and streptococci. There being no other demonstrable focus of infection, the acute respiratory infection was taken as the probable cause of the sudden onset of symptoms in a part previously under strain. Under measures tending to remove the strain, such as protection of the toes with absorbent cotton, salicylates, and local antiseptics for the nasal and pharyngeal mucosa, the disability was largely removed in about ten days.

CASE IV.—R. B., male, age thirty years. Patient complained of pain in right sacroiliac region. This pain had been noticeable for one week. One week before onset of pain he had coryza and bronchitis. In consequence of a recent fracture of the left leg, he had been going about bearing his entire weight on the right leg. No other mechanical reason was found for the disability and no other area of infection was discovered. On examination there was tenderness and pain on motion in the right sacroiliac joint and also some pain in the posterior aspect of the right thigh near the knee. Cultures of the nose and throat gave a predominance of streptococci. Marked improvement occurred after a few days of rest and salicylates, though it is probable that improvement would have occurred spontaneously under the conditions mentioned in the history.

#### MANAGEMENT OF CASE.

It is apparent that there are not only two areas to treat, but that at times general systemic medication, perhaps of a tonic character, is needed. The

sites of infection must be removed, drained, or actively treated unless they have been temporary ones, as in acute infections of the respiratory tract. The secondary lesion, if of an orthopedic nature, had better be seen by an orthopedist. A sacroiliac joint may require strapping, a flat foot may require accurate correction by supports or special shoes. At times it is not possible to eliminate the strain upon a certain part without change of occupation or actual rest in bed. Often it is only necessary to call the attention of the patient to the part played by certain duties in the production of subsequent symptoms, and he will endeavor to correct these causes, as a rule with some benefit. The salicylates are of decided value in the amelioration of pain, and improvement apparently occurs more quickly under their administration. Other local symptomatic measures, such as baking, massage, and liniments are of value in cases tending to become chronic. Constitutional remedies such as iron, arsenic, iodides, and the like may be used in cases with anemia or other underlying causes for debility.

*Vaccines.*—The object of the vaccines is to create a condition of general immunity to the causative organism. It is preferable to use an autogenous vaccine. In the isolation of the causative organisms in the alveolar abscesses and blind dental abscesses, it is necessary to have the cooperation of a dental surgeon trained to such work. This is especially true if the diseased areas are to be treated by drainage instead of extraction of the tooth. These teeth are usually ones that have been filled or capped. The individual tooth is isolated from the rest of the oral cavity by a sterile rubber dam, painted with tincture of iodine and bored into to expose the orifice of the root canals. The scrapings are carefully blown away by an air bulb and the area rendered sterile by some germicidal solution, such as phenol or tincture of iodine, but this must be wiped dry to avoid the possibility of rendering the culture sterile. The root canals are then entered by the fine probes used by the dentists for this purpose and previously sterilized—the ordinary bacteriologic platinum wire is too thick for this purpose. Following this, the tip of the wire after removal, containing some infective material, is dipped into tubes of ascites broth or glucose bouillon containing a drop or two of defibrinated blood. These enrichment medias are necessary because the organism is usually an attenuated streptococcus difficult of culture. If the teeth are extracted, the roots are crushed with a sterile bone or extraction forceps and after a momentary flaming are dropped into tubes of culture media. The infective material usually diffuses out into the fluid.

In making cultures from gums, the gingival border is painted with a weak solution of iodine and the pus expressed by pressure with a wooden tongue depressor or similar instrument, or a platinum loop is inserted into the pocket. The latter procedure is rendered possible since the diseased gums are usually not firmly placed against the teeth. The details are mentioned in this connection, because without attention to the niceties of technic, the streptococci or pneumococci of the mouth will be found on culture and confused with the causative



organisms. Cultures of the crypts of diseased tonsils may be made especially if some necrotic material can be expelled by pressure and this cultured. After removal of the tonsils, they can be cut with a sterile scissors or scalpel after searing the surface. Pockets of pus will at times be found in this way and cultures made for vaccines or for diagnostic data. In the culturing of material from ear, nose, or sinuses, suction apparatus is advisable when possible.

In the administration of the vaccine, it is well in the case of the pneumococcus or streptococcus group to start with a dose of about 50,000,000 to 75,000,000 cocci to avoid untoward reaction. If no contraindication due to excessive reaction occurs, the number of bacteria are increased by about 100,000,000 each dose and injections given about every five days. It may be necessary to run up to 1,000,000,000 to secure a favorable result. To depend largely for results upon the employment of vaccine therapy without thorough eradication of causes is disappointing, as a rule. However, by the recognition of more than one cause for these disabling lesions and by the use of some or all of the therapeutic measures, the outlook for many discouraging cases becomes considerably brighter.

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1819 CHESTNUT STREET.

## WHOOPING COUGH IN THE NEWLY BORN.\*

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The following remarks are based upon the observation of eleven cases of pertussis in infants of from nine to twenty days old. In all of these babies the source of infection could be traced to members of the immediate family, although in some of them the positive history was not immediately apparent. For example, in one case the source of infection was traced to a grandfather, sixty-four years old, who for a few weeks had been suffering from a paroxysmal loose cough accompanied by semifainting spells. He had been treated for cardiac asthma. Four infants contracted the disease from their mothers who had been suffering from a protracted cough, supposedly bronchitis, because of the absence of the characteristic whoop. As these infants during the first few days after birth were entirely free from any signs of nasopharyngeal or bronchial catarrh, there is every reason to believe that the infection took place after birth, and, furthermore, that immunity was not conferred upon them by their mothers. In the remaining six babies the source of infection was readily discerned since one or more members of the family were afflicted with the disease.

The cases of whooping cough in the newly born thus far recorded are exceptionally few. Among them may be cited the classic cases of Bouchut, Rilliet, Barthez, Currier, Watson, Neurath, and Holt (*Twentieth Century Encyclopedia* and *Pfaundler and Schlossman Handbook of Pediatrics*).

The meagreness of the literature on the subject, notwithstanding the extremely high mortality which prevails among these cases, tends to emphasize the apparent levity with which pertussis is looked upon even by the profession. Of course, due allowance must be made for the fact that a great many infants succumb to the disease before a correct diagnosis has at all been arrived at. For be it remembered that the symptomatology of pertussis in the newly born differs greatly from that observed in older children. Whereas in the latter we are usually able to distinguish three characteristic stages of the disease, thus, *stadium catarrhale*, *convulsivum*, and *decrementi*, in the newly born infants the catarrhal and paroxysmal stages are confluent, while the catarrhal stage is so brief in duration as to entirely escape observation. Beginning with occasional mild sneezing or coughing a few days after birth, it is all at once noticed that the baby is struggling for air with each fit of coughing, turns blue and even black in color and after a few expulsive efforts of expectoration, followed by gagging and trickling out of frothy mucus from its mouth, the infant falls back pale and exhausted, in semicoma as it were. The paroxysms return at shorter or longer intervals, as a rule, every five to ten minutes. The attacks of apnea are almost invariably associated with temporary arrest of the heart's action, and it is not at all unusual for some delicate infants to succumb during a paroxysm. I witnessed it in two cases—twelve and fifteen days old respectively. Of the remaining cases under my observation two recovered, five died from bronchopneumonia, or rather hypostatic or passive pulmonary congestion, one of cerebral hemorrhage and one from inanition. One of the cases of bronchopneumonia was complicated by rupture of the alveoli. The latter condition was manifested by rapidly extending subcutaneous emphysema, or more correctly pneumohypoderma (*Medical Record*, November 25, 1911), distinct purring or crepitation, readily elicited on palpation, and in severe cases the distention of the skin generally imparting to the palpating fingers the sensation very much akin to that experienced when pressing upon a strongly inflated toy balloon. The cerebral hemorrhage complicating pertussis is usually localized, giving rise to mono or hemiplegia, and when confronted with an infant that has been delivered instrumentally and shows distinct signs of forceps traumatism, the diagnosis is apt to be greatly obscured. In the absence of a positive history of whooping cough, and more especially in the early stage of the disease, it is often also very difficult to decide whether or not we are dealing with congenital heart disease or hypertrophy of the thymus gland, since in both of these affections more or less marked cyanosis predominates. In the differential diagnosis it is well to bear in mind that in congenital vitia cordis, the cyanosis is either permanent or becomes apparent only during fits of crying. Furthermore, physical examination usually reveals definite signs of heart disease, such as murmurs or pronounced anatomical malformations. An enlarged thymus sufficiently marked to produce grave symptoms usually discloses, on percussion, distinct dullness or flatness over the upper portion of the sternum.

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particularly to the left as low as the second rib and often also to the back between the scapulæ. Furthermore the paroxysms of asphyxia in thymus hypertrophy are much less marked and less frequent than in pertussis. Mild cases of whooping cough may sometimes be mistaken for atelectasis pulmonum; but this condition is usually preceded by asphyxia nonatorum and is not accompanied by sudden attacks of coughing. Some aid in the diagnosis may be derived from a careful blood examination which in pertussis generally shows a pronounced augmentation in the leucocytes, but, as there is always a great relative increase in the lymphocytes in the blood of the newly born, this test is not as decisive in infants as in older children. However, this test may serve to detect the immediate source of the infection and should be applied to the other members of the family who happen to be afflicted with a recalcitrant cough.

In view of the extreme mortality in pertussis neonatorum our main therapeutic efforts must be directed toward prophylaxis. It devolves upon the obstetrician particularly to guard against transmission of whooping cough to the newly born, be it by the mother or any other member of the immediate family. Even if there is only a suspicion the infant must be promptly isolated, and with further corroborative evidence of the existence of the disease, immediately immunized. Judging from personal observation the administration of prophylactic pertussis vaccine in full doses is absolutely harmless even in the youngest of infants. If the mother is suffering from whooping cough, we must stop her nursing of the infant, at least until the infant has been thoroughly immunized. In a number of cases owing to the frequency and severity of the paroxysms, the infants are totally unable to nurse at the breast, in which event it will be found advantageous to feed them on the breast milk by means of Brack's feeding tube, in small quantities, and at short intervals, in the same manner as practised with premature babies. The active treatment is very unpromising. In four of my cases pertussis vaccine as a therapeutic agent proved useless. Some benefit may be derived from the early administration of bromides, to arrest the frequency of the spasm, of ipecacuanha, to facilitate expectoration and thus to hasten the termination of the paroxysms and of strophanthus, to sustain the baby's heart action. The bromides, either potassium or sodium, should be given in sufficiently large doses to induce more or less profound sleep. One grain every three to six hours in the beginning and less frequently thereafter usually answers the purpose. The ipecac, preferably the syrup, should be given in from three to five minim doses until the cough has thoroughly loosened, and whenever the chest and throat become choked up the tenacious mucus, it is occasionally of advantage to increase the dose sufficiently to produce emesis. Vomiting, by the way, is nature's method of relieving the paroxysms of pertussis. The dosage of the tincture of strophanthus should vary with the condition of the infant's heart. Generally a half to one minim, three times a day, will be found sufficient. Finally, it is most important to remember that an abundance of fresh air is the sine qua

non in whooping cough, and that, especially in delicate babies, oxygen by inhalation is worthy of trial.

127 WEST EIGHTY-SEVENTH STREET.

## PROBLEMS IN OBSTETRICS.

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An obstetrical case throws upon the physician a greater responsibility than any other condition in which he is called upon to render his services, in that he has two patients to take care of at one time. Either of these is at any time apt to become the subject of unforeseen complications which must be promptly attended to, and the mother may during pregnancy present serious abnormal conditions which only persistent care and observation on the part of the attending doctor will determine. The course pursued when so determined will hold two lives in the balance.

The general practitioner must of necessity conduct the majority of labor cases but many of these physicians, regrettable as it may be, are not sufficiently trained to recognize abnormalities when they arise. Even when perceived they lack the proper knowledge as to the course of procedure. These conclusions which I have drawn in this, as yet, early stage of my medical career are the results of certain observations made during my interne days.

It is commonly thought that all doctors can attend cases of confinement. This is true; but the fact is often overlooked that the field of obstetrics includes the care and treatment of the mother and child before, during, and after labor, and that the actual delivery is only a mechanical procedure which any one with the least degree of manual skill can acquire, but which is the least important aspect of the prenatal and postnatal era. Therefore though most doctors congratulate themselves and boast of their ability to do a breech extraction, forceps, version, etc., they forget that it is equally important to know how to care for and treat pregnant women, to recognize an abnormality during the prenatal stage, and to know what course to pursue when discovered. The following of a case thoroughly, knowing when to do forceps or version instead of forceps or the indications for Cæsarean section is the important point.

The maternal or fetal mortality in many instances is no doubt due to a last minute operative procedure by the general practitioner, who, confronted by an unforeseen complication, usually becomes the victim of miscarried judgment. The mother or child, or sometimes both, suffer the consequences.

It is not amiss here to say a word about midwives. It is difficult to understand why ignorant women are permitted by law to conduct labor cases. The midwife probably still exists as a relic of the ancient methods of practising medicine when old women were obstetricians and healers at the same time. Surely if the average modern doctor who is supposed to have had years of training is not as yet thoroughly acquainted with the methods of caring for a woman in this the most critical period of her



life, it stands to reason that an ignorant woman cannot be taught this important responsibility in a few months. Fortunately the midwife is gradually losing her popularity and the specialist in obstetrics is coming into his own. The burden of my plea is therefore to encourage the more universal practice of obstetrics as a specialty and to emphasize the fact that a woman in this era of her life requires more expert attention than an ignorant woman knows how or a careless practitioner cares to bestow.

The laity is gradually waking up to the true conditions. Well to do patients are more and more engaging men who have made their reputations as obstetricians. At the same time patients of the poorer classes are at present more commonly engaging to be confined by one or other of the large lying in hospitals where each case is followed carefully and complications met before it is too late. But the great mass of patients have not the means to engage high priced obstetricians and are at the same time too proud to rely on lying in hospitals for treatment. It is this class that engages the general practitioner for confinement and it often finds itself in inexperienced hands when some radical measures are necessary.

To illustrate the harm that can be done by improper judgment in such conditions I will cite four cases occurring in a hospital where I was an interne at the time. This is a general hospital that conducts a large obstetrical service supervised by attending obstetricians who are general practitioners. There is also a private ward for obstetrical cases and one of the cases quoted was conducted by an outside private practitioner.

CASE I.—The patient, a primipara, aged twenty years, was examined at eight months and was found to have a generally contracted pelvis. This was reported to the attending obstetrician, but nothing was done and the woman was allowed to go into labor at term. Labor lasted about forty-eight hours with no progress, pains being strong and severe, the head being finally forced into the pelvis. After a period of acute suffering forceps were applied, and traction was made for fully an hour, resulting in the final delivery of a much distorted dead fetus. The maternal parts were bruised and torn beyond recognition, and after a month of stormy puerperium the patient was able to be about. However, she will no doubt remain invalidated for many years to come.

With proper care the procedure in this case should have been the following: When the diagnosis of contracted pelvis was made labor should have been induced somehow before term at the discretion of the attendant, in this way allowing a smaller object, the head, to pass through a recognized small passage. By allowing the patient to go to term the passenger was allowed to exceed in size the passage through which it was to go, producing thereby fetal dystocia. Admitting that the woman was at term and in labor and knowing that there was a small passage to deal with, Cesarean section should have been urgently considered after having given the woman a sufficient trial of labor. Although this would have meant subjecting the woman to a major operation, if due care had been taken to obviate infection the result would have been very much better than delivering a dead baby by forceps and at the same time making the mother an invalid, perhaps for life.

CASE II.—In the case of this patient, a primipara, aged twenty-three years, the circumstances were similar to those in Case I, except in some minor details. The patient was found to have a contracted pelvis, and, as in Case I, no action was taken. After a prolonged labor she was delivered by means of high forceps, was torn down to the rectum, developed a hematoma of the vulva, and ran a stormy puerperium.

A timely Cesarean section would have saved the infant and would have given the mother a better chance for the future. In all probability she will permanently show some effects of her trying ordeal.

CASE III.—A multipara, age thirty years; previous labors normal. The fact that her previous labors were normal no doubt accounts for the apparent neglect of proper observation in this case. The fact that it is perfectly possible for a woman to have had three normal confinements and at the fourth time show an abnormality was not considered. This patient was not examined until she went into labor. A diagnosis of transverse presentation was made and so was reported to the attending physician. Vaginal examination showed the patient two fingers dilated but the presenting part could not be reached. Nothing was done. Labor continued and, as is the case with most multiparae, she dilated rapidly when not observed, ruptured her membranes spontaneously, allowing a loop of cord to prolapse and protrude from the vagina. A hasty version and breech extraction was done but it was then too late, the cord having ceased to pulsate when delivery was done. The baby was dead.

The proper procedure should have been as follows: As soon as the position was recognized the introduction of Voorhees bags through the partially dilated cervix; careful observation as the pains increased; and the attendant should have been continually by the patient's side in anticipation of what was going to happen. As soon as full dilatation was reached a version and breech extraction was indicated, and there should have been a continuous lookout for what did happen here, namely a prolapsed cord.

CASE IV.—This patient, a primipara, age forty years, was the private case mentioned above. The patient had normal measurements but when she went into labor the attending doctor found both feet presenting. In spite of his inexperience—I subsequently learned that this doctor was a life insurance examiner and occasionally took confinement cases, amounting to about fifteen annually—he went ahead with the delivery instead of calling in expert aid. During delivery he became excited and in his effort to extract the child, without following any particular method, he tore her down to the rectum. I subsequently learned that her rectovaginal wall was torn through, that sepsis set in and she for a time hovered between life and death. She recovered from the immediate effects of her ordeal but subsequently had to undergo operative procedure.

Each of these cases was supervised by men who did not know what to do at the important moment, men who were general practitioners and who attempted to do the work of an expert. No doubt what occurred here occurs daily in private practice. It is true that most obstetrical cases are normal and can be attended by general practitioners. But the general practitioner should make an effort to ascertain and learn, by a careful study of each case he is called upon to attend, whether any abnormalities are present and, when found, to consult some one who has exerted himself to learn more than he about the proper methods of treatment. This few men care to do and the public suffers accordingly.

## BACK INJURIES AND THEIR RELATION TO THE WORKMEN'S COMPENSATION LAW.

BY JOSEPH C. SCAL, M. D.,  
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Of all injuries sustained by workmen none are as vague and as difficult to diagnose as those to the back. The malingering workman who is trying to collect money through the Workmen's Compensation Law is one of the greatest problems of the industrial world today. This sort of worker considers it more desirable to lie idly in bed and collect two thirds of his salary than to work and earn his full pay. The most successful of all malingerers is the one who claims an injury to the back, because he knows even better than the physician just how difficult it is to diagnose correctly any injury in that region.

Let us consider the anatomy of the back—the structure of the spine, the muscles, the fascia, and their relation to the movements of the spinal column. The spinal column itself is made up of individual vertebrae, with their component parts, which when moved, in no way affect the spinal cord. The anterior muscles of the spine produce flexion; those situated posteriorly raise it from a stooping posture, and both acting together steady it. The fascia of the back separate the various muscles from each other, and serve as their attachments.

Diagnosis of injuries to the back is a difficult procedure at best, the physician often having nothing more definite to guide him than the patient's history of the accident and the manner in which he carries himself during the examination. He should note how the patient undresses and dresses, how he moves about, and his actions when he believes himself unobserved; but all of these are insufficient for accurate diagnosis, especially in the case of the malingering who alleges that he has a sprained back. It often happens that a patient finds it impossible to assume a stooping position when asked to do so during the examination, but quite readily bends to pick up a pencil which apparently has been dropped accidentally.

For the examination, the injured man must strip completely—at least to the waist. All characteristic attitudes should be carefully noted, since in the presence of pain nature always demands rest of a part as well as protection; so that if a joint is inflamed the surrounding nerves are irritated, and the muscles moving this joint are in constant tension to keep it quiet. If the vertebrae are affected the muscles of the spine are held rigid, the patient keeping them as motionless as possible. The examiner should take into consideration the fact that slight lateral curvatures of the spine are common. In the case of the malingering who attempts to keep his erector spinae muscles rigid and spine erect, palpation will in a short while reveal muscular twitchings in indication that the muscles have been kept voluntarily inactive, until exhausted; an effect that will soon result in the spine assuming its normal position. Radiography plays a very important part in exact diagnosis of injuries to the back. It is remarkable, however, how often spinal fractures are

present when there is little or no clinical evidence.

Pain in the back may result from various causes, the most frequent of which is lumbago, which is commonly defined as pain in the muscles, joints, and fascia of the back. The pain is often very acute, and manifests itself upon rising from a stooping position. We must, therefore, in examining, consider whether this condition is due to disease or accident, and whether the pain is real or assumed. It is usually unilateral, relieved by pressure, and especially acute with movement; generally yielding to treatment. Other causes competent to produce pain—such as kidney conditions, tumors, and uterine displacements—should be eliminated before the diagnosis of lumbago is accepted. Usually the cause of this condition is a tearing of some of the fibres of the lumbosacral muscles, or a sprain of one of the vertebral joints. A history of a sudden sprain or slip while carrying a heavy burden is usually given, with pain, which lasts some time, located at a definite spot. We must first ascertain if the location of the pain coincides with the point of injury, or whether we are dealing with reflex pain which occurs in the path of a nerve, and in which the painful area is not tender to light or deep pressure. Local pain is usually intensified with increased pressure. Pain is also intensified by the contraction of a muscle, actively, passively, or by electricity, as when the muscle is brought into action.

Another cause of muscular pain is the overtaxation of a muscle for a long period of time, especially when the back is flexed during work. In such cases there is generally a temporary loss of full contractile power, for when the muscles become stretched considerable pain results, which lasts until the tone of the muscles resumes its original condition. Pain and tenderness are usually the reasons given for not being able to work, but, being a subjective symptom, this is always difficult to prove. We must, however, note that pain is always due to pressure on a nerve, increase of which will cause exaggeration, and removal will alleviate pain. The complaint of pain is impossible to disprove, and we must be guided by the patient's description, which is of great value. A throbbing pain indicates pus; a dull, boring pain means increase in pressure on a deep local part, as in osteomyelitis. A constant, annoying pain denotes hyperemic inflammation; while a burning pain means that the skin only is involved.

*Strain of the muscles of the back (strained back).*

—This is defined as violent stretching of the muscular fibres of the back, and results from overtaxing the muscular tissues beyond its physiological limit—as evidenced by the presence of sudden pain. It is generally the result of excessive or too sudden work, especially when applied to already fatigued muscles, or to a sudden twist of the body in the middorsal or dorsolumbar region. This condition gives rise to most trouble from the medicolegal standpoint, but in considering it we should note that a painful muscle is painful only when that muscle is thrown into action. Hence in determining a strained back the injured man should be asked to place himself in the exact position he occupied at the time of the accident. This will undoubtedly cause pain and prove the veracity of the statement. The



history of an honest case will always coincide with the facts found at the examination as well as the symptoms and complaint of the injured. Pain in a strained muscle which has an acute onset should get well in from two to three weeks, provided no complicating focus of infection exists in some other part of the body—as pyorrhea, gingivitis, gonorrhea, etc.—in which case the pain diminishes with rest, only to reappear with exercise until the infective focus is eradicated. The treatment of a simple strain of the back has for its aim absorption of the effusion and prevention of adhesions and blood clots, and consists in absolute rest, together with light massage. Rough massage defeats its purpose by adding injury to the already existing trauma. Active motion should be stopped if it causes pain. The pain is often alleviated by strapping the affected part with adhesive plaster strips well above and below the painful area, the spine being bent backward during its application. This dressing is worn for two weeks, during which time the back can be ironed with a heated flatiron, and upon its removal massage and electricity should be instituted.

*Rupture of the muscles.*—This is rare, but may result from the force of opposing muscles suddenly brought into play.

*Contusion of the muscles.*—A condition that results from force or violence applied externally, especially when the muscles are in action, causing an effusion of blood into the injured tissue. A severe form of violence may cause temporary paralysis of the muscles, power not being recovered for a few days. If, however, permanent paralysis should result, the injury is to the nerve and not to the muscle.

*Straining of ligaments.*—An effect produced when the ligaments are subjected to severe pressure or mechanical movement that tears or overstretches the fibres of the ligaments around a joint. It usually results in an effusion of blood into the joint or surrounding tissue, and causes overdilatation with resultant pain.

*Pain in the bones of the back.*—This, if continuous, is generally due to bone disease, such as tumors or syphilis, in which case the pain is worse at night. In fractures, when impacted, no pain may be present—a condition very common in spinal fractures. The only way to ascertain if pain is due to spinal fracture is to have the patient rise to his tiptoes and suddenly come down upon his heels. If the lesion is in the vertebral or intervertebral joints, pain will result.

*Sacroiliac sprains.*—These are not very frequent, owing to the great protection this articulation enjoys, and are usually due to severe falls or wrenching forms of violence in which other injuries occur. The symptoms are localized pain on pressure, increased by walking, sitting, or rising. Treatment should consist at first in absolute rest, obtained by strapping the pelvis and later by applying an elastic belt and the use of local remedies, in conjunction with hot applications, massage, etc.

*Back injuries involving the spinal cord.*—In cases where the coverings of the spinal cord are involved, there is a gradual onset of paralysis from the hem-

orrhage that arises (its severity depending upon location) and corresponding symptoms which slowly disappear with the absorption of the blood. If the cord itself is involved, paralysis is immediate and more or less permanent.

*Fracture of the spine.*—In this injury there is often an absence of symptoms, beyond pain and some stiffness, provided the cord is not affected. In dislocating fractures in which the cord is involved there will be a definite corresponding paralysis of the nerves which pass through that location.

*Railway spine.*—In so called "railway spine" no actual damage exists, the symptoms coming on several weeks after the accident, without any clinical signs, and persisting until litigation is at an end.

*Weakness of the back.*—This is a common complaint, impossible to disprove, being purely a subjective symptom. In such cases, in the absence of any local nutritional disturbances, it is fair to assume that exercise in the form of light work will be more beneficial than harmful.

*Stiffness of the back.*—A term usually employed by one who experiences difficulty in bending his back. It may arise from pain in a muscle, ligament, or bone, or be due to muscular spasm or structural changes.

In conclusion let me add that in examining alleged painful backs in patients suspected of malingering, I have found it advantageous to mark the spot indicated as painful with a blue pencil. Then, after distracting the patient's attention, I ask him to again localize the pain. If he is malingering, the second spot is generally a few inches away from the first. Another method of catching him is to ask if the side opposite the one alleged painful is also painful, in the meantime applying deep pressure to the painful side. The stethoscope may be used to advantage in this way.

It might be of interest to the public to know that since the Workmen's Compensation Law has been in effect more back injuries among workmen have come to our attention than ever before, and they require a long course of energetic treatment before the patient will resume work.

213 EAST BROADWAY.

## THE TREATMENT OF INFLUENZA.

By H. J. NOVACK, M. D.,  
Philadelphia.

During the present influenza epidemic more than 250 cases have come under my care with very gratifying results, and as the method of treatment deviates somewhat in principle from that usually advised, I feel justified in presenting the same.

In studying the natural course of the disease it seemed to me that the fever had a direct antitoxic or germicidal effect, and that any interference in the way of cool sponging, ice caps, or even draughts of air when the patient was lightly covered, had a tendency to prolong the disease, with its usual effect of weakening the lung tissue and resulting in a secondary pneumonia. As a result of this theory, the following is the plan adhered to:

The patient is dressed in a loose, flannel nightgown and put to bed, completely covered up to the chin with a woolen blanket, and on top of this with a warm quilt or two. No matter how uncomfortable, the hands are not to be taken from under cover, or chilling will result. The bed is moved away from direct draughts of air. The window farthest from the patient is opened from the top, just sufficient to allow gentle ventilation.

Absolute rest in bed is essential, using glass tubes for feeding liquids. No matter how sphenic the patient, nor how mild the attack he is not permitted to leave the bed nor to assume the sitting posture, the bed pan and urinal being used exclusively, and with the utmost care, in order not to chill the patient.

In all cases, whether with or without bronchial symptoms, the chest is first either cupped or liberally covered with mustard plasters, followed by repeated applications several times daily of turpentine liniment or other counterirritant. The object is to prevent congestion of the lungs which seems to be the usual tendency. The counterirritation is continued even after the temperature has become normal.

An initial dose of one mil of mixed influenza vaccine (Sherman's, No. 38) is given in these cases; also ten grains of aspirin or sodium salicylate followed by one or two teaspoonfuls of sal hepatica in a glass of cool water—both repeated every two hours at first and then as the bowels become loose and perspiration profuse, every three or four hours—no phenacetine, Dover's powder or quinine is used.

The patient is kept covered during the following twenty-four or forty-eight hours, wiping the perspiration, while under cover. Where there is a tendency to collapse, a dram or two of aromatic spirits of ammonia or whiskey is given, or as a heart tonic in asthenic cases the following, every four to six hours, is beneficial:

Digalen	.....min. v;
Strychnine sulph.	.....gr. 1/60;
Spts. frumenti	.....3ij;
Peptonoidi liquidi	.....3ij.

For the cough, the following, in emulsion every four to six hours, will give relief:

Creosotal	.....min. xv to xx;
Codeine sulph.	.....gr. 1/4 to 1/2.

As a result of this treatment, usually within thirty-six to forty-eight hours the fever dropped and not until then were changes made in bedding or clothing, care being taken that the room was sufficiently heated and all windows and doors closed. Following this the patient was made comfortable, covering well but not too heavily, and windows opened more freely. Where the temperature failed to drop within two or at most three days, the entire scheme of treatment was repeated, and if it then persisted, congestion of the lungs or a mild pneumonia were usually found to be the cause.

In regard to diet, milk and chicken broth are given exclusively until the temperature remains normal for two or three successive days, after which time the patient may be allowed to sit up a little in bed, and a baked apple, a baked potato, and buttered toast added to diet. Three or four days later full

diet may be resumed, the patient being confined to his room and house for four or five days longer, in order that normal resistance may be regained.

With convalescence a tonic pill of the following, may be taken, three times daily after meals:

Arsenic trioxid.	.....gr. 1/40;
Reduced iron	.....gr. 1/4;
Ext. nux vomica	.....gr. 1/5;
Quinine sulph.	.....gr. j.

This, together with the creosotal, with or without the codeine, may be continued for some time until complete recovery.

The following results have been obtained in over 250 cases of influenza: six patients developed definite mild lobar pneumonia; five developed relapses; two patients died; the remainder recovered, the temperature becoming normal within two to four days. Of the patients who died, one was a woman of twenty-eight years of age, who developed pneumonia at the start and had an old valvular lesion of the heart; the other was a man of thirty-three years who failed to follow directions and left his bed on the fourth day to resume work. He also developed lobar pneumonia and died, although not under my care.

The six pneumonia cases were all characteristically mild, and rapidly recovered without complications, under the fresh air method of treatment.

In a number of patients who, when first seen, had classic signs of pneumonia—including rusty sputum, etc.—when treated as outlined, the temperature dropped within thirty-six or forty-eight hours, followed by complete recovery; so that the author is convinced of the beneficial effect of conserving the fever to cure the patient.

THIRTY-SECOND AND DIAMOND STREETS.

## EVOLUTION AND DISSOLUTION OF THE TUBERCLE BACILLUS CAPSULE.

BY MAX STALLER, M. D.,  
Philadelphia,

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All unicellular organisms possess the power of multiplication, division, feeding, and maintaining a complete separate life within or without the animal host. They are not only ready to attack, but they must always be ready to defend themselves, in emergencies, against destruction by the host or other unicellular cells. Each organism defends its existence by a different mode of warfare. The pathogenic as well as the pyogenic organisms find the easiest way to accomplish their end is by means of the circulation, by throwing into it a large amount of protein poisons, thus destroying the normal molecular union of the animal's normal protein in the blood, thereby creating havoc on the leucocytes, whose duty it is to eliminate those poisons. As leucocytes rush through the circulatory stream with their burden of toxins, the stationary cells, possessing the chemical affinity for some of those toxins, pick up the loose ions, which then begin to interfere with their function, thus putting out of commission all associated organs comprising the general makeup



of the animal and jeopardizing the very life of the host. If in this critical moment the animal is not able to stop the activity of the organism by neutralizing its toxins or destroying the organism, the animal will succumb, unless the organ involved is not essential to life.

The poisons, as well as the organisms, possess certain predilections for certain tissues. The typhoid bacillus prefers Peyer's patches; toxins of tetanus, the central nervous system; the pneumococcus, the lungs; the meningococcus, the meninges; the tubercle bacillus, while ready to attack any part or organ of the body, yet prefers the lungs, because, through this medium—rich in bloodvessels and air cells—it can best attack its host through the circulation by its toxins, and it is easier to destroy the hardworking air cells than either the bone or connective tissue cells. It entrenches itself in its position and from there throws its arrows into the circulation in constantly increasing amounts, creating a condition which the body was not prepared to meet. Unless the protective mechanism of the body succeeds in producing enough substances to combine with the toxins present in the blood, in making them harmless, the great, powerful host with its trillions of cells becomes the helpless victim of the tubercle bacillus.

The ordinary lysins usually present in the blood are not able to destroy the tubercle bacillus, on account of its powerful waxy capsule which it has acquired during centuries of parasitic life, because this capsule is impenetrable by the lysins which cannot affect its inner molecular composition.

An analysis of some unicellular organisms, whether animal or vegetable, will serve to illustrate the *modus operandi* of the development of the power of defense of the tubercle bacillus. All living organisms, without exception, have the faculty of spontaneous movements, in contradistinction to the inertia of unorganized substances. These result in change of place of particles within the living cytoplasm, which is the primary result of its own interior chemical composition; secondly, by stimulation or irritation from without, according to the media in which they live, these spontaneous movements result in changes not only of the inner, but also of the outer constituents of the parasite.

A simple cell, like the foraminifer makes a shell for its protection out of limestone, leads an independent life in the ocean, and lives also in colonies. These shells gave the cell the advantage in the struggle for existence, otherwise it would have been exterminated. Another species of single cell, *deflugia*, also builds around itself a protective armor out of sand. Another cell known as the *arcella*, builds for itself a covering out of material which resembles wings of insects for the protection of its life. Another specie, *diatoma*, covers its body with a transparent flintlike substance for the protection of its life. The *Noctiluca miliaris*, a single cell, provides itself not only with a covering hard as flint and transparent as glass, but also with searchlights. All these elements are produced by this unicellular organism, to fit itself for the supremacy in the struggle for life, and in defense against other unicellular organisms with whom they have to compete for existence.

If the ameba is thrown into a fluid containing an acid, it will immediately contract, and if the impurity of the acid persists, the ameba proceeds at once to encase itself, giving off or exuding a homogeneous exudate, out of which a capsule is formed, and the ameba then assumes a spherical form.

What is true of those unicellular organisms is also true of the vegetable parasites. A living parasite with no power of locomotion would have no chance in the struggle for existence. Was the waxy capsule a chance variation beneficial to its being, in order to fit it for the struggle of existence and perpetuation of its kind, or was the capsule the primary requisite of its own life? If the theories of Darwin, Wallace, and Huxley are to be taken into account, we must come to the conclusion that the struggle for existence was the cause for the variation which causes the change in the animal as well as in the unicellular organism, to provide weapons for itself, not only for offense but also of defense.

The tubercle bacillus thrown into a medium composed of unicellular organisms, as the leucocytes in the circulation, was met first by the lysins in the blood which were capable of exterminating it *in toto*; those organisms whose membrane was tough and, for that reason less easily penetrated by the lysins, survived, and undertook the battle with the leucocytes. Their weapons of offense were the toxins and endotoxins, and their means of defense was the tough capsule which, from time to time, developed more powerfully, until it became perfect. With a perfect capsule it is in a position to defy the leucocytes, as a permanent barbed wire entanglement.

The lysins, henceforth, met several obstacles: first, they were not able to penetrate or diffuse into the tubercle bacillus on account of its capsule; secondly, the toxins and endotoxins neutralized the lysins present, thus making them inert; thirdly, the tuberculous poison retarded the multiplication of the leucocytes, by preventing the lysins stimulating phagocytosis.

All living organisms, without exception, must be sensitive, the sensitiveness being influenced by environments, and must react to changes in their own structures, in accordance with the environments, heat, moisture, light, gravity, electricity, and chemical action in the environment. Any of these influences acting upon the sensitive plasma must cause changes in the molecular composition of the organism. The sensitiveness in the organism expresses itself in the different ways. In the lowest form of organic life in the Chromacea protophyta and lowest metaphyte only movements of growth are recognizable. Some protista, like the unicellular algæ, accomplish a creeping or swimming motion by ejecting a slimy substance which gives them the chance to creep. This is the lowest form of sensitiveness.

Organisms which float in water, like radiolaria, ascend and descend by altering their specific gravity, either by osmosis or squeezing out the air. In the higher unicellular organisms the sensitiveness expresses itself in the power of contraction and expansion, like ameboid movement and ciliary movement. Any one of those forms of sensation is the response to the external stimulation. All living protoplasm

possesses power and irritability. Any physical or chemical change in the environment will call forth a response, which will develop into, either, expansion or contraction. If useful, it will express itself in growth or expansion; if harmful it will contract for protection. Each time the organism contracts it is for protection; and so, gradually, it discovers the best means for defense against those harmful substances or cells. So it can readily be seen, that the tubercle bacillus, although only a vegetable parasite, and not even motile, has a basic cause of origin for its capsule. The organizing of its capsule was a necessity for its protection and defense, without which it could not survive.

The tubercle bacillus, as a primordial cell, when its sensitive plasma was irritated, produced an irritable spot, at the point of irritation, which in return coalesced and formed a membrane. In time chemical changes occurred, taking up substances present in the host's circulation to improve and strengthen it, until it became perfected. The law of variation having reached its limit, the capsule became the permanent property of the tubercle bacillus.

Infusoria, as well as all unicellular organisms, whether animal or vegetable, obtained the material necessary for the formation of the coat of arms, out of the medium in which they thrived; they prepared weapons out of the material at hand, which could be converted to their best advantage. The tubercle bacillus must have made its capsule out of the material present in the medium of its environments, and not from outside sources; therefore, the materials entering into the composition of the capsule, are part and parcel of the animal body on which it thrives. But the basic atom formed primarily into a molecule was due to irritable substances in the hosts, which in time completed the molecules and resulted in the formation of its waxy capsule. It is, therefore, clear that the destruction of its capsule could not be accomplished *in toto*, but in causing a rearrangement in its primary component molecules; and the only way to accomplish this feat, was either in throwing in a stronger base to displace the original base, or by adding an excess of the original base, in order to tear away the loose ions, thus causing a rearrangement in the famous waxy capsules.

The destruction of the tubercle bacillus *in toto* in the animal body without killing the host, even if possible, would not be advisable, since the evidence of many authors as well as my own experimentation shows that killed tubercle bacilli cause the formation of tubercles in experimental guinea-pigs; and since tubercles are never found in guinea-pigs as a result of toxins and endotoxins, but of direct contact and in the immediate vicinity of the tubercle bacillus dead or alive, the logical conclusion must therefore be drawn that the waxy capsule is responsible for the necrosis of the tissues. Therefore, if one should succeed in killing the tubercle bacillus *in toto*, a fertile field would be prepared for the pyogenic organisms in the host, already below par. It is evident that the natural enemies of tubercle bacillus, the leucocytes, must not be taken away because any substance strong enough to destroy the tubercle bacillus would also destroy the leucocytes, which would result in the disability of

the latter to remove the debris, leaving a free field for the pyogenic or pathogenic organisms to thrive on. Our duty is to supply the leucocytes all armamentarium necessary, in the great impending battle, which consists in weapons with which they are inadequately supplied, namely amboceptors.

It is a well known fact that if a tubercle bacillus could, without hindrance, multiply indefinitely, the whole surface of our planet would be occupied by them, and since this is not the case, it shows that many more bacilli are born than survive. Those that possess in themselves some protective power, will have a better chance to survive than those that are born weak and not able to defend themselves, so that those naturally selected live to propagate and form modified species, according to chance environment. The bovine and human tubercle bacillus are only one type. The modification of each one of those types consists of its ability to attack and defend itself best, the bovine in cattle and the human in man, each one being more dangerous to its habitat.

In fact there are many other acid fast bacilli, like the Bacillus lepra, the Bacillus smegmatis, and others found in hay and grass, which are not so easy to differentiate without stains or modes of culture media necessary for their growth; and yet while all those bacilli may belong to the same generic species, they do not belong to the same variety or type as typified by the bovine and human. But the original generic species dates far, far back, long before the tubercle bacillus became pathogenic, so we must look back to those bacilli that were and still are saprophytic and are performing useful work in the universe, assisting in the decomposing of vegetable debris.

The change in such a vegetable parasite as the tubercle bacillus could only be accomplished by chemical change, in the organisms from within and from without. As the waxy capsule is a chemical product, organized solely for defense, we must, therefore, use the same means to disorganize it by chemically allied or alike substances which produced it; since no molecule can be formed without a base, which is capable of attracting the other atoms, either from the interior of its original plasma, or of its surrounding capsule, or both, unless it is done by adding to the medium in which they prosper, of the original element, in the form of certain leucocytic digestive germs containing the original substances combined with the cellular substances and plasma of the animal, acting as the chemical laboratory. Thus the substance must be properly prepared for the leucocytes to help them digest and penetrate the waxy capsule of the tubercle bacillus.

A plant cannot live without carbon, which it needs for the maintenance of life, but the carbon it gets must be in the form of carbon dioxide gas, and not in the form of coal or diamonds. Through its chlorophyll in the presence of sunlight it manages to free the carbon from the oxygen. The latter is set free, and the carbon is retained. If you should create a vacuum over a plant, cover it with a glass bowl, and expose it to the sun, surrounded with coal or diamonds in the presence of chlorophyll, the plant will die, although it has its green substance and sunlight. Plants cannot utilize the carbon



present because it differs in form from that which they have learned to split. The same is true of the leucocytes, they are not able to penetrate the tubercle bacillus capsule with their lysins unless they are armed with the original material, the tubercle bacillus had, to strengthen and form its primordial capsule.

The serum I produce is a result of years of study of an allied bacillus, belonging to the generic tree. Those bacilli, injected into goats, are easily devoured by the leucocytes, and after a certain period, the serum of the goat, contains the chemical compositions, of the original germs used, digested by the enzymes of the animal, mixed with the enzyme of the original germs, and hence contain tuberculous antibodies (proved by tests) (1). As a result of testing out this serum on a large number of bony and pulmonary tuberculosis subjects, very favorable results were obtained. I, therefore, feel justified in asking the profession to give it a trial.

#### SUMMARY.

1. The tubercle bacillus is armed with toxins and endotoxins at birth, all formed to express its power of life by attacking the enemy cells or lysins—*offense*.

2. To repel the attacking lysins of leucocytes of its hosts, the tubercle bacillus germ has provided itself with a powerful waxy capsule, making it impossible of penetration by ordinary osmosis—*defense*.

3. In the primordial state the capsule was entirely absent because defense was not needed.

4. As all living cytoplasm responds to external irritation by contraction and results in hardening, and as those irritations are kept up and the hardening maintained, the capsule begins to form.

5. The original capsule was thin and acted only as a temporary protection, those whose capsules were harder, survived, and taking up material present in the circulation to strengthen themselves, until a time came when the capsule became hard and tough, as we find it today, resulting as a permanent property of the tubercle bacillus.

6. Even today capsules of persons who are not perfect succumb easily on account of the lysins being able to penetrate into the interior of its psychoplasm and causing a disorganization of its chemical constituents, and thus preparing them for the leucocytes to be devoured.

7. The toxin and endotoxins weaken the host by feeding the cells with toxalbumins, thus lowering their vitality, and therefore lessening the resistance; the lysins are neutralized, thus preventing their function of stimulating leucocytosis, hence leucopenia results.

8. With a weakened resistance of leucocytes themselves with a hard, tough impenetrable capsule, the tubercle bacillus defies its host, and threatens its extermination.

9. At this stage only two courses are possible; either the tubercle bacillus wins out, or the leucocytes and lysins have fully recovered their resistance, and begin the gradual destruction of the tubercle bacillus by digesting them; and in time the host is free from tuberculosis.

10. In order to digest those tubercle bacilli, the

leucocytes as well as the cells provide themselves with antibodies; antibodies are produced by an infected person only in time. If he succeeds, he wins; if he fails, he dies.

11. I have succeeded in producing a serum composed of tuberculous antibodies, as proven by tests, the agglutination, precipitation, and complement with tubercle bacilli.

12. This serum acts by neutralizing the toxins present, these maintaining the leucocytes and stationary cells in their normal activities.

13. This I have proved clinically as follows:

a. The larger the area of infection, the more toxic the patient, the stronger the reaction to the serum.

b. With each succeeding injection the reaction becomes milder and finally no reaction is produced.

c. In bone tuberculosis with open sinuses regardless of size the reaction is mild, while in close bone tuberculosis the reaction is stronger, and yet not as strong as in a case of incipient pulmonary tuberculosis.

14. The tubercle bacillus is not destroyed *in toto*, but is becoming slowly devitalized with a loss of power of regeneration, and disorganization of the capsule.

15. This is accomplished by the primary atom present in the serum of Bacillus x which tears off free ions from the capsule thus making it possible for the leucocytes to get after them, proved:

a. In a patient who gained in weight, with a cessation of cough, sweat, temperature, and the disappearance of all clinical evidences, the tubercle bacilli were still found in small numbers.

b. Bacilli from a tuberculosis patient injected into guineapigs prior to treatment with my serum caused death in guineapigs from two to three weeks, while pigs receiving the tubercle bacilli from the same patient, after five injections of serum were given, lived four months.

c. In patients in whom all evidences of tuberculosis were gone, after being ready to discharge only one or two bacilli found in the sputum, this sputum was washed and injected into guineapigs and up to the present time, ten months later, no tuberculosis developed in the guineapigs. Whether or not those avirulent tubercle bacilli will become virulent in time under favorable conditions, is impossible for me to say; however, the period—ten months—is worthy of note.

16. The accumulative evidence shows that we have different types of tubercle bacilli and also of different varieties. They all must have had one common origin, resulting in development of types according to the media in which they chanced to get in.

17. It is therefore possible to obtain a bacillus, as Bacillus x, which when injected into the circulation of an animal will break it up into its original atoms, uniting the enzymes, and other substances present in the blood, and form tuberculosis antibodies. The result obtained in the treatment of fifty cases of bone and pulmonary tuberculosis justifies its general use by the profession.

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1310 SOUTH FIFTH STREET.

# Medicine and Surgery in the Army and Navy

## CHEMICAL POISONS IN WARFARE.

### *A Study of Gases and Benzene Derivatives.*

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An analysis of the chemicals used in modern warfare, including the asphyxiating gases used, respectively, by the Central Allies and the Entente Allies, to render the enemy *hors de combat*, the gases generated by explosives, and the chemicals used in the manufacture of explosives, yields important data.

The asphyxiating gases available for gas warfare are chlorine, carbon oxychloride (phosgene), carbon monoxide, cyanogen, and certain other gases the chemical composition of which has been kept, more or less, a secret. Chlorine and phosgene gases seem to have been employed very extensively. The asphyxiating gases are, for the most part, corrosive in action, coagulating the tissues with which they come into contact. Some of them act through the production of methemoglobin in the blood. They are absorbed through the respiratory organs, cause acute lobar pneumonia in nonfatal cases, acute edema of the glottis, larynx or lung in fatal cases and, if not fatal, leave a stubborn chronic bronchitis, favoring chronic pulmonary tuberculosis, and rapidly accelerate an existent tuberculosis to a fatal termination. Most modern high explosives are derived from hydrocarbons, coal tar products, chiefly nitro and amido substitution chemicals of the benzene series, and produce a clinical entity, in poisoning, which may be called the hydrocarbon syndrome.

In studying chemical poisons it is well to determine upon a classification of their action. Blythe has offered a simple grouping of poisons into three classes: 1. Those producing quick death, such as hydrocyanic acid, cyanides, oxalic acid, and strychnine. 2. Irritant poisons, such as arsenic, antimony, phosphorus, cantharides, savin, ergot, digitalis, colchicum, and zinc, mercury, lead, copper, silver, iron, barium, and chromium salts. These produce vomiting and purging as prominent symptoms. 3. Irritant or narcotic poisons, acting on the central nervous system, such as chloral, opium, chloroform, producing narcosis; belladonna and camphor, producing delirium; strychnine, producing convulsions; and nicotine, producing complex nervous phenomena.

Roberts has made an interesting classification of poisons, as to their action on the blood: 1. Those interfering, physically, with the circulation, such as hydrogen peroxide. 2. Those producing methemoglobin, such as potassium chlorate, hydrazine, nitrobenzene, aniline, picric acid, carbon disulphide, carbon monoxide and nitrous oxide. 3. Those which dissolve blood corpuscles, such as saponin. 4. Those acting on blood pigments, such as sulphides of hydrogen and cyanides.

Loew, in his studies of synthetic chemistry, has developed some important principles, relative to the toxic action of chemical compounds. These principles have a broad application, when applied to the complex chemical compounds used in the manufacture of explosives. Loew claims that the hydroxyl

group (OH) endows a chemical with toxic properties, as in the alcohols, and that the more hydroxyl groups present, the greater the toxicity, e. g., phloroglucin (three OH groups) is more toxic than resorcin (two OH groups), which, in turn, is more toxic than phenol (one OH group). When hydrogen is replaced by a halogen, especially chlorine, in the fatty acid series, the resultant chemical has narcotic properties, e. g., monochloroacetic acid. For instance, ethyl sulphite is a weak poison, while monochlorethyl sulphite is very toxic. Toxicity increases as the carbon content increases, as in the series of ethyl, propyl, butyl, and amyl alcohol. The triamines of nitrogen are less toxic than the pentamines of nitrogen. Alkaloid properties are altered by the presence of the methyl group, e. g., strychnine and brucine cause tetanic reactions, while methyl strychnine and methyl brucine are without this property.

Some of Loew's generalizations are as follows: The presence of the carboxyl and sulpho groups decrease toxicity; chlorination increases the toxicity of the catalytic poisons, alcohol, ether, chloroform, carbon tetrachloride, carbon disulphide and the volatile hydrocarbons; the presence of the hydroxyl group in the catalytic poisons of the fatty acid series decreases toxicity; on the other hand, the toxicity of the substituting poisons, such as hydroxylamine, hydrazine, phenylhydrazine, hydrocyanic acid, hydrogen sulphide, aldehydes and phenols, is enhanced. A three linked nitrogen compound, when converted into a two linked compound, becomes more toxic. The presence of a second amino group increases the toxicity; the presence of the nitro group increases the toxicity. It is safe to say that with the attention of the American medical research workers concentrated upon the poisons incident to the manufacture of highly complex hydrocarbons in our newly created munition and coal tar industries, these studies of Loew will receive considerable attention.

The four important classes of derivatives of coal tar, from a medical point of view, are the benzols, crystalline carboic acid, naphthalene, and creosote oils. Pure benzene, toluene, and xylene are benzol derivatives by distillation. Benzene is used in the manufacture of nitrobenzene and aniline. The aniline dyes are derived from the latter. The trinitrotoluene (TNT) of modern warfare is produced by the nitration of toluene. Crystalline carboic acid is antiseptic. By nitration, it gives picric acid. It is a source of salicylic acid. Naphthalene finds commercial use as a carbureting gas. From it are also derived the phthalein, azo, and indigo colors. The creosote oils are antiseptic, preserve timber, act as lubricants and are useful in the production of patent fuels.

Since synthetic chemical derivatives of coal tar have had a tremendous vogue as drugs and antiseptics, e. g., salicylates, acetphenetidin, acetanilide, phenyl acetamide, phenyl hydrazalol, resorcin, betanaphthol, cresol, creosotes, benzoates, and, since the literature is rich in case reports of poisoning



from these coal tar products, it is important to compare these cases with poisoning from hydrocarbon explosives, such as trinitrotoluene (TNT). The well known picture of salicisim has many points in common with the evidence of an almost specific sulphocyanogen poison, as seen in poisoning from the nitro and amido derivatives of benzene, dinitrobenzene, trinitrotoluene, nitronaphthalene, amido-benzene, tetranitromethylaniline, and trinitrophenol, such as splitting headaches, amblyopias, tinnitus, and confusion. The blood picture, likewise, shows many points in common.

It has been stated, with much truth, that the great European war is a gigantic tournament of chemists, and this fact will be appreciated when one examines the list which follows. It will be noted that an astonishingly large number of the chemicals are members of the benzene series, obtained chiefly from coal tar:

Amidobenzol	Nitric acid
Ammonia	Nitrobenzol
Ammonium nitrate	Nitrocellulose
Amyl acetate	Nitroglycerine
Aniline	Nitrogen oxides
Asphyxiating gases	Phenol
Benzene	Potassium chloride
Benzol	Potassium nitrate
Carbon monoxide	Sodium nitrate
Carbon oxychloride	Sulphuric acid
Chlorine	Sulphur dioxide
Cyanogen	Tetrachlorethane
Diamidobenzol	Trinitrochlorobenzol
Dinitrobenzol	Trinitromethylaniline
Dinitronaphthalene	Trinitrophenol
Fluorine	Trinitrotoluene
Mercury fulminate	Toluol
Mononitronaphthalene	

Explosives are made, in large part, from organic compounds, and these compounds consist of the hydrocarbons, including the paraffins, olefins, acetylenes, and benzenes; alcohols, ethers, ketones, especially acetone; phenols, quinones, and carbohydrates, those of cellulose series being used in making gun cotton.

Of the asphyxiating gases, carbon monoxide, CO, is colorless, almost odorless, divalent, a product of the incomplete combustion of coal, produced, in large amounts, in the manufacture of illuminating gas, and in the distillation of coal tar. It is fatal to all forms of animal life, and enters into chemical combination with the hemoglobin of the blood, forming the stable methemoglobin. Chlorine, Cl, is a greenish yellow gas, over twice as heavy as air, of a pungent, suffocating odor, exceedingly poisonous, corrosive to tissues, and occurs very abundantly in nature in the form of sodium chloride. Because of its tendency to hug the ground, chlorine gas is effective in trench warfare, the gas sinking into the trenches as it passes over the ground. Carbon oxychloride or phosgene gas, COCl<sub>2</sub>, has been used extensively and effectively by the Teutonic armies. Phosgene gas is also known as carbonyl chloride. It is divalent, colorless, offensive in odor, and is formed from chlorine and carbon monoxide under the influence of light. It is sometimes called "stink gas" by the soldiers. Cyanogen gas is doubly deadly in war because, in addition to being exceedingly poisonous when inhaled, it is inflammable, and in combination with carbon and potash or sodium

may be used in the so called "liquid fire" attacks of modern trench warfare.

#### GAS POISONING SYNDROME.

In this war there have been two main groups of gas poisoning: one by the asphyxiating gases used in the trenches; the other by nitrous oxide fumes which are present in practically all the processes of nitration employed in the manufacture of explosives. The clinical symptoms of poisoning by any specific gas massed together, when compared with those caused by another specific gas, bear a striking relation and similarity. In fact, poisonings by all gases exhibit certain symptoms in common, so that one may, with reason, say that there is a gas poisoning syndrome. Clinical and laboratory workers in medicine while studying cases of poisoning by chlorine, carbon oxychloride, carbon monoxide, nitrous oxide, and sulphur dioxide gases have been inclined to consider each as a separate clinical entity and have not stressed their correlation with a combined gas poisoning syndrome. Of course, it is true that poisoning by any specific gas will exhibit certain idiosyncrasies, dependent upon the chemical itself.

Gas poisoning, except for small amounts gulped down and thus absorbed through the gastrointestinal tract, is a direct and concentrated attack upon the parenchyma of the lungs, upon such adjacent tissues as may be affected through continuity, and upon the constituents of the blood when brought into contact with the toxic gases during aeration. The action upon the parenchyma of the lungs is corrosive and might be likened to a burn or escaration by nitric, sulphuric, or carbolic acids. Being, for the most part, members of the halogen group, they are to be studied as such; that is, the chemical phenomena of halogen bodies acting on living tissue is to be observed. To be sure, the corrosive action is not characteristic of all gas poisoning; for example, in carbon monoxide gas poisoning, the classical illuminating gas poisoning, the primary attack is on the blood, preventing aeration because of methemoglobin fixation, as exhibited by the spectroscopic methemoglobin band.

The industrial bearing of these two phenomena is that thorough physical examination of workers in munition, dye, and gas producing industries should be made in order to exclude pretubercular, tubercular, and anemic persons. Because of their low resistance to tuberculosis, negroes and the Irish present a high mortality rate in these industries. For similar reasons, where women are employed in munition work, a blood smear of those appearing anemic should be taken.

Where the corrosive action of gases is pronounced, if the concentration of the gases is great, severe pulmonary edema with quick death results, the subject presenting the agonizing picture of submersion in his own secretions. Injections of adrenalin are ineffective, except in mild cases, where it has bridged a crisis. If the concentration of the gas has been less, but still severe poisoning has occurred, an acute lobar pneumonia, with showers of fine crepitant râles through both lungs develops. The sputum is copious, bloody, and frothy. Many

of the cases in which pneumonia does not develop show a copious, thin, white, or greenish yellow sputum. The pneumonia takes one of the following courses: Death by acute edema of the larynx or by pulmonary edema, gangrene of the lung, relapses; or it may develop into a chronic bronchitis or pulmonary tuberculosis. Latency and relapses are striking features of gas poisoning by corrosives. In many instances pneumonia has not developed until six to eighteen weeks after the gas attack. In other cases, second and third attacks of pneumonia have followed in rapid succession at intervals of seven or ten days after crisis. The pneumonia, in most cases, has been associated with patches of emphysema. The corrosive gases produce a capillary thrombosis. While this has been noted most frequently in the lung, it has also been noted in studies of sections from other organs, such as the kidney.

Mott, in excellent studies, published in the *Archives of Neurology and Psychiatry*, in 1907, and in the *British Medical Journal*, in 1917, reported punctiform hemorrhages in the cerebrum and basal ganglia in cases of trench gas poisoning, associated with hyaline thrombosis of terminal capillaries, such as are present in the cerebrum and basal ganglia. It is believed that capillary thrombosis, widely distributed throughout the body, is characteristic of gas poisoning. Mott has noted it in carbon monoxide poisoning, too, so that the phenomenon is probably not limited to any particular group of gas poisons. These thrombi may explain some of the sudden deaths which have occurred in gas poisoning. Other cases of sudden death have appeared to have been due to a more or less specific action on the respiratory centre, with failure of respiration. A large percentage of cases of gas poisoning have shown central nervous system symptoms such as an aggravating insomnia, night terrors (bad dreams), and a fine tremor of facial muscles, tongue, and fingers. These again may bear some relation to the capillary thrombi mentioned above. These insomnias, terrors, and tremors, like the respiratory symptoms, have persisted far into the long convalescent periods. Mild cases of gas poisoning may clear up in a few days, so that the men return to the trenches. The mild cases are usually listed as cases of tracheobronchitis, which are greatly relieved by a few drops of chloroform and aromatic spirits of ammonia in water. The subacute cases are also relieved considerably by inhalations of stramonium, nitre and, occasionally, opium.

Blood studies in gas poisoning have shown that a grave anemia is to be expected. This often takes the form of aplastic anemia, and has been found so often that it should be looked for as a routine procedure. Miller and Rainey, English investigators, who have directed the treatment of hundreds of cases of gas poisoning since the European war began, studied blood smears from a majority of their cases and found a lymphocytosis of forty to sixty per cent. in almost all cases. It is interesting to note that aplastic anemia and lymphocytosis also occur in all severe cases of poisoning from nitro and amido derivatives of the benzene series. Clinicians were surprised and unable to account for a temperature of  $102^{\circ}$ - $104^{\circ}$  F. in gas cases. Halli-

burton, in a personal note to Mott, has offered the theory that it may be due to the formation of acid hematin, similar to the temperature rise noted when hematin is set free during malarial paroxysms. In gas poisoning, of course, the abnormal temperature is continuous in type. A rise in temperature has been noted in gas cases where there were no complications, such as pneumonia, to account for it. The corrosive gases destroy dentine, so that a filthy oral condition due to dental caries is often present. Fatty degeneration of kidney, spleen, liver, and heart muscle is noted, especially in chronic cases. Exudates are profuse.

#### THE HYDROCARBON SYNDROME.

Trinitrotoluene, or TNT, plays a major rôle as one of the most extensively used explosives employed in modern warfare. Medical study has been concentrated upon cases of TNT poisoning among munition workers. As a result, the medical literature of 1916-1917 teems with references to it. TNT is a dangerous industrial poison. In its study, investigators have considered it as a distinct clinical entity. Comparison with cases of poisoning from benzene, nitrobenzene, nitronaphthalene, amidobenzene (aniline), tetranitroaniline (TNA), tetranitromethylaniline (tetryl), trinitrophenol (picric acid), and the popular headache drugs, acetphenetiden, diethyl barbituric acid (veronal), phenylacetamid (acetanilide), phenyl pyrazolon (antipyrine), and sulphonethylmethanum (trional), show that they have certain characters in common, which may be called the hydrocarbon or the benzene syndrome. The condition is seen in poisoning from coal tar products. The essential picture of such poisoning is: toxic hepatitis, with pathologic changes so closely resembling acute yellow atrophy of the liver that sections of liver from a severe TNT case and from a case of acute yellow atrophy of the liver, placed side by side, can with difficulty be distinguished; blood showing the methemoglobin band by spectroscopy; lymphocytosis of forty to sixty per cent. (of small mononuclear type) and leucopenia reaching as low as 140, when death usually intervenes; dermatoses comparable to moist eczemas; tendency to hemorrhagic purpuras and marked central nervous system symptoms, including peripheral neuritis, toxic amblyopia, migrainous headaches, and, in fatal cases, Cheyne-Stokes respirations, with death by failure of respiration.

Martland has reported findings in a case of TNT poisoning which came to autopsy. The kidney showed fatty degeneration of the epithelial cells of the convoluted tubules and hyaline thrombi of the arterioles with pigment imbedded in the coagulum. There was a cloudy swelling of heart muscle and a fibrosis of the parenchyma of the liver, with irritative and degenerative changes in the endothelial cells of capillaries as shown by mitosis of nuclei, bile duct proliferation and periportal lymphocytosis. Pneumonia was also present. The hepatitis is a grave and striking feature.

As for other chemicals used in the manufacture of explosives which may give rise to toxic manifestations, such as ammonia, nitric acid, nitroglycerin, sulphuric acid, carbolic acid, and fulminate



of mercury, their toxicological attributes are well known and need not be discussed here.

When it is realized that practically every explosive involves nitration processes with consequent exposure to nitrous oxide fumes, that after the war our munition works will be converted into industries for the manufacture of dyes, explosives, nitrates, and other chemicals, for agriculture and commerce, and that more than 100,000 people are employed in munition work now, and that the number of employees is expected to increase, rather than decrease, after the war, these medico-industrial questions become transcendental in importance.

August 4, 1914, found the German empire practically possessed of a world monopoly of the chemicals derived from coal tar. One may wonder whether this industry was not but a cog in the almost perfect German war machine, manufacturing dyes in peace times, and explosives in war time. The advantage of possessing such a highly organized industry for the manufacture of explosives has undoubtedly been a big factor in the notable fight Germany has staged.

#### CONCLUSIONS.

Poisoning by gases may be studied as a clinical entity, recognizing that there are chemical characteristics of specific gases.

Poisoning by hydrocarbons, especially those of the benzene series, have certain features in common which may be grouped into a clinical syndrome.

Complete bibliography will appear in the author's reprints.

### TYPES OF MEN AS OBSERVED AMONG RECRUITS.

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Extraordinary opportunities are offered by the examination of the millions of young men candidates for military service to learn significant facts obtainable in no other way. Among these facts are types of conformation, of disposition, of temperament, of character, of capabilities of adaptation, of endurance, of maintenance of physiological and psychological poise, of nutritional balance, and the like. The population of America being exceptionally varied in its origins, extraordinary opportunities are thus afforded to get a critical line or purview of practical problems in anthropology, racial admixtures, hybridism, stability of racial strains, susceptibilities to environmental influences, to fatigue and anxiety stresses, to infections and to recoverability from infections, to variants in the manifestations of devolutionary agencies, hereditary and environmental.

Studies should, if possible, embrace those men selected and those rejected. The difficulties of such an appraisal need not be so large if a comprehensive yet economic system of tabulation is adopted. However, it is probable that only those who are accented could be subjected to such assessment, and only the outstanding phenomena, till the

importance of the census becomes appreciated. The primary examiners at recruiting stations could not be expected to do much of this work, although it is entirely possible that some facts of inestimable value could be learned and recorded even here by the use of special cards. Among those rejected these points could be followed up, and many facts of greater practical as well as scientific importance might be learned than from the more perfect accepted individuals. Already the special examiners of recruits are making important observations which could readily be rendered of yet greater value if amplified in certain particulars desirable for statistics.

Among these special examiners are those of the mental status, which could readily include, on blank forms, associated anomalies of conformation, type, and functional status of the ductless glands. Those who examine for evidences of infections, tuberculosis, and syphilis, could add to their observations facts which might lead to amplification of our knowledge of the susceptibilities to, or capabilities of, recovery from infections. So also in cardiovascular renal disorders; a few associated or correlated facts added would afford enormous enlightenment in essential directions.

The orthopedic experts could contribute much to a more comprehensive knowledge of the origins of deformities, of variants in tissue tone, of susceptibilities in the realm of development, and of metabolic and endocrinologic data. Here we have the realm indicated by Major Joel E. Goldthwaite as "the challenge of the chronic patient," the indicia of anomalies in growth forces, developmental peculiarities, as shown not only in conformation but in body chemistry. Such matters have by no means become of common interest or knowledge. Until they become so, clinical results must be narrowed in essential directions. Much of the data existing is in such form and place of record as to escape attention. It is also lacking in systematic presentation, in symmetry, in comprehensiveness. Let us have aid from present observers in the practical field afforded by military opportunities.

1504 PINE STREET.

### MEDICAL NOTES FROM THE FRONT.

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#### MODES OF TRANSMISSION OF BACILLUS LEPRÆ.\*

With the present extension of the world war, involving as it does so many countries with their peculiar climates and pathology, it may not be out of place to refer to the various modes of transmission of the *Bacillus lepræ*, an important point for prophylaxis that should be known to all army medical officers whose troops may be exposed to contagion of this affection.

The elimination of the bacillus in the nasal secretions is, of course, so well known that it is needless to more than refer to it here, but in the case of the

\*This communication was received September 15, 1918.

buccopharyngeal mucus excreted, not so much is known. Schaeffer has shown that by coughing, sneezing, or even during the act of speaking, Hansen's bacillus is scattered by thousands to a distance as far as a yard and a half. He placed some Petri's plates on a table and placed subjects having tuberculous leprosy at the distance of one and one half yards off and made the droplets. He estimated that the droplets of mucus projected by these patients during a ten minute conversation contain anywhere from 40,000 to 185,000 bacilli.

Mucous secretions taken from the throats of twenty-seven leprosy patients by Auché were positive in only seven, while Roemmer arrived at positive results in the mucus removed from the nose and pharynx.

In order to explain the presence of the lepra bacillus in the buccopharyngeal secretions and saliva, it is logical to assume that, when local lesions do not exist in the pharynx or throat, it is probable that the bacilli contained in the nasal secretions fall with the latter into the pharynx, and becoming mixed with the secretions and saliva, are thus eliminated in them.

Begué has found the bacillus in the ocular secretions, and the following notes of a case will no doubt prove of interest: The patient, twenty-nine years of age, born in Calcutta, had leprosy for sixteen years, and ocular lesions for three years, consisting of a central leucoma of the right eye; vision almost entirely destroyed. The left cornea was covered with whitish striae, conjunctival hyperemia, iris normal. The eyelashes had disappeared. There was dacryocystitis and there were bacilli in the tears, which probably explains the lesion of the lacrimal tract.

In eight other cases Begué found Hansen's bacillus in the tears, while Babès has pointed out that leprosy conjunctivitis, frequently secondary, is hardly ever absent in advanced leprosy lesions of the face and can almost always be found in the conjunctival secretion.

In almost every case of advanced leprosy, frequently also at the beginning of the disease, the conjunctival sac contains a large number of bacilli which is due to the superficial localization of the conjunctival lesions.

It is needless to refer to other writers who have found the lepra bacillus in the tears and ocular secretions, and I will now mention the bronchopulmonary secretions. As you undoubtedly know, pulmonary leprosy lesions are uncommon, and although the sclerosed type is most frequently met with, nevertheless the bacillus has been found in the sputum in these cases. Out of a total of twenty-four cases Auché found five in which the bacillus was present.

Ehlers, Bourret, and Witte have shown that the bacillus may be found in the sweat and pilosebaceous secretions. The organism has been found by Roemmer in the roots of the hair of the eyebrows and eyelashes, in those of the pubis, in the sweat, and in the matter excreted by the sebaceous glands. Touton has demonstrated the presence of the specific organism in the sudoriparous glomerulae and admits that the sweat may very well be a source of contagion. This is of all the more importance be-

cause paroxysms of acute bacillema in leprosy are far less rare than was formerly supposed, while paroxysms of sudoral and sebaceous hypersecretion are likewise very common.

The first to discover Hansen's bacillus in the meatus was Jeanselme who, during a trip in Yunnan found a leprosy urethritis in a Chinese beggar. A drop of pus obtained by expression of the meatus was literally swarming with bacilli, and only a year or two ago the same writer had another typical case of leprosy urethritis in his hospital service at Paris which is of such intense interest that I will give some brief notes of the patient's history.

The patient was fifty-five years of age, was born in Argentina, where he contracted leprosy about fifteen years previously. Two years ago he came to France. The patient's skin was covered with numerous copper colored maculae and large anesthetic tubercles. Successive crops of lepromata had rendered both corneas opaque. The ulna nerves were hypertrophied and moniliform. Leprosy rhinitis was very marked.

For the past six months micturition has been difficult and the stream of urine reduced in size. When the glans penis was exposed it was found covered with lepromata. One of them had developed around the meatus and infiltrated the urethral walls, to the extent of over a centimetre, and blended with the fossa navicularis. By expression some droplets of viscid grayish pus were obtained from the urethra, which microscopically showed very numerous intact polynuclears, some macrophage cells, and large epithelial cells with a large clear nucleus. Many bacilli were found.

The etiological importance of this bacilliferous urethritis is evident because the patient admitted that he was still in full sexual activity. These bacillary purulent products washed down with the sperm and deposited on the vaginal mucosa during ejaculation may very well be the factor of utmost importance in propagation of this dire affection. A female quite free from leprosy, with a healthy vaginal mucosa having had intercourse with a subject with a bacilliferous discharge, is quite capable of contaminating other men by an inoculation on the glans or in the urethra.

And this brings me to the question of the vaginal mucous secretion in leprosy women. Nicolas examined ten leprosy females and found the vaginal secretion bacilliferous in four, negative in five, and doubtful in one. Thiroux examined the vaginal secretion of nine leprosy females, one being a virgin child of ten years of age, and found it bacilliferous in all, but what is worthy of particular mention is that the cervix and vaginal walls were free from any leprosy lesion in eight, only one presenting a cervical metritis and vaginitis.

Now, we know from Cabanesco's experimental work on the function of microbic autophurification that is fulfilled by the mononuclears on the various mucous surfaces and that of the vagina in particular, that bacteria deposited on the surface remain there in a saprophytic state and at length are eliminated. Therefore, from the point of view of prophylaxis, great care should be taken to prevent



troops from sexual contact with women in leprous countries.

I would once more insist that it should be generally known among the medical corps of the army that elimination of bacilli by an intact vaginal or urethral mucosa in a leprous female or male does actually occur and, as proof of this statement, I need only mention the case of the physician, reported by Ehlers, who contracted leprosy during the labor of a leprous female who did not present any outward evidence of the disease. He pricked his finger and the little wound was long in cicatrizing. Soon afterwards there was very sharp pain in the finger and at length a leprosy of the anesthetic type was manifest.

Roemmer has pointed out that the intestinal ulcers in leprosy differ from those encountered in tuberculosis. The former have distinctly outlined borders; the bottom offers a medullary infiltration; they are rare, annular, and in the edges numerous bacilli are found but no miliary nodules. The bacilli can be demonstrated in the stools. Boeck found the bacillus present in the stools of two patients out of five that he examined in this respect. This fact should be recalled from the viewpoint of prophylaxis.

A number of writers have described leprous lesions of the kidneys with bacilli in the connective tissue stroma and renal parenchyma. Jeanselme found in one case numerous clusters of bacilli in the glomerulæ while in the intercanalicular connective tissue of the cortex there were globi and bacilliferous cubic cells in very small number.

Babès has met with a few clusters of bacilli in the mucosa of the bladder, but the first paper especially relating to the elimination of bacilli by the urine dates back to as recent a time as 1910, when Dominguez, Recio, and Martinez, of Havana, undertook this research in one case and obtained positive results. Following this, a number of other cases have been recorded. The following are the notes of a case recently under the observation of de Beurmann and Gougerot:

The patient was a South American who had married a leprous wife. Up to 1910 he offered nothing abnormal, but in 1911 there was a pigmented erythematous macula with an achromic, anesthetic centre on the left forearm and leg. In 1912, the patient had capricious, painless, total hematuria.

Careful palpation of the kidneys gave a negative result. The urine was very albuminous; there was an intermittent macroscopic hematuria, but histologically blood was always present.

The red blood corpuscles were slightly changed: there were many polynuclears and mononuclears, with only a few eosinophiles. There were also cells from the renal pelvis, ureter, and hematic and granular casts. No hemoglobinuria. Twice a few Hansen bacilli could be detected. The writers attribute the bacilluria to bacillemia as occurs in all other infectious processes.

The conclusion is that leprosy may be transmitted by the urine.

It is hardly necessary to add that I have merely outlined the various possible ways in which leprosy may be contagious; but given the importance of the question from the viewpoint of military hygiene it

seemed apropos to call attention to the subject, and I will briefly outline the supposed channels of penetration of the *Bacillus lepræ* into the human body.

Firstly, it may be said that one hears less and less of the contagiousness of leprosy. The relation of cause to effect between Hansen's bacillus and leprosy is universally acknowledged, but much uncertainty still exists as to the mechanism of the inoculation. Does it take place directly from man to man, or indirectly by the intermediary of an agent of transmission, for example, an insect? The principal hypotheses for explaining the manner of invasion of the *Bacillus lepræ* are the following:

1. *Nasal theory*.—The frequent and early localizations of the disease in the nasal mucosa have given rise to this theory, but too much stress should not be laid upon it. Hoorda Smit thinks that persons living among lepers may be inoculated with the disease by scratching the nose, thus infecting themselves directly with the fingers.

2. *The digestive theory*.—The lower digestive tract has also been incriminated as a starting point of the infection. Some writers suppose that the infection takes place in early life, remaining latent up to a time when the influence of some, as yet, ill defined cause makes the disease appear.

3. *The skin theory*.—The penetration of the bacillus in the cutaneous surface is a hypothesis of some little value, and a number of competent writers have pointed out that in certain countries where the inhabitants go about barefooted, the first manifestations of the disease are often noted on the lower limbs.

Geil saw a case in Java, in which the subject cut his bare foot on a pointed stone. The wound was slow in healing and a year later a maculoanesthetic leprosy developed.

All these data should be recalled, but none of them offer a satisfactory explanation of the mechanism of the infection. The same may be said of arm to arm vaccination, but as this method is no longer in use the question need not be discussed. However, Arning and other observers have found the *Bacillus lepræ* in the lymph of a vaccinal pustule.

Of the possibility of contracting the disease by coitus, I have already spoken, and in conclusion, I will briefly refer to the part played by sucking insects in the transmission of leprosy.

Some suppose that the mosquito is the agent of transmission and Noe found an acid resistant bacillus in the digestive tract of this busy insect which had been fed on leprous infiltrated tissue. Goodhue says that he has found the *Bacillus lepræ* in the female mosquito and bedbug, and Borrel supposes that the demodex may carry the bacillus from one person to another.

Donal, Curie, and Leboeuf admit from their experiments, that the domestic fly may be a carrier of the bacillus, as these writers found the organism in the digestive tract of flies which had been fed on the surface of ulcerated leprous lesions. The part played by flies in the contagion of lepra is, therefore, limited, if in reality it is effective.

Such is the state of our knowledge of this interesting question at the present day.

## THE LABORATORY OF THE PORT OF EMBARKATION.

### *Central Clinical Laboratory for Thirteen Hospitals—Wide Scope of Work—A Training School for Technicians.*

On the roof of the Greenhut Building at Sixth Avenue between Eighteenth and Nineteenth Streets, New York, the officers, technicians, hospital corps men and clerical assistants who constitute the personnel of the central laboratory of the Port of Embarkation have established themselves in commodious quarters. Here they have an animal house with rabbits, guineapigs, white mice and other "small deer" for testing controls in their bacteriological work. Here they have their various laboratories all high above the din, the dust and the noise of the street and here they keep a surplus stock of laboratory supplies and sera of different sorts in reserve subject to emergency calls from any one of the twelve laboratories which form a part of the elaborate and far-reaching system of hospitals under the command of the Surgeon of the Port of Embarkation. That able officer, Colonel J. M. Kennedy, M. C., whose portrait was printed in the *NEW YORK MEDICAL JOURNAL* for September 28th and the extent of whose command was also set forth there in detail, has under his supervision thirteen hospitals with a bed capacity of about 18,000 and an aggregate of between 4,000 and 5,000 officers, nurses, and enlisted men to carry on his work.

The first of these tasks was the supervision of the health of troops embarking for foreign service. The physical condition of every soldier, every Y. M. C. A. worker and every civilian who sails for Europe from any of the ports north of Baltimore must be favorably reported on by some of Colonel Kennedy's staff before he can set sail. His is the duty also of receiving all the sick, the maimed and the wounded returning from overseas. Only five or six thousand of these have as yet returned, but now that actual hostilities have ceased the sick and wounded will be returned as rapidly as they can be brought over and cared for. Plans have been laid for providing fifty thousand beds in and around New York city for the sick and wounded from the American Expeditionary Forces. The cessation of hostilities, however, has obviated the necessity of further expansion and no additional hospitals are being provided, although those already in course of construction will be completed.

At present there are clinical laboratories at two camp hospitals, five debarkation hospitals, one general hospital, one post hospital, and two subsidiary hospitals under Colonel Kennedy's command. The work of all of these is coordinated by the Director of Laboratories, Major E. H. Schorer, M. C., who has immediate charge of the laboratory of the Port of Embarkation in the Greenhut Building. Major Schorer has with him three medical officers, seven women technicians, one sanitary corps officer, two contract surgeons, and eleven hospital corps men besides clerical assistants.

The laboratory in the Greenhut Building acts primarily as a departmental laboratory, the scope of which is outlined in Article V of the *Manual of the*

*Medical Department*, thus: "Department laboratories are maintained for the purpose of making such examinations as cannot well be made at the smaller laboratories of post hospitals. Surgeons may, unless otherwise instructed, send specimens for examination to the nearest department laboratory making appropriate explanation direct to the officer in charge of the laboratory."

In the second place the Laboratory of the Port acts as a school in army laboratory methods. Its personnel is constantly being changed, new men and officers being sent to the laboratory for training in laboratory methods and in keeping military records. Laboratory workers who have been thoroughly trained are detached from time to time, as occasion may arise, for service in smaller laboratories where they will be thrown upon their own resources. In addition to the general work this Port Laboratory will do all the work of the hospital in the Greenhut Building, Debarkation Hospital No. 3, which will provide ample material for gaining experience.

The third function of this laboratory is as a source of supplies for the other laboratories under Colonel Kennedy's jurisdiction. Major Schorer not only has sufficient quantities for his own needs but also is able to supply promptly therapeutic sera as well as general laboratory supplies. Laboratory workers are detached from time to time and assigned to other units, and occasionally it is necessary to send a detachment of technicians or officers and men to some special command to take a large number of cultures where there is a suspicion of the presence of infectious disease.

Not only is all the laboratory work of Debarkation Hospital No. 3 done in the Port Laboratory but media are prepared for use in the laboratories of Debarkation Hospital No. 4 at Long Branch, and the same course is to be pursued regarding Debarkation Hospital No. 5 in the Grand Central Palace as soon as it is ready for occupancy.

Finally all the samples of catgut purchased by the government are tested for sterility in this institution.

The laboratory occupies floor space of about five thousand square feet and includes a large store room which is used as headquarters, a large refrigeration room, an animal house, a laboratory store room, a Wassermann test room, a large bacteriology room, a large incubator room, a room for pathology, one for clinical microscopy, one for chemistry, one for the preparation of media and two record and office rooms.

The pathological work involves both clinical pathology and examination of specimens from necropsy.

#### TYPES OF CHEMICAL ANALYSIS MADE.

Some idea of the scope of the work done in chemical analysis may be gathered from the following memorandum which has been sent to the commanding officers of the various hospitals in the Port of Embarkation for their information as to the chemical work which this laboratory can undertake:

November 22, 1918.

It is requested that you inform the chief of the Laboratory Service that the laboratory at the Port of Embarka-



tion, Sixth Avenue and Eighteenth Street, New York city, is now prepared to make the following chemical examinations:

1. *Ice cream.—Fat:* Reese Gottlieb method, also for condensed milk, cream, milk, skim milk, buttermilk and whey.

2. *Milk analysis.—Fat* determination, Babcock method; calculation of total solids, lactometer method; test for formaldehyde, phenylhydrazine, and ferric chloride.

3. *Water and sewage.*—Examination for poisons, heavy metals, and alkaloids.

4. *Chemical analysis.*—Free ammonia, albuminoid ammonia, oxygen combining capacity, inorganic solids, nitrates, nitrites, chlorides, alkalinity, temporary hardness, permanent hardness, soap consuming powers, excess chlorine in water, sulphates, and iron.

5. *Alcohol determination in liquids.*—Quantitative and qualitative.

6. *Examination for poisons in food, water, or tissues, group and individual tests for.*—(a) Volatile poisons, (b) fixed organic poisons, and (c) fixed inorganic poisons.

7. *Urine analysis.*—Quantitative determinations; Nitrogen partition, total nitrogen, urea, uric acid, chlorides, sulphates, phosphates, titratable acidity, hydrogen ion concentration, glucose, total acetone bodies, acetone and diacetic acid, and beta hydrophthalalein test for kidney function.

8. *Blood analysis.*—Nonprotein nitrogen, urea, chlorides in blood plasma, and hemoglobin.

9. *Stomach contents.*

10. *Feces.*—Fat and fatty acids.

11. *Arsenic determination in blood, urine, tissues, etc.*

12. *Media.*—Hydrogen ion concentration, glucose, and total nitrogen.

13. *Creatinine* in blood and urine.

14. *Creatinine.*

15. *Glucose* in blood.

16. *Bicarbonate* content of blood plasma under constant carbon dioxide tension.

17. *Oxygen combining capacity* of blood.

The laboratory is also prepared to supply and examine Dakin's solution, normal and standard solutions and standardize apparatus.

When any of these special determinations is required it is requested that this laboratory be called and the special precautions and method of obtaining samples ascertained.

## MEDICAL NEWS FROM WASHINGTON.

Rear Admiral William C. Braisted, Surgeon General of the Navy, Before House Naval Committee.

WASHINGTON, D. C., December 3, 1918.

When Rear Admiral William C. Braisted, Surgeon General of the Navy, was before the House Naval Committee last week, the subject of cutting naval estimates came up, and he took occasion to warn the members of the committee that every man, woman, and child in this country will demand, and will have a right to demand, that the men remaining in the service, the sick and wounded, have the very best of medical attention.

During his hearing, Admiral Braisted stated that there had been no case reported of lack of medical supplies, and that the cooperation and coordination with other bureaus of the navy had been all that could be desired. He laid particular stress upon the complex problems to be met with the advent of peace, and he warned the committee that they must not reduce the appropriations for the medical department if they desired to have it as successful in the future as it had been during the war.

Admiral Braisted believes that he faces the heaviest and most important part of the work incident to his bureau in handling the results of the war. It was shown that the men coming home will

not be under the same strict discipline that existed during the war, and they will need very careful treatment as a reward for heroic service. He assured the committee that everything will be done to take care of the sick and wounded, and that particular thought is being given to the question of reconstruction. It is proposed to use army hospitals for special reconstruction, after men leave the naval hospitals, to put them in shape to earn a livelihood. The navy will pay the upkeep of its men during the period under physical reconstruction in the army. When physical reconstruction is complete, the men will be placed under instruction with the Federal Vocational Board.

The estimates, as revised by Admiral Braisted, amount to approximately \$9,500,000, or about two thirds of the original estimate before the armistice was concluded. He pointed out the increasing demands on the Medical Corps in the transportation of the sick and wounded in both the army and navy, which largely falls to the navy or to ships manned by the navy. The work of the navy in connection with the transport service was particularly praised by Admiral Braisted, who called it one of the best works of the navy during the war, which it had been unexpectedly called upon to undertake.

Admiral Braisted stated that the total number of sick under care of the navy at present is 15,000 men. The total casualties in deaths in the navy during the war are 1,233 men.

The question of the care of patients was gone into at great length before the committee, which was told that all of the present naval hospital facilities are full, and until the navy is decreased and the present construction under way is completed, there will be necessity for securing outside accommodations. Admiral Braisted stated that his principal worry at the present time was finding places to put the men returning from abroad, and that he will be forced to take measures to relieve New York and Norfolk for sometime to come as the hospital facilities become inadequate for the requirements of the navy. He stated that there were forty-three hospital establishments in use by the navy during the war, and that all of those abroad will be demobilized as fast as possible.

Concerning hospital ships, Admiral Braisted said that there are three in commission, but that the *Solace* is not expected to be in use very long after the present emergency is over. The *Mercy* and *Comfort* are considered very good ships, and they now are being used to bring back army sick and wounded. Each has a capacity of 1,000 patients. The new hospital ship, authorized several years ago, will have a capacity of between 500 and 800 patients, and when completed it will take the place of the *Solace*.

Members of the committee manifested much interest in provisions for female nurses for the navy, and were told that there are 290 in the regular establishment, 500 in the reserve corps, and 625 in the naval reserve force, or a total of 1,415. The basis of calculation is one nurse for every ten patients, and the navy ought to have approximately 1,500 at present.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

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*A Weekly Review of Medicine*

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### THE TUBERCULOSIS WAR PROBLEM.

Probably no other phase of the medical problems presented by the war has been more carefully worked out than that of the handling of tuberculosis. Colonel George E. Bushnell, M. C., for some months acting as assistant surgeon general of the Army, has devoted himself especially to the study of tuberculosis, and as commanding officer of the Army tuberculosis hospital at Fort Bayard, N. M., he had unusual opportunities to study this disease.

In the August issue of *The Military Surgeon* Colonel Bushnell gives a most informing review of the work done by the medical department of the Army during the first year of the war. A body of nearly 400 examiners for tuberculosis was organized, all of whom were more or less expert. Some of these were in the Army, but many were not, but merely acted as contract surgeons. A circular of instruction, for their guidance, was drawn up by Colonel Bushnell to insure uniformity in procedure.

At officers' training camps 53,905 men were ex-

amined and 0.362 per cent. were found to be tuberculous. In the aviation corps 38,835 men were examined, of whom only 0.159 per cent. were affected. Both of these groups represented a picked class of men, for an examination of the entire army, which then numbered 1,406,498, resulted in the discovery of 11,020 cases of tuberculosis, or 0.783 per cent. Not all of these were discharged, as many patients had no clinical symptoms, and a still larger number were sent to sanatoria for treatment. In the regular army 190,398 men were examined and 1,144 cases of tuberculosis were discovered, or 0.758 per cent., while in the coast artillery, a part of the regular Army whose duties confine them to garrisons, 40,396 men were examined, and 297 cases found, or 0.735 per cent.

Altogether, something like 10,000 men were excluded from the Army by the tuberculosis survey, and the great majority of these were found to have contracted the disease before entering the service. Consequently they did not become pensioners when discharged. A conservative estimate places the average cost of a tuberculosis soldier at \$1,000 for pensions. If, therefore, half the 10,000 men were prevented from becoming pensioners on account of disabilities for which the Government was not responsible, a saving of \$5,000,000 was made by the tuberculosis survey. The Canadian Government estimates that each tuberculous soldier returned from Europe costs the Government \$5,000. If there had been no examination held, these 10,000 tuberculous patients would have been sent to Europe and been returned at a cost of \$5,000 each, making a total of \$50,000,000.

But the Government has not been content to attempt to exclude the tuberculous soldiers from the Army, for it has made ample provision for the care of those who do develop the disease in the service, having established tuberculosis hospitals at New Haven, Conn.; at Otisville, N. Y.; at Markelton, Pa.; at Azalea, near Asheville, N. C.; at Waynesville, N. C.; at Denver, Col.; and at Whipple Barracks, near Prescott, Ariz., with a total capacity of 5,875 beds, besides the big hospital at Fort Bayard, N. M. To care for these men will require the aid of many specialists, and all medical men who have special skill in the treatment of tuberculosis are urged to apply for appointment in this service.



## RESPONSIBILITY TOWARD VENEREAL DISEASE AMONG NEGROES.

A state of apathy or indifference toward half measures has been shaken from us in many ways during the present prolonged crisis in affairs. Factors which have been left standing to breed what disaster and corruption they may, have been forced upon active attention. Not the least of these is the question of the health of the negro in the midst of our population, especially in the field of venereal diseases. Once more it has been the imperative importance of attaining and maintaining the efficiency of our army that has aroused active interest in a problem that concerns civil life as well.

Spingarn [Arthur B. Spingarn: *The War and Venereal Diseases Among Negroes*, *Social Hygiene*, July, 1918] puts before us the lamentable lack of scientific knowledge of the real incidence and state of such diseases among the negroes. This ignorance has been obscured and fostered by generalizations which are based upon most meagre facts and largely influenced by prejudice. The result has been a careless dismissal of the sanitary questions involved, and any definite attack upon the diseases themselves among the negroes or of unsanitary conditions which further their spread has been prevented. It has been left a problem too vague for investigation and too large for control.

War necessity has, however, brought a more determined and effective state of mind. The actual high incidence of venereal diseases among the negro population serves to emphasize the lack of moral influences, social restraints, and sanitary measures, toward which the white race bears a heavy responsibility. Strangely, the white race has merely pushed aside the existing menace, failing to consider its own danger to health, and this even though the two races are continually thrown into the closest contact.

The army camps have, however, at last taken up the question as one, not of race, but, primarily of health, which, owing to the seriousness of the problem, admits of no distinction. The colored troops arriving at camp show a high percentage of infection, mostly of a chronic character varying from several months to many years in duration. The contraction of new infections after arrival compares favorably with that of white troops. It has been the policy of the Surgeon General that systematic and painstaking effort should be made, as efficiently and expeditiously as possible, in the examination and cure of these troops; furthermore, every safeguard should be

thrown about them, as in the case of the white troops, to prevent new infection. There have been instances of a careless and perfunctory treatment of these troops which has taken no account even of separating those who were infected from those who were not, and therefore subjecting the latter to infection through the use of unsterilized syringes upon all alike. This, Spingarn states, is fortunately not typical, and on the whole conscientious and intensive treatment has produced most satisfactory results.

The social agencies of the camp have also had a large share in the health of these troops, by surrounding them with the same facilities for recreation and stimulation of moral and social interest. This work is only in its initial stage, but its effect is no less marked than that of medical treatment.

It is not enough that these agencies are at work at the cantonments; in order that they shall be effective there, and that the work begun as a war measure shall become a part of civil sanitary and moral protection, it must extend outside these limits. Here there is particular need that communities shall awaken to the menace that has been with them and the possibility of combating it successfully. The recommendations which are offered, therefore, include both the cantonments and the civil communities. It is recommended that in the camps the Surgeon General's policy be rigidly carried out and that for this purpose there should be a sufficient number of colored medical officers and orderlies, should this prove advisable. There should be instituted some instruction in social hygiene, in lectures specially adapted to the negro's capacity, with an appeal also to his race pride. It should be remembered that these troops are in special need of military discipline before they set out to perform their various tasks.

There should be adequate facilities provided for prophylactic treatment both within and without camp. Those places outside the camp which endanger colored morals and health should be cleaned up with the cooperation of the civil community, while there should be especially drastic control of extracantonment zones for repressing prostitution. It must be remembered that this pertains to white troops as well as to colored. With the same consideration in view, colored women should be submitted to the same regulations in regard to punishment, detention, and treatment as white women. Public clinics maintained by State, city, or public health service should be accessible to the negro, as to the white.

The importance of recreational diversions should be recognized for both sexes among the colored as well as among the white population and adequate provision be made for it. Effort should extend to the definite improvement of such conditions as tend toward vice and disease. There should be direct attack upon illiteracy and bad industrial and housing conditions. Constructive work also should be undertaken among the civil negro population as well as in the Army, both in regard to venereal disease and in matters which will rouse their pride and interest. An essential factor to success is the hearty cooperation on the part of the colored people themselves, among whom already exist many agencies which might be utilized.

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### THE ULTIMATE SIGNIFICANCE OF PAIN.

Perhaps the most important and time honored duty of the physician is the alleviation of pain, no more, however, merely in the abstract, but concretely in relation to the removal of the cause. No one believes any longer that pain is an unmitigated evil. The importance of pain to the life of the individual organism is now somewhat better understood. Pain acts as the harbinger of evil to the system and warns it of the presence of pathological conditions before they become irremediable. Without pain pathological conditions would have free rein in the destruction of the organism, the organism remaining unaware of the destructive processes going on. But if the sole function of pain is to signal danger, one would expect that the intensity of that signal of danger would be commensurate with the degree and form of danger. This is not so. The degree of conscious pain varies with the degree of development of the particular organism affected. The defective or those low in the scale of development have less sensitiveness to pain than those more highly developed. It is this fact which points to a more general evolutionary significance of pain.

Moreover, while lower organisms feel pain in some degree, it is only those of higher development who feel it acutely, more particularly pain other than the purely physical, such as moral pains—qualms of conscience, pains of apprehension and imagination. To the refined or highly specialized individual these pains cause more suffering than mere physical pain. The higher the organism the more sensible to pain and the greater the variety of pain from which it can

suffer. Every adversity, every problem it meets it must remove as it would the cause of a pain, for to such an organism every life problem is a pain until overcome. The more complex and differentiated the nervous organization of the individual, the more acute the pain and the suffering. Differentiation and specialization bring with them, however, not only more pain but also more pleasures. Indeed, overcoming a pain, or the cause of it, is a source of conscious pleasure. Those who can enjoy music are capable of suffering real pain from disharmony, when the same action would cause individuals not so developed no pain at all. The more highly specialized the organism becomes in any endeavor the more occasions of pain arise and the more sources of pain must it learn to overcome.

That pain is purposed only for evolution is proved by the fact that, while we speak of remembering pain, a pain dies after its work is finished, and we only remember having had a pain. We never refeel the same pain. The pain survives only in the consciousness of the higher organisms; the lower organisms have neither the consciousness nor the pain when once passed. The harm of pain inflicted is not merely on the sensorium, for the pain is a physical part of the organism as a whole. It is now found in surgical operations that it is not sufficient to rob the consciousness of the pain, but that the seat of the infliction of the pain must be insulated or dissociated from the rest of the organism—annoci-association. It is the dissociation of the part where pain is inflicted that anticipates pain. There is no pain in actions of dissociated organs or tissues. It is the sympathetic unity of the organs that appreciates the infliction of pain on one of them, and it is their combined harmony of action in avoidance that moves for their higher development. The action of a lower organism in apparently shrinking when injury and pain are inflicted is explained on the ground that such an organism shrinks from any action that affects its normal physiological action and leans to those agents that enhance it. Indeed, it shrinks from anything that does not excite normal physiological action.

In a broader sense the moral notions that restrain single organs or phases of the organism from indulging in certain individual pleasures are born of the consciousness in the higher organism that this individual action, particularly since individual and not harmoniously united with the interests of the entire organism, would injure the whole organism. The moral restraint is in



effect the pain or danger signal of disease impending to the whole organism because of this separate and therefore immoral action. And the moral development of the race is occasioned from an avoidance of moral or even physical pain or disease. The defective or the immoral are incapable of this consciousness, just as the lower organisms are incapable of appreciating pain. It is pain in whatever form that spurs man onward in development, proximately in mere avoidance of pain, but remotely in his evolutionary progress. Without the pain sense or the adversities or the problems that cause it there would be no incentive for development to overcome them, and the organism would remain stationary. Whatever virtue there is in the alleviation of pain and suffering, the abolition of pain is neither aimed at nor desired. It is intended rather to overcome this pain by developing the organism and to put it in position to meet the more diversified and acute pain of higher differentiation and development of the organism. Like any ideal, the abolition of pain is a goal to strive for but not to attain.

#### SALICIN IN INFLUENZA.

The subsiding epidemic of influenza will of course be followed by a barrage of remedies, each guaranteed to be a specific. Luckily the next epidemic will probably not occur for so long a time that most of these will be forgotten. While they are still apropos, however, let us call another one to the attention of the American profession. Dr. E. B. Turner, in the *British Medical Journal* for August 3d, lauds the use of salicin.

In the epidemic of 1890-1891 and in the few years following it, Turner says, he treated more than two thousand cases, with recoveries in an average of thirty-six hours, with no mortality. He gives twenty grains an hour; in two or three hours the pain is gone, and the fever materially reduced. Besides this, he believes that the infectivity of the patient is greatly lessened. He has noted no ill results from the large quantities of the drug given, and in the present epidemic recovery has usually occurred in twenty-four hours.

We mention this specific for influenza for what it is worth. The value of salicylates in this affection is well known; what advantage is obtained by administering this particular form of the drug is difficult to see. While borne well by the stomach, salicin is far less prompt and reliable than salicylic acid itself or the salicylates.

#### SERVICE AND SACRIFICE.

The Distinguished Service Cross has been awarded to Major Jackson Stuart Lawrence, Medical Corps, of the 368th Infantry, for extraordinary heroism in action at Binerville on September 30th. Major Lawrence, with two soldiers, voluntarily left shelter and crossed an open space fifty yards wide swept by shell and machine gun fire to rescue a wounded soldier whom they carried to a place of safety. Doctor Lawrence was born in 1880, was graduated from the School of Medicine of the University of Pennsylvania in 1905, and was engaged in the practice of medicine at Greensburg, Pa., when he entered the army. A number of surgeons have been killed and wounded; the first American officer to be killed in the war was a medical officer, Lieutenant Fitzsimmons, who was killed by a bomb dropped by a German airplane on a base hospital in France. Many physicians have given their sons for the cause. Dr. Herman Vedder, of New York, has lost two sons within the past three months. Dr. Herman J. Boldt, Dr. Alexander Duane, and Dr. Howard Lillienthal, of this city, have each lost a son since the American advance was begun. These are but a few instances in which the doctor has been called upon to make a sacrifice for his country even greater than that of life itself. To these and all the many doctors who have suffered such loss, the members of the medical profession extend their homage and their deepest sympathy. The medical profession of the United States may well be proud of the part that it has played in the great war, both in service and in sacrifice.

#### Obituary

##### MAJOR JOSEPH B. BISSELL, MEDICAL CORPS, U. S. A., of New York.

Major Joseph B. Bissell, who died in Mt. Sinai Hospital on December 1st, was born at Lakeville, Conn., on September 3, 1859. He graduated from the Scientific Department of Yale University in 1879 and the Medical Department of Columbia University in 1883. He studied in Vienna and Munich and in 1886 was appointed instructor in surgery at the New York Polyclinic School and Hospital. In 1889 he became instructor in surgery at the New York Post Graduate School and Hospital and in 1895 he became surgeon to St. Vincent's Hospital. At the time of his death, he was clinical professor of surgery at the University and Bellevue Hospital Medical College, visiting surgeon to the Bellevue and St. Vincent's Hospital, consulting surgeon to the Hospital for Deformities and Joint Diseases and to the German Hospital and Dispensary, consulting gynecologist to the Ossining Hospital, consulting radiologist to the House of Calvary, and surgical director to the Radium Institute of New York. He was elected president of the American Radium Society last June. Early in the war, he was invited by the British authorities to demonstrate the use of radium in the treatment of septic sinuses and for that purpose went to England.

## News Items.

**Section Meeting Postponed.**—The Section in Otolaryngology of the New York Academy of Medicine will meet on Wednesday, December 18th, the meeting having been postponed from the second to the third Wednesday.

**To Increase Capacity of Naval Tuberculosis Hospital.**—At a hearing before the House Naval Committee last week, Surgeon General Braisted called attention to the importance of the Naval Tuberculosis Hospital at Las Animas, Colo. The hospital has a capacity at present of 500 beds, but Admiral Braisted believes that this capacity should be doubled as soon as possible.

**House Naval Committee Compliments Admiral Braisted.**—At a hearing before the House Naval Committee last week, Rear Admiral Braisted, Surgeon General, United States Navy, was complimented on the excellent showing of his department. He insisted that the praise should be given to the officers and men under him, and he took occasion to call attention to the very great support he had had at all times from the Secretary of the Navy. He closed the hearing with the earnest request that the members of the committee give him the full amount estimated as necessary for the next fiscal year, as the problems of his department are greater now, and will be for the next year or two, than they were during the war.

**Wounded Soldiers Return.**—The United States Hospital Ship *Northern Pacific* reached Pier 1, New York, Monday, December 2d, with 1,100 wounded soldiers from the war zone on board. The ship had a very stormy voyage and the sufferings of the wounded men were greatly increased by the roughness of the weather. Lieutenant Commander R. G. Davis, of the Medical Corps of the Navy, who was in charge of the patients, said that most of the severe cases would be cared for at Fox Hills, base hospital, Staten Island. There were 600 walking patients and 500 severe cases. The soldiers came from every battlefield in France. Fifty-four infantry units, ten units of engineers, six of field artillery, two of the machine gun battalion, one of cavalry, one of the Quartermaster's Corps and two of the marines were represented.

**Meetings of New York Medical Societies.**—The following medical societies will hold meetings in New York during the coming week: Monday, Society of Medical Jurisprudence (annual), New York Ophthalmological Society, Yorkville Medical Society, Williamsburg Medical Society; Tuesday, New York Academy of Medicine (Section in Neurology and Psychiatry), Manhattan Dermatological Society, New York Obstetrical Society; Wednesday, Medical Society of the Borough of the Bronx, New York Pathological Society, New York Surgical Society, Alumni Association of the Norwegian Hospital, Brooklyn (annual); Thursday, New York Academy of Medicine (Section in Pediatrics), West End Clinical Society (annual), Brooklyn Pathological Society; Friday, Clinical Society of the German Hospital and Dispensary, Eastern Medical Society of the City of New York (annual), Flatbush Medical Society.

**Narcotic Drug Commissioner Appointed.**—Governor Whitman has announced the appointment of Frank Richardson, of Cambridge, N. Y., as commissioner of narcotic drug control. The commission was created by the 1918 legislature.

**A Polyglot Ward in an American Red Cross Hospital.**—In an American Red Cross hospital, in Dunkirk, France, a visitor found ten nationalities represented. They were Belgian, French, English, American, German, Chinese, Japanese, Moroccan, Italian, and Polish.

**Anniversary Address at the Academy of Medicine.**—Dr. Edwin G. Conklin, professor of biology at Princeton University, delivered the annual anniversary address at the New York Academy of Medicine, Thursday evening, December 5th, his subject being *The Biology of Democracy*, with special reference to the present world crisis.

**Few American Soldiers Blinded.**—According to the *Army and Navy Journal* for November 30, 1918, the Office of the Surgeon General of the Army is authority for the statement that probably less than fifty American soldiers have suffered total blindness from wounds received in action. This is considered a remarkable record considering the number of men engaged and the intensity of the fighting in the sectors where Americans were engaged.

**Demobilization of Students' Army Training Corps.**—Thirteen New York and Brooklyn colleges and universities have begun the demobilization of their Students' Army Training Corps, in compliance with the War Department's order. Among the institutions affected by this order are Columbia University, New York University, Cornell University Medical College, New York College of Dentistry, College of Dental and Oral Surgery, and Long Island Medical College.

**The Journal of Orthopedic Surgery.**—The *American Journal of Orthopedic Surgery*, which is the official organ of the American Orthopedic Association, announces that with the coming of the new year it will enlarge its scope by serving also as the official organ of the newly formed British Orthopedic Association. Henceforth the name of the publication will be *The Journal of Orthopedic Surgery*. The journal will be published, as heretofore, by Ernest Gregory, Boston, who assumed the publication in January, 1916, when the journal made its previous step of progress from a quarterly to a monthly publication.

**Exhibit at Clinic for Reeducation of the Disabled.**—The directors of the Clinic for Functional Reeducation of Soldiers, Sailors, and Civilians have issued invitations to an exhibition of the equipment and a demonstration of the apparatus of the clinic, to be held on Thursday afternoon, December 12th. This clinic, which is situated at 5 Livingston Place, New York, is affiliated with Cornell University Medical College. Dr. W. Gilman Thompson is president of the institution. The staff consists, in great part, of members of the faculty of Cornell Medical College, but medical officers experienced in Canadian and French work of functional reeducation have been invited to give instruction.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### POLYVALENT SERUM THERAPY IN CEREBROSPINAL MENINGITIS.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

Certain clinical reports on the use of serum in epidemic cerebrospinal meningitis have been far less encouraging than might have been expected, in view of current statements concerning the efficacy of specific treatment in this disease. Thus a mortality of sixty-one per cent., in spite of serum therapy, has been reported by Rolleston, of sixty-eight per cent. by Ellis, and of fifty-five per cent. by Gaskell and Foster. Of seventeen English clinicians employing serum, not less than seven deemed it altogether valueless. In truth, as with all relatively new therapeutic procedures, even the most valuable, optimal results from antimeningitis serum could not be expected from the start, a prolonged period of trial and modification necessarily elapsing before complete availability of the measure under all circumstances can be obtained. Evidence is not lacking that in the case of the serum in question this period has not yet terminated, or at least, that unanimity of opinion and procedure has not so far been attained.

Upon seeking the cause of the irregularity in clinical results from antimeningitis serum, vari-ous observers have been led to emphasize the fact that meningococci of different origin, even though alike in their cultural and biological characteristics, may be markedly different in other respects—in particular their behavior as antigens, including their response to specific agglutination tests. Studies of the influence on various samples of meningococci of monovalent sera obtained by inoculation of animals enabled Ellis, Dopter, Gordon, Arkwright, and others to classify these organisms in definite groups, each group corresponding to a monovalent serum, toward which was shown specificity, not only in regard to the agglutination and precipitation tests, but also in regard to bactericidal power *in vitro* and in animal experiments. Most students of the question have not regarded this differentiation of distinct groups as involving a division into separate species of organisms, but merely as reflecting the occurrence of meningococci in different strains or varieties. Among the French observers, however, Dopter was instrumental in propagating the view that the organisms of epidemic meningitis should be divided into two definite species, viz., the meningococci and the parameningococci. Meningitis due to the latter form of organism was shown to be amenable to that which he terms antiparameningococcic serum, though refractory to meningococcic serum. Furthermore, Dopter later found it necessary to recognize at least three distinct types of parameningococci, which he designated, respectively, with the three Greek letters, alpha, beta, and gamma.

Nicolle, Debains, and Jouan, 1917, who have also made a careful study of the specific meningitis

organisms, recognize a Type A of organism, corresponding to the true meningococcus of Dopter and the Type I of Ellis, Arkwright, and Gordon; a Type B, corresponding to Dopter's alpha parameningococcus, possibly also to his beta organism, and likewise to the Type II of Ellis, Arkwright, and Gordon; a Type C, corresponding, at least partly, to the beta parameningococcus, which is agglutinated by C serum, and a Type D, corresponding to the gamma parameningococcus.

In brief, the multiplicity of meningococcic organisms that may be responsible for cerebrospinal fever has been rendered clearly evident, whatever the system of notation used to distinguish them. Since the beginning of the war, moreover, as pointed out by A. Netter, 1918, the ratio of samples of meningococci differing from the originally recognized type has proven increasingly large, and this, in view of the known occurrence of variations in seric specificity among different samples of organisms belonging to a given species, seems likely, even *a priori*, to have an important bearing on treatment.

Dopter, believing most cases of meningitis to be due to the typical meningococcus, at first deemed it sufficient to begin treatment with an injection of a monovalent antimeningococcic serum and to turn to other sera only when that first used had proven ineffectual or the identity of the invading organism as a parameningococcus had been ascertained. Experience with this type of treatment showed, however, that at times a patient treated with the antimeningococcic serum succumbed before the parameningococcic infection actually present and responsible had been identified. Netter was therefore led to emphasize the fact that in meningitis the earliest possible use of an efficacious serum of whatever nature and composition, is the chief necessity, and that since the employment of a monovalent serum at times resulted in a fatal termination that might have been preventable, a serum efficient against different groups of meningococcic organisms must be given from the start. This is rendered all the more essential in that where, as is often the case, laboratory facilities and the necessary technical skill are not available, recognition of the type of organism present in a given patient as basis for a more accurately specific treatment is out of the question.

At the Rockefeller Institute the advisability of using several types or strains of organisms in the preparation of antimeningococcic horse serum was early recognized. Netter, employing clinically Flexner serum prepared with a considerable number of bacterial samples from cases of cerebrospinal meningitis, obtained better results than he did from sera supplied by Wassermann, Kolle, and others. Whereas among the first forty-eight cases he subjected to serum treatment the total mortality was twenty-seven per cent., among thirty-one cases that received Flexner serum it was nineteen per cent.

(To be continued.)

**Dietetic Treatment of Liver Diseases.**—Allen Eustis (*New Orleans Medical and Surgical Journal*, August, 1918) says that the diet should consist essentially of an abundance of carbohydrates, and, while a transient glycosuria may be produced, this soon disappears as the liver cells regenerate. This must be selected according to the gastric function of the patient, and, if vomiting exists, glucose by drip proctoclysis or by hypodermoclysis must be resorted to. Where there is little disturbance with gastric function the following diet list should be selected from, and the patient maintained on this diet as long as a positive aldehyde reaction is obtained, or as long as there is an intestinal toxemia.

DIET FOR PATIENTS WITH DEFECTIVE LIVER FUNCTION.  
MAY TAKE.

**Soups:** All clear soups, vegetable broths, puree of corn, beans, peas, asparagus, spinach, celery, onions, potatoes and tomatoes.

**Eggs:** None.

**Fish:** None.

**Meat, Game or Poultry:** None.

**Farinaceous:** Oatmeal, rice, sago, hominy, grits, cracked wheat, whole wheat bread or biscuits, corn, rye and graham bread, rolls, dry and buttered toast, crackers, muffins, waffles, batter cakes, wafers, grape nuts, macaroni, noodles and spaghetti.

**Vegetables:** Potatoes (sweet and Irish), green peas, string beans, beets, carrots, celery, spinach, artichokes, alligator pears, eggplants, lettuce and onions. All vegetables except cabbage, cauliflower and turnips.

**Desserts:** Rice and sago with a little cream and sugar, figs, raisins, nuts and syrup, stewed fruit, preserves, jellies, jams, marmalades and gelatin; prunes, apples and pears, either raw or cooked.

**Drinks:** Tea and coffee (with cream, but not milk), grape juice, orangeade, lemonade, limeade and Vichy, cocoa. An abundance of pure water, cold or hot.

MUST NOT TAKE.

Veal, pork, goose, duck; salted, dry, potted or preserved fish or meat (except crisp bacon); oysters, crabs, salmon, lobster, shrimp, mackerel, eggs, turtle and ox tail soup, gumbo, patties, mushrooms, mince pie, cabbage, cauliflower, turnips and cheese; alcohol.

Negative tests for urobilinogen and indican extending over a week indicate that either eggs, fish, or easily digestible meats may be taken in moderation, this being limited to not oftener than once a day. The author finds that buttermilk, to which lactose has been added, is the best animal protein on which to start, and strongly urges a constant control of the diet by frequent examinations of the urine.

**Gunshot Wounds of the Knee Joint.**—H. H. Hepburn (*British Medical Journal*, September 28, 1918) discusses only those cases in which the synovial membrane was penetrated, except to point out that in the nonpenetrating cases joint suppuration has been strikingly diminished in frequency since the general adoption of immediate excision of the wound and primary surgical cleansing. In the penetrating cases, as seen at a base hospital, the first three days constitute the doubtful stage, during which indications for further surgical interference are most likely to arise. In cases which develop suppuration in the joint, repeated aspiration, with or without lavage through a cannula, does not give results which warrant delaying more efficient drainage. The joint should be aspirated once only and if the fluid shows evidence of active infection and the pus recurs, effective drainage

should be instituted immediately. The streptococcus has been the infecting organism in all cases which have required reopening. The operative treatment begins with the administration of omopon, and anesthesia is produced by nitrous oxide or ether. With as little movement of the joint as possible the skin is scrubbed with soap and water and washed with eusol. A tourniquet is applied to secure a dry field. An incision three or four inches long, centred opposite the upper pole of the patella, is made along the line of the anteroexternal margin of the femur. This is carried down to the synovial membrane, but not through it. The extrasynovial fibrous layer is then sewed to the skin by a continuous catgut suture through the whole length of the incision; this step is repeated on the inner side of the patella. The synovial cavity is then opened on both sides and the anterior portion of the cavity is irrigated clean with at least a gallon of warm saline solution, followed by one or two pints of eusol. With the knee slightly flexed a small catheter is passed first between and then along either side of the femoral condyles and these regions are similarly irrigated, the leg being alternately flexed and extended. When the return flow is clean the anterior portion of the cavity is again washed out with eusol and the tourniquet removed. Two Carrel tubes are passed upward under the quadriceps and two downward, one on each side of the joint. The part is then put up in a Thomas knee splint with about ten degrees of flexion and no traction is applied, in the hope that the posterior part of the joint cavity will become shut off, from the anterior and take care of itself. Half an ounce of eusol is injected into each of the Carrel tubes every four hours and the joint is thoroughly irrigated once daily for three days. Then the tubes are removed and replaced by two which lie superficially in the two incisions, these being allowed to close as rapidly as they will. When the synovial sac has been closed for ten days gentle passive movement of the joint can be started. Under this plan there were only two deaths and six amputations among fifty cases.

**Treatment of Empyema.**—T. Tuffier (*Presse médicale*, September 26, 1918), in pneumococcic empyema without sinus formation, first makes a simple intercostal incision in the region of the posterior axillary line and evacuates the empyema and false membranes. In nonpneumococcic empyema, costal resection is performed and followed by a very careful visual examination of the size and arrangement of the intrapleural purulent focus. Seven or eight Carrel tubes are then introduced in all recesses, even the most remote, and in all directions, and are fastened to the skin with an adhesive strip or silver wire. The second step in the treatment consists in chemical disinfection by injection of Dakin's solution through each tube every two hours. Every other day the exudate is taken from the superficial tissues, pus tract, and deep recesses, and bacteriologically examined. In five to thirty days, the microbiologic curve and nature of the organisms present show that the pleural cavity is sterile. The incision is then closed, care being taken to avoid an effusion of blood, and respiratory



exercises instituted to facilitate absorption of the pneumothorax. In some cases of empyema with a sinus already existing, rubber tubes enclosing silver wire are passed into the cavity and an x ray picture taken. Where the sinus is to be at once surgically dealt with, however, this procedure is dispensed with. A broad opening is made through the wound and the wound margins widely separated with a double retractor. Gray membranes over the surface of the lung are removed by simple rubbing and the shape of the cavity carefully inspected. Disinfection with Dakin's solution is then systematically carried out, with daily pulmonary gymnastics. The size of the pleural cavity is measured by ascertaining the amount of fluid required to fill it, and the extent of lung expansion calculated by comparison of the quantities of fluid injectable during inspiration and expiration. When bacteriological examinations show clinical sterilization—one bacterium in four fields or less—the antiseptic treatment is stopped. If three additional bacteriological examinations are negative, the case is ready for operation and suture. The entire sinus tract is removed and decortication of the lung, as completely as possible, effected as in Delorme's operation. The results of this are vastly better than formerly, for the operation is no longer carried out in a septic medium. Former surgical principles are now reversed, in that the lung is brought to the chest wall rather than the latter brought to the lung, with corresponding improvement in the result.

**Treatment of Catarrhal Pancreatitis.**—Hugh Morton (*Glasgow Medical Journal*, September, 1918) reports the successful treatment of a case of functional disturbance of the pancreas associated with achylia gastrica, and counsels against giving a prognosis in an apparently hopeless digestive disorder until all methods of making an accurate diagnosis have been exhausted. The patient, an overworked business man, complained at first of diarrhea, discomfort after meals, and general apathy; later, of a dislike for meat, borborygmi, offensive flatus two hours after taking food, white and greasy stools, and gradual loss of weight. The stomach showed no free hydrochloric acid, with a total acidity of twenty. The Wohlgemuth test showed a marked deficiency in amylolytic ferments; the Wolff-Jungians test suggested a benign rather than malignant achylia. Rennin and pepsin were but slightly deficient. The patient was put to bed in a nursing home, given meals at definite intervals, and enjoined to eat slowly and masticate well. Fats, meats, and eggs were restricted, but he was able to take considerable milk. Carbohydrates were given in the form of fine farinaceous food. To promote duodenal antiseptis, one of the following powders was given morning and evening:

R Hydrargyri cum creta, ..... 3 grains;  
Rhei pulveris, } ..... of each, 5 grains;  
Phenylis salicylatis, }  
Bismuthi subsalicylatis, ..... 10 grains.  
Fiat pulvis.

Hydrochloric acid was given with the food, at first in forty minim doses; later, in diminishing amounts, as the Ewald test meal showed spontaneous secretion of gastric juice. The acid was given with pepsin, thus:

R Acidi hydrochlorici diluti,  
Pepsini (puri), } ..... of each, 2 drams;  
Tincturae nucis vomicae, }  
Glycerini, ..... 1 dram;  
Aqua, ..... q. s. ad 6 ounces.

M. Sig.: Two drams thrice daily in water along with meals.

To assist starch and fat digestion, pancreatin was given about one hour after food:

R Pancreatin, ..... 2 drams;  
Tinctura cardomomi composita, ..... 4 drams;  
Glycerini, ..... 1 ounce;  
Aqua, ..... q. s. ad 6 ounces.

M. Sig.: Two drams thrice daily in water one hour after meals.

The remaining measures used comprised: Gastric lavage daily for four weeks with sodium chloride solution, two drams to the pint; biweekly injections of five mls of sea water plasma aseptically under the shoulder blades; a soap and water enema every morning, followed by rectal injection of a solution of urotropin and sodium benzoate, ten grains of each; to stimulate the liver, a cold compress over it every night, and removed in the morning. Under this treatment the patient rapidly improved. In five weeks the free acid and pancreatic secretion were normal.

**Serum Therapy in Gangrene.**—J. Mairesse and J. Régnier (*Presse médicale*, September 9, 1918) report on four months' experience in the French Army with an antiperfringens serum supplied by the Institut Pasteur of Paris. Examining the flora of wounds in 1,016 cases, the authors found 197 instances of infection with rodlike organisms of the perfringens type; in many cases the identity of the organism was verified by culture. These organisms, in common with other bacteria, appeared in the wounds at the seventh or eighth hour after injury. Each of the 297 positive cases was given at once, before surgical intervention, an injection of antiperfringens serum—twenty mls in 247 cases and forty mls in fifty cases more heavily infected. Twenty-five patients developed gangrenous lesions requiring repetition of serum treatment, and five died of gas gangrene. Three of these deaths occurred early in the series, when the amount of serum given was relatively small, owing to the fear of serum disease. Both of the other two fatal cases had penetrating shell wounds of the thigh; in neither instance was the entire track of the missile exposed at the operation. Gangrene appeared suddenly on the third day and was followed by death in ten hours. These cases illustrated the usual modification of the manifestations of gas gangrene by serum, showing absence of gas formation and of odor, ruddy muscles, and preservation of the normal softness of the superficial tissue layers. Of the twenty-five cases requiring curative in addition to the initial prophylactic injections, nearly all received but eighty to 100 mls of serum altogether; most of them showed injury to arterial trunks. The serum treatment always restricted the gangrenous involvement below the level of arterial injury, and likewise prevented centripetal extension of the disease. Conservative surgical treatment was facilitated by it.

**Loss of Achilles Reflexes in Intensive Arsenical Treatment.**—Sicard and Roger (*Paris médicale*, June 29, 1918) call attention to destruction of the Achilles tendon reflexes as an early sign of chronic arsenical poisoning in paretics subjected to intensive neocarsenobenzol treatment in the daily intravenous dose of 0.3 gram, up to an aggregate dose of twelve to twenty grams. The loss of the reflex indicates a latent arsenical neuritis of the internal popliteal nerve, as yet unaccompanied by disturbances of locomotion, pain or muscular atrophy, yet already resulting in certain quantitative modifications of the electric reactions in the involved muscles. Paretics subjected to such treatment show marked physical and mental improvement, but there is no clinical or humoral cure, the Bordet-Wassermann reaction in the cerebrospinal fluid remaining irreducible.

**Surgical Closure of Wounds.**—Georges Dehelly (*Annals of Surgery*, October, 1918) describes the precautions to be taken in the surgical closure of wounds, as follows: 1. The closure must be complete, as far as possible. If the suture is not complete there is re-infection from the exterior, generally from the skin. 2. The stitches should be without exaggerated traction. Tension of the stitches puts the skin in bad condition of defense against infection. 3. Under the cutaneous suture no cavity must be left in which secretions can accumulate. The secretions accumulated in the cavity constitute a very good medium for the culture of the bacteria. There is, however, a procedure which banishes complications when suture is not absolutely complete, or if there is reason to fear a hematoma, or if there is any oozing whatever. This happens often in the secondary closure of stumps with resection of scar tissue and bone ends. In these cases cutaneous suture is made as complete as possible, but one or two instillation tubes are left under the skin to sterilize the subcutaneous cavity by the Carrel-Dakin method, without the necessity of removing stitches, if there is some inflammation after the operation.

**A Healing Paste for Ulcerated Wounds.**—Morlet (*Presse médicale*, September 12, 1918), in view of the favorable results obtained in the treatment of all forms of ulcerated wounds—except those due to syphilis—by application of the old fashioned occlusive dressing with strips of diachylon plaster, was led, in order to eliminate the attendant copious and malodorous discharge, to use a paste containing balsam of Peru, which is both deodorant, antiseptic, and keratoplastic. To render the paste absorbent and porous after desiccation, bismuth subnitrate was also included, the complete formula of the paste being: Balsam of Peru and bismuth subnitrate, fifteen to twenty grams of each, according to the extent of infection of the wound; fish glue and glycerin, fifty grams of each, and water, 100 grams. This constitutes a semi-occlusive dressing which, while tending to dry the wound, also allows any pus formed to pass out. Fish glue is employed in preference to any other form of gelatin in order to obviate all risk of infection with tetanus. Wounds to be dressed with the paste are first cleansed with alcohol and their margins loosened. A bandage impregnated with

the hot paste is then applied, covering the wound. The dressing is allowed to remain from twelve to fifteen days. According to the size of the wound one or two dressings are required, rarely three. To promote formation of a good new epidermis the patient is allowed to get up and walk about during the course of the treatment, the act of locomotion having the effect of an actual massage of the wound.

**Organotherapy in Wounds.**—Serge Voronoff and Evelyn Bostwick (*Presse médicale*, September 9, 1918) report that, after much experimentation at the Collège de France, they were able to cause healing of extensive and deep wounds in a few days, by applying locally the pulp of sex glands procured by castrating young animals. The cells of these glands, through the secretion they contain and which is absorbed by the wound, exert an intense accelerating action on the process of granulation. The organ found most effectual in these experiments would, *a priori*, have been considered that most suitable, owing to its especial vital energy. Animals deprived of these organs are known to accumulate fat at the expense of their muscles and to become apathetic and passive. In the wounds treated with this material, its use often had to be discontinued after a few days in order not to exceed the results sought and cause projection of new tissue beyond the level of the wound cavity by reason of a too intense development of granulations. With the aid of this treatment its sponsors hope to spare the wounded long months of suffering and considerably shorten their stay in hospitals. This method is being tried at Carrel's hospital.

**Fusion Treatment of Vertebral Tuberculosis.**—Russell A. Hibbs (*Journal A. M. A.*, October 26, 1918) presents the results obtained by the fusion operation in a series of 210 cases of spinal tuberculosis. The operation was performed more than three and a half years ago in every case. The operation consisted in the fusion of the vertebrae over an area including the affected vertebrae and at least two healthy ones at each end. This was accomplished by removal of all nonosseous tissue from between the lateral articulations, the laminae, and the spinous processes, and the securing of bony contact at all of these places. Of the entire group of cases nearly seventy-five per cent. have been cured, about ten per cent. are still doubtful cures, and about fifteen per cent. have died. In 139 of the cases there has been no increase in the deformity, while in eighteen there was a definite increase. Five of the deaths occurred in patients who had been definitely cured of their Pott's disease. Three of the patients in the series had had previous bone graft operations, but in none was there any bony fusion, and all of the patients had evidences of active disease still persisting. In only four of the fusion cases did fusion fail to take place at even one single point, and in these the failure was probably due to imperfect technic. The effect of the fusion in all cases was apparently to hasten cure of the spinal disease, in spite of the fact that the average duration of the disease, before the operation, had been nearly four and a half years. It is suggested that even better results can be expected if the operation is performed at an earlier stage.



**Serum Treatment of Type I Pneumonia.**—Lesley H. Spooner, Andrew Watson Sellards, and John H. Wyman (*Journal A. M. A.*, October 19, 1918) obtained a mortality of twenty per cent. for Type I pneumonias when treated with a low titre serum before the outbreak of influenza in their camp. After this epidemic had invaded the camp the mortality of Type I cases of pneumonia treated throughout with low titre serum, or with low titre at first and high titre later, was about double that recorded before the influenza epidemic. In contrast to this, the Type I cases occurring during the epidemic which were treated throughout with high titre serum gave a mortality of only seven per cent. From these observations the use of large amounts of low titre serum was deemed inadvisable. It was noted incidentally that the *Bacillus influenzae* was established by careful bacteriological investigations as the causative agent of the influenza epidemic at the camp.

**Treatment of Influenza Pneumonia with Convalescent Human Serum.**—L. W. McGuire and W. R. Redden (*Journal A. M. A.*, October 19, 1918) tried the use of serum from convalescent human cases of influenza as a treatment for influenza pneumonia in thirty-seven consecutive patients. At the time of writing thirty of the patients were convalescent, six were still under treatment and one had died. Of those under treatment two were much improved, two were not improved, and two had received only one dose of serum. The serum was obtained from convalescents within a week to ten days after their temperature had become normal, each patient giving about 800 mls of blood in two bleedings. The serum was tested by the Wassermann test and also against the recipient's corpuscles. The serum was given intravenously in doses of seventy-five to 125 mls, repeated at intervals of eight to sixteen hours. The average total amount given was 300 mls, though two patients received from 600 to 700 mls each. Different sera were found to vary widely in potency, some having no effect whatever. The effects of the serum treatment were usually quite evident within the first twenty-four hours and the best results were obtained when the treatment was begun within the first forty-eight hours after the development of the pneumonic complication. Efforts were made to test the potency of the human serum by complement fixation or by agglutination, but no successful method was found.

**Cranioplasty.**—L. Dufourmentel (*Paris médical*, June 29, 1918) believes the use of a metal plate to be the only procedure affording an assurance of stout protection of the underlying soft tissues in extensive wounds of the cranium. The author's mode of operation is effected in two stages. In the first, which may be carried out under local anesthesia, the opening in the cranium is exposed either by incising the scar or by making a flap. The scar in the dura may or may not be incised. The essential step is to carefully expose the margins of the bony opening. An impression of the opening is now secured with a block of wax previously sterilized by boiling and allowed to cool until soft—to about 40° C. The wound is then temporarily closed

with a few tissue clamps. Next the cast is taken to a dental or other appropriate laboratory, where a plate of gold or other chemically resistant metal is made from it; for large openings, aluminum is best because of its lightness. The plate is fashioned as an inlay, i. e., must fit precisely in all the irregularities of contour of the opening. It may or may not be perforated to facilitate adhesion of the adjacent tissues. The plate covers the bevelled bony margins and rests solely upon them. The second stage, which is very simple, takes but a minute or two, and is carried out a day or two after the first, consists in removing a few clamps, introducing the plate under the skin to its proper position, replacing the clamps, and applying a sufficiently firm dressing. The tissues adjacent to the plate subsequently hold it in place just as they would fragments of bone or cartilage. Tolerance of the plate for an indefinite time can be expected. That osteoperiosteal or bone transplants may lead to restoration of bony continuity in cranial wounds remains to be demonstrated; meanwhile the metallic plate is the best corrective device.

**Treatment of Severe Burns.**—Byron N. Lingenman (*Indianapolis Medical Journal*, September, 1918) says that the most important things to be considered are: 1. Does it exclude the air in the early stages? 2. Does it prevent or combat the shock? 3. Does it favor sloughing of the tissues? 4. Does it maintain the sterility of the tissues? 5. Does it injure the newly formed granulations? 6. Is it painless in application? 7. Does it permit the immobilization of the tissues and limbs in the best possible position? The combination of the open and closed treatments might be better than one alone. The open treatment might be better in the sloughing stage, while the closed might be better in the later stages. The following outline is proposed: 1. Relieve the pain by giving morphine and excluding the air in early stages either with paraffin or continuous bath. 2. Prevent or combat the shock by providing artificial heat, giving alkaline drinks, and by intravenous injection of sodium bicarbonate. 3. If the wound contains clots or other debris, place the patient in a continuous tub bath for a few hours, but do not forcibly remove burned skin. 4. Remove from the tub, and irrigate according to the Carrel-Dakin method, together with daily exposure to the sun, light, and air. Continue this treatment during the sloughing period, eight or ten days. 5. If only a second degree burn treat (after sloughing period) by the paraffin or adhesive strip method, keeping the limbs in the proper position. If a third degree burn and wounds are sterile, try skin grafting.

**Treatment of Empyema by the Carrel-Dakin Method.**—George A. Stewart (*Medical Record*, August 10, 1918) reports forty-five cases of empyema treated by the Carrel-Dakin method at the Rockefeller Institute, with twelve deaths. At first spontaneous closure was allowed to go on, but later secondary suture was done after cultures were sterile, which, on the average, was fourteen days. In such cases primary union was obtained in seventy per cent. of all cases. The hospital stay of these patients was shorter than the average, and none of them was discharged from the army for disability.

# Miscellany from Home and Foreign Journals

**Toxicity of Eucalyptus Oil and Myrtol in Human Beings and Animals.**—Lewellys F. Barker and Leonard G. Rowntree (*Bulletin of the Johns Hopkins Hospital*, October, 1918) in a review of the literature of myrtol poisoning, found thirty-four such cases, to which they add one of their own. Undoubtedly certain people exhibit an idiosyncrasy, as the symptoms of intoxication occur after minute or therapeutic doses in some cases. An analysis of the literature divides the cases into two groups, showing different syndromes which follow as evidences of intoxication with derivatives of myrtaceous plants—eucalyptus oil, myrtol, cineal, etc. These the authors call a myrtogenic neuropathy and a myrtogenic dermatopathy, and the latter may in some instances be a specific instance of the neuropathy. The first twenty-nine cases reviewed belong to the myrtogenic neuropathy group, while five cases, including the authors' patient, showed remarkable cutaneous manifestations. The skin lesions may be erythematous, urticarial in type, or an outspoken dermatitis. In seven of the cases there was a fatal termination. Experiments on dogs and cats proved that the symptoms of intoxication of the nervous system observed in man can be duplicated by subcutaneous and intraperitoneal administrations of myrtol. The report of the authors' case is as follows: The patient, a man of forty-two years, complained of cough and a large amount of offensive sputum. After physical and x ray examinations, the diagnosis was determined to be bronchiectasis, chronic putrid bronchitis, fibrous peribronchitis, and chronic pleuritis, right. In addition to general measures, three minims of myrtol in capsules to be taken three times a day were prescribed to relieve the fetid bronchitis. The patient had previously taken oil of eucalyptus and oil of sandalwood, which he continued to use along with the myrtol. Later the patient wrote that after taking two capsules three times a day for eight days his face became discolored, with puffiness under the eyes; his forehead looked as though it was going to break out with eczema, his left eye was nearly closed and the right eye partially closed from the swelling. The drug was stopped, but the swelling lasted a long time. His cough increased markedly, his heart action became more rapid, and he was greatly depressed. The discoloration of the skin and eruption covered the entire chest.

**Function of the Gallbladder: An Experimental Study.**—F. C. Mann (*New Orleans Medical and Surgical Journal*, August, 1918) finds that the functional significance of the gallbladder seems to be intimately connected with the fact that it is mechanically adapted to change the escape of bile into the intestine from a more or less continuous flow into an intermittent one. Studies on animals—practically always dogs—with biliary fistula, show that the liver secretes bile continuously, although the rate varies considerably. In most instances, however, in which duodenal fistula have been formed, the escape of bile into the intestine has been inter-

mittent. No studies seem to have been made on animals without a gallbladder in regard to the flow of bile into the intestine, but it seems that, in all probability, it would be continuous with liver secretion. Observations have been made in the rat and pocket gopher, but the experiments were complicated by the necessary anesthetic. Under such experimental conditions, the entrance of bile into the intestine in these two species was continuous, except for the slight changes produced by respiration. The fact that the sphincter seems to be inactive in species without a gallbladder would imply that this was quite the normal condition. A study of some species of animal without a gallbladder, in which it is possible to make a permanent duodenal fistula, will be necessary to definitely prove this point. The action of the gallbladder seems to be as follows: The liver secretes bile more or less continuously. Under normal conditions this is secreted under very low pressure. The sphincter at the opening of the common bile duct is normally under tone, which is great enough to increase the intraduct pressure above the resistance offered to the entrance of bile into the gallbladder. At intervals the sphincter relaxes, allowing bile to flow into the intestine. The mechanism controlling the action of the sphincter is not known, but is reported to be under nervous control. The gallbladder not only acts as an expansile chamber for the accommodation of the difference in rate of bile secretion and bile discharge, but it also prevents some of the fluctuations in intraduct pressure which would occur during respiration in all instances in which the duodenal sphincter is active. It should be appreciated that in all species in which the sphincter is active some mechanism like the gallbladder is necessary.

**Acute Syphilitic Meningitis with Turbid Cerebrospinal Fluid.**—Paillard and Desmoulière (*Presse médicale*, September 12, 1918) report the case of a Chinese laborer who was brought to a hospital with a meningeal syndrome and subfebrile temperature of about 38° C. Lumbar puncture yielded a frankly turbid fluid, macroscopically similar to that of cerebrospinal meningitis. Immediate examination of the fluid showed very pronounced lymphocytosis and mononucleosis, without any bacterial organism. The Bordet-Wassermann proved to be strongly positive in the cerebrospinal fluid and blood, in spite of the absence of any syphilitic lesion of the skin or mucous membrane upon careful clinical examination. Intravenous injections of neosalvarsan, with mercurial treatment, rapidly overcame the morbid manifestations. This case is emphasized as showing that an acute syphilitic meningitis may appear at such an interval from the secondary stage as to be entirely unaccompanied by secondary disease phenomena; that the condition may be subfebrile—a condition existing six days in this instance; and that the cerebrospinal fluid in such a case may be macroscopically turbid and of the type of an aseptic puriform meningitis.



**Effects of Various Systemic Agents on Superficial Hemorrhage.**—Paul J. Hanzlik (*Journal of Pharmacology and Experimental Therapeutics*, September, 1918) studied the result on superficial hemorrhage of various drugs administered to dogs intravenously, intramuscularly, and subcutaneously. Epinephrin proved to be the most effective hemostatic agent; tyramine was less successful, while pituitary extract was variable in its action. In one experiment a fatal dose of ergot lessened the bleeding, while a large dose of digitalis completely arrested it. The effects of the following agents on bleeding are roughly parallel to the changes in blood pressure: coagulen (Cila); kephalin (Howell); thromboplastin (Squibb); horse serum; stypticin; gelatin; saline; emetine; and possibly peptone. Nitrite and hydrastis increased the bleeding, while the blood pressure fell. The thromboplastic agents might give different results with prolonged administration, but the investigation was interrupted before this could be determined.

**Morbid Anatomy of Spanish Influenza.**—E. Rivaz Hunt (*Lancet*, September 28, 1918) outlines the symptomatology of the disease and points out that it is characteristic in most cases. Nevertheless the disease may readily be confused with a number of other conditions prevalent among the soldiers at the front, including malaria, colon bacillus bacilluria, malignant endocarditis, trench fever, the enteric fevers, and cerebrospinal fever. The differentiation between these is very greatly helped by a blood count, trench fever usually showing a moderate leucocytosis; malaria, endocarditis, scarlet fever and cerebrospinal fever a marked leucocytosis; the enteric group a leucopenia; and influenza a count between 5,000 and 9,000. In influenza there are evidences of slight myocarditis and, post mortem, some degree of myocardial involvement was always found. Other methods of differential diagnosis than the blood count must be employed, but the latter gives a definite clue to the probable diagnosis. Some cases of influenza begin with occipital headache and pain in the neck and even show a doubtful Kernig's sign. In such cases a lumbar puncture may be necessary for definite diagnosis.

**Study of the Leucocytes in an Epidemic of Influenza.**—Roy P. Forbes and Helen A. Snyder (*Journal of Laboratory and Clinical Medicine*, September, 1918) report a study of the blood count made on fifty cases, diagnosed as influenza, at Camp Hancock. The epidemic there was highly contagious, but was a comparatively mild infection of the respiratory tract. In only one instance, which proved to be the only fatal case in the camp, was the influenza bacillus recovered. The organism was found in two blood cultures and in post mortem cultures taken from the lung and spleen. The present work is in accord with that of other observers—that the influenza bacillus is rarely found, and then only in very severe or fatal cases. A summary of 202 counts in fifty cases showed the average of leucocyte counts to be as follows: On the first day of the disease it was 6,166; on the second day, 5,378; on the third day, 7,522; on the fourth day, 8,157; on the fifth day, 8,059, and on the sixth day, 7,885. A complicating bronchopneu-

monia seems to decrease rather than increase the lymphocytes. The authors state that absence of hyperleucocytosis or actual leucopenia, and relative lymphocytosis are characteristic of influenza. They believe that the leucocyte count is of value in the early diagnosis of influenza, and as a means of differentiating it from scarlet fever rash.

**Fracture of the Spinal Column with and without Cord Injury.**—Norman Sharpe (*Journal A. M. A.*, October 26, 1918) says that we usually think of fracture of the spine in terms of cord symptoms, the bony lesion being itself of minor importance. This is true in the great majority of cases, but there is a small number in which there is fracture without cord injury, and in these the diagnosis of fracture is frequently not made. Five such cases are reported by the author and emphasis is laid upon the fact that in the process of repair of the overlooked fracture the callus formed may produce serious cord symptoms which could have been prevented if the diagnosis had been made and proper immobilization of the spine practised from the first. It is therefore very necessary to subject all cases of suspected injury of the spine to careful clinical and röntgen ray examination to prevent later ill effects from unsuspected fracture. It is also conceivable that in such cases a sudden movement by the patient might cause displacement with serious and permanent injury of the cord.

**Occurrence and Significance of Bacillus Welchii in Certain Wounds.**—James L. Stoddard (*Journal A. M. A.*, October 26, 1918) investigated a consecutive series of 137 cases of war wounds, excluding only trivial and clean bullet wounds. The wounds ranged between one and eleven days old when first seen and all had been thoroughly treated in a casualty clearing station. The *Bacillus welchii* was found in twenty-three per cent. by culture; while smears showed the organisms in only fourteen per cent. of the cases in any appreciable numbers. Such figures are much lower than for wounds seen during rush periods or for wounds in the period before excision was the common practice. There was definite muscle infection with gas production in only three per cent. of these cases. There was only a very small difference in the results between the excised and the unexcised wounds, showing good judgment on the part of the surgeons who first saw the patients. The organisms tended definitely to persist in greater numbers until the eighth day in the gas infected than in the noninfected wounds. In the cases without gas infection the number of the bacilli became very small early in the history of the wound. The organism did not flourish well in the surface exudate, or for long periods. In wounds of the type considered the presence of large numbers of the organisms was good evidence of gas infection, and was the stronger the older the wound; on the other hand their absence was not conclusive evidence of lack of infection. The results of smear examinations were of more value than those of cultures in determining the likelihood of the occurrence of gas infection. The presence of large numbers of *Bacillus welchii* in smears was a contraindication to suture of the wounds, but small numbers were not necessarily so.

**Antimeningitis Vaccination; Agglutinins in the Blood of Chronic Meningococcus Carriers.**

Frederick L. Gates (*Journal of Experimental Medicine*, October, 1918) describes the use of a meningococcus vaccine suspended in salt solution which was given as a prophylactic to about 3,700 volunteers at Camp Funston, Kansas. Preliminary trials were made on a small group of men to establish the proper dose, and the vaccine was finally given subcutaneously in three injections of 2,000 million, 4,000 million, and 4,000 or 8,000 million cocci at weekly intervals. The reactions were usually mild. The first injection appeared to cause less general and local reaction than the typhoid prophylactic, and the second injection caused even less discomfort than the first. The question of individual susceptibility is important, as a few patients suffered severely from doses which caused no general discomfort in the great majority of the men. In such cases the symptoms were partly those of meningeal irritation, and sometimes simulated the onset of meningitis. A study of the blood serum of vaccinated men showed that specific meningococcus agglutinins were demonstrable, as compared with the serum of normal controls. An interesting point is the demonstration of agglutinins in the blood serum of chronic meningococcus carriers. Evidence is thus adduced that the relative immunity of meningococcus carriers to epidemic meningitis may be owing to the presence of specific antibodies in the blood stream.

**Epidemic Jaundice.**—J. Cantacuzène (*Bulletin de l'Académie de médecine*, September 17, 1918) presents data concerning an epidemic of infectious jaundice which occurred during the summer of 1917, in Roumania, and was characterized by mildness and widespread extension of the disease. The epidemic began in May in small separate foci, spread throughout the army with great rapidity, matured in August, and subsided in October. The civil population did not begin to be affected until July. At the time of the appearance of the epidemic the Roumanian army, vaccinated against typhoid and paratyphoid infections ten months before, was beginning to lose its immunity. Systematic revaccination in September was followed by cessation of the epidemic. The highly communicable nature of the disorder was shown in the frequent spread of an epidemic, following the arrival of a single case in a previously unaffected village, factory, or company. The incubation period proved to be four to seven days. In the first two months of the epidemic the clinical picture showed pronounced uniformity, the onset being marked by slight fever which subsided in a day or two, followed by nausea, sometimes vomiting, epigastric discomfort, gallbladder tenderness, jaundice, pronounced asthenia, pains, especially in the lower extremities, decolorized stools in half the cases, slow pulse, and bile pigments and urobilin in the urine. The disease ran its course without fever in one to two weeks. No complications occurred, and there was practically no mortality. Later, there appeared a hardly noticeable, attenuated form of the affection, as well as cases with fever persisting two to three weeks. In pregnant women the

disease was almost always fatal; the pulse rate was high, the temperature low, jaundice intense, and coma followed. Abortion occurred in the later days of the disease. Autopsy in such cases showed fatty degeneration of the liver and lesions of the adrenals. Blood culture revealed, in one third of all cases of the ordinary form, paratyphoid bacilli—usually of the B variety, but with atypical characteristics. In patients inoculated against typhoid and paratyphoid seven or eight months before, the jaundice caused a marked return of the previously lost agglutinating power in both the typhoid and the paratyphoid organisms.

**Retrograde Movement of Ureteral Calculi.**

Herman L. Kretschmer (*Journal A. M. A.*, October 26, 1918) reports two cases of ureteral calculus in which the calculus was shown to have wandered upward in the ureter. In one its retrograde movement carried the stone from about one inch above the ureteral orifice in the bladder to opposite the fourth lumbar vertebra; in the other the range of wandering was between approximately similar points. Such retrograde movement might readily lead to error in operating unless the stone was localized just prior to operation. Such was actually done in one case and the patient was spared a wholly fruitless and unnecessary operation. Such retrograde movement of the stones in the ureter might be accounted for on the basis of marked dilatation of the lumen above the stone, permitting it to fall about with gravity; or as resulting from reversed peristalsis in the ureter. Analysis of the literature and of the results of animal experiments showed that both explanations might be accepted, the latter accounting for retrograde movement in cases without dilatation of the ureter.

**Association of Rickettsia Bodies in Lice with Trench Fever.**

—J. A. Arkwright, A. Bacot, and F. Martin Duncan (*British Medical Journal*, September 21, 1918) conclude that a very close correlation exists between the presence of rickettsia bodies in lice, or their excreta, and trench fever. They conducted many carefully controlled experiments which show that large numbers of these bodies can almost invariably be found in the excreta or the bodies of lice about ten days after the latter have fed on a trench fever patient. Daily examination of lice after an infecting meal shows evidence of these bodies for the first time on the fifth day, when they are present in small numbers only. Their numbers rapidly increase during the next three or four days. When a box of lice has once become infected with these bodies they continue to be present for periods of two to three weeks, or until all of the fed lice are dead. Not all the lice from an infected box show the rickettsia bodies, only a small proportion doing so in the first week, while the great majority are infected by the second and third weeks. The lice can be infected by trench fever patients during the fever, between the attacks, or even several weeks after an attack. Normal lice, fed on persons who have never had trench fever, do not show rickettsia bodies. From these and other experiments, including inoculation tests on volunteers, the presence of rickettsia bodies in lice is shown to be directly associated with trench fever.



# Proceedings of National and Local Societies

## PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Meeting Held Wednesday, March 27, 1918.*

The President, Dr. FRANK C. HAMMOND, in the Chair.

### SYMPOSIUM ON NEPHRITIS.

#### Symptoms and Diagnosis of Nephritis.—Dr.

DAVID RIESMAN called attention to the fact that there were two diseases which manifest themselves in most protean ways—hysteria and uremia. Uremia was so much more common than true hysteria that it was important to know its peculiar habits. The cause of uremic poisoning had not yet been established, but it was acknowledged that it exerted itself largely upon the central nervous system. Every one who had had hospital experience in a case of coma knew the difficulty of determining the cause. The comas of the various infections had no very definite earmarks attending them. In a case seen by him recently it was very difficult to decide between uremic coma and that attending acute cerebrospinal meningitis. Alcoholic coma and the coma of brain injuries were often difficult to differentiate from uremic coma. Perhaps the most important factor here was the catheterization of the patient and the examination of the urine. Enlargement of the heart and hypertension pointed toward uremia, and the eyeground changes were important in differential diagnosis. It was difficult to determine the differential diagnosis of uremic hemiplegia and uremic aphasia. Those men who were trained in the Philadelphia Hospital would remember how often a case diagnosed as apoplexy showed at autopsy no hemorrhage in the brain. The condition of uremic hemiplegia or of monoplegia was transitory in character, with a tendency to recover. There was nearly always hypertension with cardiovascular changes of chronic Bright's disease. It was not known whether, in such cases, one was dealing with a poisoning of the nerve cells or with some vascular crises in the brain; the transitory character of the picture might be compatible with either. Another nervous condition was that of uremic headache, which might be the only symptom of which the patient complained. It might be so intense that brain tumor was suspected. There were also severe neuralgias referable to uremic intoxication. Uremic narcolepsy also presented difficulties in diagnosis. Such a case had been brought into one of the hospitals in a state of sleep exactly like that from the effect of drugs. The breathing was natural. The urine contained no albumin, but always granular casts. Autopsy showed the kidneys to have been not much larger than a silver dollar. The only symptom in this case was the continued narcolepsy during six days. Doctor Riesman thought that gastrointestinal symptoms were often very important. Uremic dysentery, as pointed out by an English writer, was rare, but did occur at times. It seemed as though the uremic poisoning acting upon the colon produced a severe colitis. There might be

constant itching of the skin with no other involvement than that of chronic interstitial nephritis. The so called hemorrhagic diathesis was another manifestation of uremia; a patient would suddenly bleed from the mouth and nose and perhaps from the bowel and would show patches of hemorrhage in the skin. In all cases of this nature which Doctor Riesman had seen there had been contracted kidney with high blood pressure and injured heart. Uremic pericarditis might also be seen. In one such case the man had shortness of breath with symptoms of mediastinal tumor; tapping showed hemorrhagic fluid in the pericardium. At autopsy chronic interstitial nephritis only was shown. The diagnosis of uremia and of Bright's disease in general must be made, not upon one element alone, but after the consideration of many factors. The urinary analysis might be misleading; he had seen cases of Bright's disease with no albumin. There might be greatly contracted kidney with low blood pressure. A most valuable point was that with the albuminuria of heart disease the urine was nearly always highly colored and contained a large amount of urates. The albumin was generally small in amount and casts were few; but, it would often try the best men's skill to determine whether the case was one of Bright's disease with cardiac failure or purely a heart condition.

#### Functional Tests of the Kidney in Diagnosis and Prognosis.—Dr. O. H. PERRY PEPPER said

that although the kidney, of all the organs of the body, lent itself most readily to a study of its function by functional tests, such testing was difficult and was complicated by several factors. Three difficulties to be remembered in this connection were the complexity of kidney function, lack of final knowledge regarding the mechanism of urinary secretion, and the importance of extrarenal factors. In the tests of renal function not only must the quantitative appearance of the ingested substance be measured, but the time relation was equally important, for even a markedly diseased kidney would always eliminate the increased amount of water, salt, or urea, if given time. It was hardly necessary to refer to the entire uselessness of estimations of urinary urea if unaccompanied by exact control of the intake of all protein food and of the nitrogen loss in the feces. The extrarenal factors were too many for any reliance to be placed on the test except under extremely favorable conditions. The separate tests of the ability of the kidneys to dispose of known amounts of water, protein, and salts might be combined and the patient placed on a diet containing known quantities of these substances and the results observed. This, however, was usually done in conjunction with studies on the blood. The determination of the freezing point and the estimation of urinary toxicity were other tests, though not widely employed. The blood sooner or later showed the results of any depreciation of renal activity. Attempts had been made to express the relationship

of the urinary urea and the blood urea in a formula which would give the functional efficiency of the kidney in mathematical terms as an index. None, however, had proved wholly satisfactory and the plan was scarcely one for general clinical use. Another group of tests was based upon the introduction into the body of some substance foreign to the organism but which was eliminated by the kidneys and of which it was possible to determine the rate and quantity of excretion. Of the various tests, the three of special usefulness were: 1, The testing of the ability of the kidneys to eliminate water and to dilute or concentrate the urine; 2, the estimation of salt test; 3, estimation of blood urea nitrogen; and 4, the phthalein test. Diagnosis by functional test might be considered from the following points of view: 1, The ability of the kidney to perform a given function; 2, an estimate of the degree of renal impairment by nephritis by one or more tests; 3, an estimate of the patient's condition at the time; 4, conclusions concerning the anatomical lesions in the kidneys. This, however, could not be successfully done with our present knowledge. The test of provoked polyuria was of chief value in the recognition of acute nephritis, simple degenerative nephritis, and of passive congestion of the kidneys. The test of chloride elimination often gave the earliest evidence of impaired renal function. The phthalein test was the best all round test of renal function, and there were few renal diseases in which it did not give a fairly true estimate of the renal function. Its especial value was in chronic glomerulonephritis. These tests aided in prognosis only as they led to a correct diagnosis; a zero phthalein might occur in an acute nephritis and recovery ensue; or, it might appear as a warning of imminent fatal uremia. In prognosis and for the control of treatment, the functional tests must be repeated at intervals to obtain the best results. The importance of carefully excluding extrarenal factors and of always interpreting the tests in conjunction with routine study of the urine, the blood pressure, and of the patient should not be overlooked.

**Treatment of Nephritis.**—Dr. WILLIAM E. HUGHES said that the picture of Bright's disease showed a condition due to retention of poisons, deterioration of the blood, interference with function of various organs, and changes in the circulatory apparatus. The fact must also be taken into consideration that the crippled condition of the kidney was aggravated by attempts to secrete even a normal amount of excrementitious material. Treatment must include the attempt to prevent ingestion of further poisons, to take as much work off the kidneys as possible, to stimulate faulty function of other organs, to restore the blood condition, to minimize the injurious effects of circulation, and possibly to stimulate the faulty kidney to renewed activity. The methods of treatment were, therefore, indirect rather than direct. The matter of food was the most important in treatment. Of foods which were the least injurious milk probably stood at the head. Sweet milk, buttermilk, whole milk, or skim milk were, in extreme cases of Bright's disease, the ideal diet. Meat was the most

injurious form of diet, on account of the high nitrogen content. The nitrogenous foods apparently were those which poisoned most seriously and permanently. It was necessary, of course, to have a certain amount of nitrogenous intake, except for a short period of time. Eggs, rather than meat, might be adopted as the nitrogenous constituent of the food. It had been Doctor Hughes's practical experience that a moderate amount of salt in the diet did no harm. In the use of water we were likely to go to extremes and, by increasing the watery content of the blood, raise the blood pressure and thus produce a secondary danger to the kidney function. The effervescent beverages contained a certain element of danger in their stimulative character. The state of the digestion was a most serious factor in Bright's disease and one to which treatment should be directed with the closest attention, because through the absorption of toxins in the intestinal tract additional irritation in the kidneys was brought about. Intestinal antiseptics seemed to offer rather slight reliance, but of these probably calomel was the best. Colonic irrigation should also be considered. Among the poisons that were operative in the production of Bright's disease or in its aggravation were those produced by fatigue. In no other class of disease was the wearing apparel so important as in Bright's disease. Doctor Hughes believed that woolen underwear of proper weight, worn all the year round would serve an exceedingly useful purpose. In the matter of climate, California probably offered the best in this country and next to that, Florida. Undoubtedly patients with Bright's disease had their lives prolonged by removal to some such climates as these. We all seemed to be rather fanatical concerning good air and plenty of it, and not infrequently, an exacerbation of Bright's disease might be traced to too light bedclothing and too much fresh air at night. The skin circulation, of vital importance in cases of kidney conditions, was favorably influenced by baths and massage to a moderate degree; hot air baths also, in all cases of Bright's disease, were distinctly beneficial. Anemia as one of the ill effects of nephritis must always be borne in mind. The drug of most value in treatment was iron and, with it, pilocarpine in small doses would be found beneficial. The later stages of cardiac failure were treated as in other conditions. The dropsy of Bright's disease was in no way different from any other dropsy; there was the condition of diseased vessels, poor heart power, and wrongly mixed blood. Of cardiac stimulants digitalis was the best. It must be borne in mind that many cases of apparent apoplexy "stroke" were really cases of uremia, and that vigorous treatment must be directed to the kidneys. As far as possible the kidneys should be relieved of work and the intestinal tract cleaned out to prevent further absorption of poisons. Where there was much hypertension and the patient was fairly well nourished and not particularly anemic, he should be bled and bled frequently.

Dr. M. HOWARD FUSSELL suggested that the name Bright's disease should be eliminated, for the reason that it was applied in many cases of nephritis, and



that, to the mind of the layman, it carried the idea of an absolutely fatal condition. There was no doubt that many cases of nephritis, if not curable, did not result fatally in short time. Therefore better, as Doctor Pepper had said, to use the term nephritis. While in the vast majority of the arteriosclerotic types, uremia, according to Doctor Riesman, could be easily recognized by the cardiovascular changes, in acute nephritis these changes were not present. Hemiplegia sometimes lasted until death. Doctor Fussell remembered a case, in the Episcopal Hospital, of a woman with a typical interstitial nephritis, who did not seem very ill but developed a left sided hemiplegia and died apparently of apoplexy, but at autopsy there was no sign of thrombus—nothing but the sclerotic arteries. Doctor Riesman had said that it did not make much difference whether the arteriosclerotic condition was recognized as the basis of certain cases of nephritis, so far as treatment was concerned, but Doctor Fussell had, that very afternoon, seen, in the University Hospital, a colored man who, it seemed, presented an excellent example of the condition due to a general arteriosclerosis. The man, fifty-five years of age, had suffered for some time with dyspnea and recurring attacks of edema of the legs. His arteries were like pipe stems; he had polyuria, with low phthalein output. From the results of treatment by rest and elimination, in all probability the case was one of general arteriosclerosis; it was not Bright's disease. It seemed a great mistake, from the standpoint of treatment, to consider such a case one of nephritis. Such a patient, given rest and placed in an old man's home, would live a number of years. It was true that albuminuria does not mean nephritis; it was also true, unfortunately, that a great many physicians believed that albumin in the urine meant nephritis. Notwithstanding our disappointments in the results of the removal of teeth and tonsils for the elimination of foci of poisons producing the nephritis the search for these foci should be continued and knowledge concerning the proper method of dealing with diseased teeth must be increased. In some nephritics, meat, however slight in amount, seemed to act as an actual poison. In treatment each case should be a law unto itself. In acute nephritis diuretics were absolutely harmful. There should be absolute rest and in cases of heart failure digitalis ought to be used.

Dr. WILLIAM DUFFIELD ROBINSON emphasized the necessity of study, by every method of research, to determine the cause of nephritis. In treatment much could be accomplished by a proper dietary, and he advocated one day of starvation a week. The usual quantities of fluid should be given but the tax of elimination was reduced with the lessened food intake. Regarding drugs, he strongly advised the use, in nephritis, of pilocarpine, which would result in the greater elimination of solids and the increase of the specific gravity. The essential point in the consideration of nephritis was to seek the cause of the abnormal content in the blood.

Dr. MOSES BEHREND said that any disrepute into which the operative treatment of nephritis may have fallen was probably due to the fact that most cases were brought to the surgeon too late and that the

cases were not properly selected. Cases of chronic interstitial nephritis did very badly as did those of interstitial nephritis in the aged on account of the arterial changes and the changes in the kidneys themselves. The most favorable cases for operation were those of acute parenchymatous nephritis. The best results had been obtained by Edebohls and Lloyd; the former had operated on about 110 patients, and the latter twenty-five or thirty. They gave a mortality of ten per cent. and claimed a cure in thirty-three per cent. of their cases with improvement in forty-three per cent.; this was an extremely good record. Doctor Behrend's own experience was not at all satisfactory. He had operated on six patients, three of whom were of the chronic parenchymatous type. The last case was that of a child of six years; death followed in from twenty-four to thirty-six hours. It was an extreme case, and operation was the last resort. He had operated for bichloride poisoning, stripping the kidneys, but the patient died, as these patients usually do in severe bichloride poisoning. In operation for eclampsia the best results had occurred after labor. Before the puerperium the results were rather fatal. Litchfield's mortality was 1.73 per cent. in fifty-three cases. Many writers, especially Lloyd, have said that a fibrous capsule redeveloped after decapsulation of the kidney and that this fibrous capsule was just as bad as the original capsule; this was denied by another writer. Opportunity for reoperating on these cases was naturally not very good. E. H. Goodman had noticed a rapid fall of blood pressure after decapsulation and this might be of some importance in this operation.

## AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE.

*Meeting Held at Philadelphia, September 20 and  
21, 1918.*

Dr. WILMER KRUSEN, Director, Department of Public Health and Charities, Philadelphia, in the Chair.

### THE REHABILITATION OF THE WOUNDED.

**Nature and Scope of the Problem.**—Dr. W. W. KEEN, of Philadelphia, said that the fundamental difference between the surgical conditions during the Civil War and the present world war was our ignorance, in 1861, and the enormous increase in our knowledge since that date. In chemistry and in physics the chief advances in fifty years had been made by experimental research. In biology and its subdivisions of medicine the same was true. The almost virgin fields of battle during the Civil War held few bacteria; hence, while tetanus was not common, it was deadly, killing nine of every ten victims. In the early days of the present world war it exacted a fearful toll of lives, exact figures of which could be given only after the war was over. As soon as a sufficient supply of the tetanus antitoxin for the huge numbers of the wounded was obtained the ravages of tetanus were checked, and as a result few died from lockjaw in the later stages of the war. Every hour of delay, however, in giving the protective serum meant a life lost. In the Civil War compound fractures killed two out of

every three; amputations averaged over fifty per cent. mortality. Only twenty-five per cent. of the cases of compound fractures were now fatal compared with sixty-six per cent. in the Civil War. Our victory over infection was the reason for the greatly diminished number of amputations done during this war. Moreover, the mortality from amputations during this war was low—in some series every patient recovered. The present war was waged on densely infected soil, the wounds were caused by high explosives, and there developed an unprecedented riot of infection utterly unknown prior to 1914. If the wounded could be brought to the surgeon in the few golden hours, two out of three could be saved. Out of 400 cases in Carrel's hospital in which primary healing could not be secured because of delay in reaching surgical aid, only six were failures. This was due to the researches of Dakin and the work of Carrel. While engineering and chemistry had done much to develop modern sanitation, bacteriology had been the most important factor in this movement. In 1861 we were wholly ignorant of the fact that the mosquito alone spread yellow fever and malaria; of the rôle of the fly in typhoid fever; of that of the flea and rat in bubonic plague, and of the fact that the louse was responsible for the deadly typhus and the wholly new disease, trench fever. Typhoid has been banished from our army. The following are Surgeon General Gorgas's figures: "In the entire army, numbering over 1,500,000 men at the end of December, 1917, there had been, during the year, 242 admissions of typhoid fever patients to hospitals, with eighteen deaths. During the corresponding period in 1861 when the Northern Army was being mobilized, there were about 9,500 cases of typhoid fever, with less than one quarter of the strength of the present army, with about 1,800 deaths." In the British Army ninety-nine per cent. of the soldiers were vaccinated voluntarily. During the past year there had been but one death ascribed to antityphoid vaccination in our more than 1,500,000 men. This would seem to be an overwhelming testimony to the value of the method and to the fact that making it compulsory was essential to our winning the war. "The road to the heart is only a little over an inch in a direct line," said Professor F. S. Lee, "but it has taken surgery nearly 2,400 years to travel it." The heart was first laid bare and sewed up for a stab wound twenty-one years ago (1897). The operation has now been done hundreds of times and has saved the lives of about half of those operated upon. In the present war missiles have been removed from the interior of the heart and even from the large bloodvessels. A striking instance of the value of experimental research compared with observational and clinical research was given in our present knowledge concerning the treatment of syphilis. Since 1903 we have learned more and accomplished more for the human race than in the preceding four centuries of intense clinical study. Ehrlich's discovery of a cure for syphilis was one of the most beneficent ever made. Research will never cease to give us better and better methods of coping with disease and death so long as they afflict the human race.

**Reclamation of the Maimed in the Industries.** Lieutenant Colonel HARRY E. MOCK, M. C., U. S. A., in presenting his views on this subject, said that in warfare a number were bound to become disabled, but very few need remain so. A handicap was bound to put more fight in a man and often resulted in his making good. To be disabled was only a temporary state, to be crippled, a permanent one. A man living in Kansas City confined to bed for four years by paralysis had become the owner and superintendent of a large publishing house. Asked to tell how he accomplished such a result he said, "I am not an invalid; I am a business man." His advice was to keep the mind alert and active.

The medical department of the army began at the earliest moment to plan for the reclamation of the soldiers, and it was desired to make closer the co-operation between the medical department and the general public in the reconstruction and rehabilitation of the soldiers and sailors. During the past decade a new specialty had been developed in industrial medicine and surgery. In order to prevent waste, deformity, and inefficiency many industries had developed a staff of physicians for men in the first line trenches of the industrial army, and one tenth of the workers of the nation were receiving the benefits of this work. Too often men injured in the industries were given positions without consideration of their fitness; if trained they could fill a gainful position. The most unfortunate among the injured and disabled in the industries were those not employed by the firm for which they worked. They must be not only cured, but trained for and given suitable positions affording them equal income to that received before their disability.

**Rehabilitation of the Wounded.**—JAMES PHINNEY MUNROE, vice-chairman, Federal Board for Vocational Education, said that we were in the midst of the greatest waste and the greatest saving in all history. It was not extravagant to believe that the colossal outpourings of wealth which the orgy of war had forced would possibly be redeemed in one generation by the spirit of saving which, with many other hard and salutary lessons, war had taught. The work of the Federal Government in the rehabilitation of the soldier had its essential complement in the Vocational Rehabilitation Act passed by Congress in June of this year. This act placed upon a federal board the responsibility for the retraining and placement of injured soldiers and sailors. Under the Vocational Rehabilitation Act, the Federal Board for Vocational Education made up, *ex officio*, of the secretaries of agriculture, commerce, and labor, and the commissioner of education, and of three other members appointed by the President, was charged with responsibility for the placing back in economic life and, if need be, for the training, of every soldier and sailor so far disabled in military service as to have become a beneficiary under the War Risk Insurance Law. So long as that soldier or sailor needed daily hospital care or so long as he was adjudged fit to return to full or limited military service, he was the sole ward, of course, of the medical military authorities; but from the moment he was discharged from military service, either because his disabilities were such as to preclude fur-



ther army service, or because he was relieved from such duty by the coming of peace, he became automatically a ward of the Federal Board for Vocational Education, and as such ward, had established rights which he alone and by his own free choice could surrender. Having elected to receive training, the board, together with the War Risk Insurance Bureau, assumed not only his support and that of his dependents, should he have any, during the process of training, but undertook to follow him up after placement, and to give him reasonable opportunity for further training should the first venture prove not to be suited to his capacities. The jobs which these men undertook would be theirs because they were fitted to take them. In this placement the board had the specific right under this law to ask the cooperation of the Department of Labor; it had the general right, in consideration of the debt which we owed to these disabled men, to seek the cooperation of every employer in every line of activity. The Government would fulfill its sacred obligation to make these men as efficient as possible physically, also vocationally, in the widest possible field of effective economic service.

**Role of the American Red Cross in the National Program for the Rehabilitation of the Wounded.**—CURTIS B. LAKEMAN, assistant to the director general of Civilian Relief, American Red Cross, said that in this, as in all its work, the Red Cross would subordinate itself to government leadership and bend all its enthusiasm and resources to the promotion of the official plans and to the filling of such supplemental needs as might arise. The Red Cross had assumed an obligation of military service reaching to every soldier and sailor and to his dependents whenever they indicated a need that the Red Cross could fill. This service continued through that indeterminate but critical interval in which the man awaited the application of the government's plan to his individual needs. Such endeavor naturally fell to the Department of Civilian Relief of the Red Cross as a phase of Home Service work and organization. The Red Cross had already in operation a special piece of war service machinery peculiarly adapted to assist in the after-care of the disabled soldier. Under the Department of Military Relief of the Red Cross there had been conducted also the pioneering research and educational work of the Red Cross Institute for Crippled and Disabled Men in New York, and the more recently established Red Cross Institute for the Blind supplementing the work of the Army Hospital at Baltimore.

**Reconstruction and Rehabilitation of the Returning Soldier.**—FREDERIC C. HOWE, commissioner of immigration at the port of New York, stated that the problem of reconstruction and the redistribution of millions of men and women in immediate profitable employment at the termination of the war was as colossal a problem as the mobilization of the army. The United States Employment Service was a proper agency for carrying through the work of demobilization. All of the warring countries were emphasizing the necessity of returning the soldier to the land, and in England, Australia, and Canada the farm colony was being

developed. Experts had submitted the statement that the soldier would not take up an unbroken piece of land isolated from his fellows. Official commissions in England and Australia were developing plans by which the state would sell to the returning soldiers ready made farms of from three to thirty acres which one man could cultivate. Farms were grouped as a community with educational, recreational, and cooperative agencies for marketing and buying. Farms with a house and barn were sold to men, and they were provided with sufficient capital on easy terms, the state advancing nine tenths of the capital to be repaid on long term installments. The experience of Australia and of Denmark demonstrated the success of this plan. In the United States such colonies should be located in New England, the southern, central, and western states, each adjusted to a special kind of farming. Tractors and farm machinery should be owned in common. Such a program involved no permanent burden to the nation. Such a comprehensive agricultural program was demanded by the drift of population to the cities, the growth of tenancy, and the exhaustion of the soil.

**Training of the Blind in the Rehabilitation of Soldiers and Sailors.**—Lieutenant Colonel JAMES BORDLEY, expressed the opinion that in no phase of reconstruction were there more difficulties to overcome than in connection with the blind. The public had made up its mind that the blind were industrially useless, forgetting the long list of distinguished blind men, statesmen, musicians, poets, warriors, merchants, and inventors. A blind man could perform any operation except where judgment must be based on sight. To concretely translate this definition the Surgeon General of the Army working in conjunction with the Surgeon General of the Navy had established, on a beautiful estate, in Baltimore, tendered the Government for that purpose by Mrs. T. Harrison Garrett, a hospital training school for the blind sailors, soldiers, and marines, and Congress had endowed the Federal Board for Vocational Education with money and power to supplement whatever was necessary for training and to provide the opportunity for employment. The American Red Cross had caused to be organized the Red Cross Institute for the Blind to supply such economic and social supervision as might be found necessary after the discharge of the blind by the various governmental departments. Vocationally the courses were classified as professional, agricultural, commercial, industrial, housework and blind shop work. Only through individual study of the men could any plans be formulated and any decisions made in regard to placing them in proper classes. It was hoped to hold to the lowest possible proportion the home and blind shop worker. A talented and experienced industrial engineer was making an analytic industrial survey to determine the occupations suited to the blind. The significance of the work was reflected in the hearty cooperation of every industry studied. If the blind man failed to make good the employer would be relieved of all embarrassment by removing the blind man and re-educating him for another trade.

**Opportunities for Employment.**—**GERTRUDE R. STEIN**, employment secretary, Red Cross Institute for Crippled and Disabled Men, New York, said that in initiating an employment bureau for the handicapped it was of advantage to have the bureau a small one. No organization of this kind was truly valuable unless it was flexible. She felt that employment work did not mean the mere securing of positions, but the securing of the chance to make a livelihood at congenial work with the opportunity to make use of the best powers of the man. In New York was an effective clearing house which was invaluable in widening the opportunities open to crippled men. A placement bureau for the handicapped must be more efficient than the average bureau or it would not live; it must have a file of satisfied employers who could be called upon when the applicant seemed suited for his particular job. An industrial survey of the opportunities for cripples in the city must be carried on in conjunction with the employment work. The whole system of placement was valueless unless it was properly followed up.

**T. B. KINDER**, vocational secretary, Invalided Soldiers' Commission of Canada, on duty with the Vocational Educational Rehabilitation Division of Washington, said that the United States went further than any other country in the care of its fighting men in that it provided that any man entitled to compensation as a result of his injuries would be provided after his discharge from service with a course of training at the expense of the Government. In Canada every case is studied individually in the light of every factor with a possible bearing. This plan had been adopted also by the Federal Board at Washington in dealing with American soldiers. One of the most important factors in this connection was the man's educational history; his industrial history was also of great importance. The disabled man must have the will to succeed with his reeducation and successful placement. The man elected his course, but he must be assisted to select wisely and in the light of all the information with which his vocational advisers could provide him. A careful medical examination was made to determine the man's abilities, and medical and technical experts were consulted. In Canada 1,347 men had completed courses of reeducation for new occupations; 1,868 were at present taking courses. Over 2,000 men were taking courses during convalescence; many of the men receiving active treatment in bed were being trained vocationally. The large majority of men completing courses were in positions as good as were held before their service and many were vastly better off. They were self-supporting, capable members of the community fulfilling their duties in peace as they did in war. This was one of the big things we were learning from the war, the lesson from which would be carried over into the industrial life. Congress was considering a bill to provide for vocational rehabilitation for the injured in the industries and their return to employment. Of the men returned to Canada unfit for further military service only about ten per cent. required reeducation for other occupations. An interesting fact also was that up to June

1st last, out of nearly 30,000 disabled men returned to Canada, less than 1,500 had suffered a major amputation. The commission had proved the value of occupation for mind and body of the men. It was disciplinary for the disabled man in that it prevented the moral and social deterioration always the result of prolonged idleness in an institution.

**LEW R. PALMER**, acting commissioner of the State Department of Labor and Industry, called attention to the fact that 50,000 jobs were open and waiting in Pennsylvania for disabled soldiers returning from France. Industrial accidents in that state, in the two and a half years ending July 1st, had crippled more men than were crippled in the Canadian army in four years of war. Pennsylvania was the first state in the Union to take steps toward providing employment for the blind and the crippled after the war. Seven months before Congress adopted the rehabilitation act Pennsylvania, through the Department of Labor and Industry, submitted questionnaires to 900 industrial plants to ascertain in what capacity each plant could employ the disabled war veterans. Forty-seven thousand of the 50,000 jobs awaiting the crippled heroes were in industrial work; 900 were clerical; sixteen were in agricultural lines, and 1,200 were miscellaneous. The number of amputations due to industrial accidents in this state were 3,798 in two and a half years, while in the four years of war Canada's army had only 1,200 amputations. As the result of industrial accidents in Pennsylvania 1,157 eyes were lost, while up to last spring only thirty-four Canadian soldiers had been blinded.

**Employment of Disabled Service Men.**—**FRED-ERIC W. KEOUGH**, of the National Association of Manufacturers, said that in putting disabled men back into industry there was no room for the spectacular. Our soldiers would go the limit in their military life, and we would go the limit in appreciation and care of the injured. Bringing the physically unfit and disabled men to an irreducible minimum was a national obligation. If disabilities made it inadvisable for a man to follow his former occupation he should be fitted for a new occupation by appropriate training. The greatest number of openings were undoubtedly in the clerical fields. In France blind soldiers had been trained to take dictation on a special machine and to transcribe their notes rapidly and accurately. Among the industries open to disabled men were the plate glass, machinery building, boiler making and printing. In the underwear industry many firms had offered to take disabled men, one firm even offering to employ them up to one sixth of the operating force. For men who had suffered the loss of their arms the chemical industry was particularly inviting. The large number of processes which required little manual labor but careful watching made it possible to employ men lacking both arms. Many and varied industrial opportunities had been offered, proving that no industry was entirely closed to these workers. It had been the experience of firms already employing disabled men that the latter were so keenly appreciative of the opportunity offered that their spirit of willingness more than compensated for their disability.



## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*International Medical Annual.* A Year Book of Treatment and Practitioners' Index. Contributions by Twenty-seven Doctors. (New York: William Wood & Co., 1918. Pp. xxiii-666. (Price, \$4.)

This sort of thing, a distillation of the year's work by a group of practical authorities, has an important place in medical literature, and bridges the gap between current periodical material, some of it quite ephemeral, and permanent scientific contributions. This particular annual, now in its thirty-sixth year, is an excellent one. "The great war," the first three words of the editor's introduction, runs through this number, even as it has overshadowed all human activity. War experience is fully reported, but no undue insistence upon it is noted. Judicious selection and careful editing have produced a well balanced and interesting volume, and it would seem to be of value alike to the man of medicomilitary interests and to the man who is looking for the application of the war's lessons to civil practice. Part I is entitled The Dictionary of Materia Medica and Therapeutics; Part II, The Dictionary of Treatment; and Part III, Miscellaneous, Including Medicolegal and Forensic Medicine and State Medicine. As the old friends of the *International Medical Annual* may know, the material is arranged alphabetically according to topic, with careful cross references. This system is further supplemented and the material made the more easily available by a good general index which emphasizes the more important articles. Signed articles give a brief, concise review of important work and the pith of significant contributions with comment and the conclusion of the author. In the case of work which has attracted attention and presented new concepts, but whose conclusions are not approved, the editor or contributor quotes to condemn, but the case is fairly put and the reader has the reference to verify or reverse judgment. The inclusion of such material is, we take it, as important as the approved work. After careful reading, it can be said in general, that this *International Medical Annual* can be depended upon to present the significant work of the year. The references appended to each item constitute a good bibliography for one who must have the literature sifted.

*The Doctor's Part.* What Happens to the Wounded in the War. By JAMES ROBB CHURCH, A.M., M.D., Colonel, Medical Corps, U. S. Army. With Foreword by Major General William C. Gorgas, Surgeon General, U. S. Army. Illustrated. New York and London: D. Appleton & Co., 1918. Pp. 284. (Price, \$1.50.)

Colonel James Robb Church had the good fortune to be sent to France as a military observer in November, 1915. He remained there until America had passed from the category of friendly neutrals to that of active allies. In this book he tells in simple, nontechnical terms, just what happens to the sick and the wounded in the war. He first de-

scribes the organization of the sanitary service in the French Army, an omission no doubt due to the fact that in the French Army the medical supply service is in the hands of pharmacists, not physicians. He describes the hospitals of the interior, the medical work in the zone of the armies, the transportation, and the work of the surgeon in the front lines. He does this in a most interesting and human manner, making altogether a very readable and informing book.

*Nouvelle méthode de vaccination antityphoïdique le Lipovaccin T. A. B.* Par E. LE MOIGNIC, médecin de 1<sup>re</sup> classe de la Marine, et A. SÉZARY, ancien chef de clinique à la Faculté de Médecine de Paris. Paris: Librairie J. B. Baillière et Fils, 1918. Pp. 75. (Price, two francs.)

The new method of antityphoid vaccination which is described in this monograph is being tried in our own medical service and so far with satisfactory results. The essential feature is that the mixed bacteria of typhoid and of the two forms A and B of paratyphoid fever are killed, the water drawn off by sedimentation, centrifugation, and aspiration under reduced pressure. The residual mass of bacteria is then taken up by an oleaginous medium. This oily emulsion of bacteria is then adjusted so that one injection suffices to immunize the patient. The reaction is no greater in this more concentrated dose than it is in the divided dose which has heretofore been used. The method certainly offers great advantages in the celerity with which immunization is conferred, but sufficient clinical data have not yet been accumulated to warrant an unqualified endorsement of the mixed lipovaccine.

## Births, Marriages, and Deaths.

### Died.

BISSELL.—In New York, on Monday, December 2d, Dr. Joseph B. Bissell, Major, Medical Corps, U. S. Army, aged fifty-nine years.

BULL.—In France, on Friday, November 15th, Dr. William S. Bull, of Cranbury, N. J., aged thirty-two years.

HORTON.—In Providence, R. I., on Friday, November 22d, Dr. William D. Horton, aged fifty-one years.

HUNTER.—In New York, on Wednesday, November 27th, Dr. Linnaeus Jones Hunter, aged fifty-five years.

LAVERY.—In Middletown, Pa., on Friday, November 22d, Dr. Dewitt C. Lavery, aged sixty-two years.

MEAD.—At La Catelet, France, on Thursday, October 30th, Captain Theodore Douglas Mead, Medical Corps, U. S. Army, of New York, aged thirty-three years.

PECK.—In Caldwell, N. J., on Friday, November 22d, Dr. Edward D. Peck, aged sixty-four years.

ROSS.—In Brooklyn, N. Y., on Friday, November 29th, Dr. Henry William Ross, aged sixty-nine years.

ROWAN.—In Brooklyn, N. Y., on Wednesday, November 27th, Dr. John P. Rowan, aged forty-one years.

RUBINO.—In Paterson, N. J., on Thursday, November 21st, Dr. Antonio Rubino.

SCHLAPPI.—In Fulton, N. Y., on Thursday, November 21st, Dr. Herman W. Schlappi, aged forty years.

WASSON.—In Waterbury, Vt., on Sunday, November 24th, Dr. Watson L. Wasson, aged forty-four years.

WINKELMAN.—In Brooklyn, N. Y., on Sunday, November 24th, Dr. John G. Winkelman, aged sixty-two years.

# New York Medical Journal

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### Original Communications

#### MILITARY TRAINING AS A FACTOR IN PUBLIC HEALTH.

BY CHARLES O. LINDER, M. D.,  
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##### I.

The statement has been made that an average of eighty-one per cent. of the men in the draft have been found to be physically defective. The record for the five years before the war shows that the rejected applications for enlistments averaged eighty-one per cent. plus, which was higher than those in the draft. Most of these defects could and probably would have been corrected in early infancy had they been discovered.

It is universally conceded that physical education and training, especially as a preventive against the high percentage of defectives, should begin in early school days. Attention should be given to habits, hygiene, teeth, ears, eyes, nose, throat, feet, etc. Modern school boards are doing much to correct many defects pertaining to the throats and eyes of school children, but in earlier days such matters were considered absolutely no business of the school authorities.

Eighty-one per cent. defectives does not mean that this percentage had been rejected under the present draft system. Relaxed war standards have caused to be accepted many who have minor defects. There are on record examinations by the Life Extension Institute of large groups of supposedly healthy persons, busy at their work, of which practically all show some form of impairment, more than fifty per cent. being in need of medical attention. These findings led to the forecast, before the draft examinations took place, that among the population of military age (from nineteen to forty-five) at least fifty per cent. would be found unfit for military service even under relaxed war conditions, which are, as stated before, less rigid than those for maintenance of a small and select peace army. Figures collected from local boards of different types may be accepted as fairly representing the conditions in the age group covered by the present draft. The total number of men called in Detroit, New York, and Brooklyn was 8,875; the total number examined 7,611; the total number rejected 2,232, giving a rejection rate, for physical reasons, of twenty-nine per cent. The rejections at the can-

tonments of those passed by the local boards have varied from two to eleven per cent. Therefore, it is safe to say that the total rejection rate, for physical reasons, lies between thirty and forty per cent., and this in the group of most favorable ages—twenty-one to thirty-one years.

Of the defects in registrants above referred to and which caused rejection, defective eyesight was at the top of the list with 462 cases; defective teeth came next, with 366 cases; underweight, 350 cases; hernia, 223 cases; heart, eighty-four cases; feet, eighty; and so on down the list. It may be said that some of these defects are purely structural and in a sense, anatomical, and do not reflect substandard general health; but when we find such a heavy percentage of eye defects, for example, to a degree that disqualifies for military service, then we are justified in regarding such a degenerative tendency as reflecting some fault in the care of the body or in nutrition, or in the use of the eyes, and as showing the failure of securing proper correction of refractive errors. As to the teeth, there can be no doubt. Mouth infection is a menace to health, and missing teeth indicate probable past impairment. Bad mouth infection is liable to develop into actual organic disease. Mutilation is a physical defect, not necessarily indicating ill health. Most other impairment causes for rejection evidence ill health. Flatfoot and deformities are mostly reflections of muscular impairment or faulty footgear and improper posture.

Let us remember that sixty per cent. of this substandard condition is preventable; that thirty per cent. is due to poor general physical conditions remedial by proper nutrition and physical training and hygiene; that thirty per cent. is due to defective eyes and bad mouth conditions; and that ten per cent. is due to neglected surgery.

The digest of the Provost Marshal General's report early this year gives the rejection rate, for physical reasons, as 29.11 per cent. of all those examined in all local boards. In addition to this it must be remembered that an average of 5.8 per cent. will be further rejected before the troops are inducted into active service. These figures are compiled as a result of the examination of men of the most favorable age group, from twenty-one to thirty-one years.

The Provost Marshal General's report is as follows:

Total number called.....	3,082,906
Men examined by local boards.....	2,510,706



Number of men rejected by local boards for physical reasons .....	730,756
Percentage rejected of those examined .....	29.11%
Add 5.8% as further rejection (estimated at cantonments) .....	5.8%
—	34.91%

The intense interest in the findings of the draft examinations can be utilized to arouse the people to their need of physical development. There can be no doubt, with the figures facing us, of the need of child hygiene, of the tremendous importance of universal physical training and of standardized periodical physical examination. Entirely apart from the actual reclamation of registrants, an immense stimulus can be given to the popular movement for physical reform and for higher ideals of health and hygiene.

Under proper military training where discipline is supreme, proper habits of cleanliness are formed. Training in accuracy and in precision of thought and action, regular hours and regular meals, regular nine o'clock retiring and early rising, learning to obey and to devote spare time to self-improvement in various ways, will have its effect upon the men thus trained and enable them to carry on their vocations more efficiently when this war is over.

By proper modern military training the soldier boy, instead of being a weakling, becomes a strong and healthy man. Every day drilling develops the muscles, builds up and strengthens the body. He learns to do his duties during each and every day. The instruction in health habits will have a lasting effect and make him as nearly as possible immune to sickness.

The result of military training, discipline, and instruction in health habits are clearly shown in a report from one of the training camps in the Middle West which did not have one death among its 50,000 men for one week—in August of this year—a very different and gratifying record from that which terrified the American people during the Spanish American War twenty years ago, when the death rate at concentration camps was twenty-five out of every thousand soldiers. Even at the time of America's entrance into the present conflict the death rate at the concentration camps was rather on the increase, but marked improvement in health conditions have taken place within the last few months. The nation has found a scientific, dependable way to gather its young manhood in concentration camps, cure their minor ailments, build up their physical strength and constitutional vigor, discipline and train them for better service in civilian pursuits, and in various other ways make them efficient, patriotic, and intelligent citizens. We have done this fine work under the whip and spur of a terrific war, but the benefits thus conferred upon the country's youth are no less valuable in time of peace than in stress of war. The lessons which have been taught to boys to avoid preventable diseases and their being brought to a state of physical wellbeing as a result of military training, will result in lasting benefit to the community, whether the boys are in or out of the army.

When the public has been convinced of what modern military training can accomplish with our youth, the question of universal physical training will have taken a long step forward.

## PSYCHANALYSIS.

By FREDERIC J. FARNELL, M. D.,  
Providence, R. I.

"It has been said recently of one of our American heroes who died in battle while still a youth, that, "he was entirely at ease within his own moral code." Nothing can be more pregnant with suggestion to the new psychologist, if only he is a moralist as well, than this statement, which arrests one's attention and compels one to think just what it may mean. The physician who works through psychology, if it is his wish to reach a cure for his patient, must, first and foremost, make that patient "entirely at ease within his own moral code." Never was the conflict depicted in the New Testament of serving both God and Mammon, or, the larger, more comprehensive conflict between the flesh and the spirit so well understood, as now—the conflict so often unrecognized by the person who is engaged in it, and having, not only moral results, as emphasized by all religions, but oftentimes far reaching physical results baffling the skill of the most clever and conscientious physicians, and only just beginning to be understood by specialists in the study of mental conflicts.

The object which the psychiatrist sets before himself is the discovery of the conflicting personalities of the patient, and then the adjustment of these personalities to each other, whether these personalities are conscious, or, as is more often the case, one is conscious and the other subconscious—assuming that there are but two in conflict. Fortunately, the majority of neuroses, even of psychoses, if a recovery is reached at all, as in many instances, are cured spontaneously, without the interference of physician or friend who directly and purposely influences the thinking life; one set of ideas eventually adjusts itself to the conflicting set of ideas. The person whose world is so different from ours is usually adjusted gradually, sometimes suddenly, not always to life as it is, but to life as he feels it to be, and the conflict having closed, the adjustment having taken place, the ills both of mind and body disappear.

It is not, however, a problem of this class on which the psychiatrist must needs ponder, but on what he personally must do to bring a patient into normal relations with himself and the world. In this transformation it may or may not be a hard, persistent, and painstaking task to find the conflict and adjust the man to himself. But, besides that, a second problem may arise. It may be not only necessary to adjust the patient to himself, thus restoring health, but also it may be best to change both the conscious and the subconscious personalities to conform to other standards of living; that is, to change his character into something better.

Hypnotism has always been thought to be a possible great menace to society, a treatment calling for a different sort of skill from that of the physician who may even employ a dangerous drug, or the surgeon who uses the knife. For the hypnotist not only knows that his suggestion will make a man do this, rather than that, but he has a greater choice in the results to be accomplished than the physician who aims at a normal—as that normal is generally

understood. And so the warnings against the hypnotist have been many, lest one become the victim of an unwise influence, or even an unwilling tool of an evil man. Today, the man who heals through the medium of suggestion does not often resort to hypnotism, for long ago it was found that the subconscious mind could be reached through the conscious with no show of magic. But no less responsible is the task of him who changes the personality of his patient, though the patient is under no hypnotic spell. The work of the psychopathologist is in a great measure a destructive process, and so far as it is, the problem is a comparatively simple one. A patient has this idea, and that, and again another, all of which are, in the eyes of the expert, radically wrong. So far the object may be clearly seen and stated, though it may not be easy to attain. These ideas are wrong, they do not express what the experience of more nearly normal people have found to be true; therefore these ideas must be removed to be substituted by others.

To make the case clearer, assume the abnormality to be anxiety hysteria as understood by the abnormal psychologist and as treated by the psychanalyst. The mechanism of hysteria, the repression of natural emotions, or the repression of the natural outlets of these emotions has been aptly described by a layman, Mr. James Lane Allen,<sup>1</sup> in his *A Summer in Arcady*. "Take a cannon ball of the best metal that may be cast; hollow it out; fill it with water; plug it tight; put it under the corner of a house so that the weight of the house will rest on the plug. Then let nature come along in a freezing mood and one of two things will happen: the water will force the plug and lift the house, or the ball will burst. And if she requires so much room in which to freeze, think of the space that she needs for heat. Nature quietly asks room for the operation of her laws; if it is not given, she takes it, and you take the consequences."

The psychanalyst deals again and again with such cases as are here figuratively described. "Nature quietly asks room for the operation of her laws; if it is not given she takes it and you take the consequences," and then the physician is called in to make all things calm and normal again, after the explosion. In effect, the physician, if he understands these psychophysical or psychosexual manifestations, finds, if possible, what it is in his patient that is explosive, and then what the inhibitions are. The course to be taken is evident: either do away with the explosive, do away with the inhibitions, or compromise.

Now, this having been effected, conditions are changed until conflicts cease, the patient may be declared cured, and the analyst may leave him to do what he will with his own life, feeling that up to this point and no further he is his brother's keeper. The patient is cured of his mental or physical disturbance which incapacitated him from doing a man's work in the world. But is this the sole aim of the analyst? In many cases, yes; it is all that needs be done. In others, no; and here lies the peril

of psychoanalysis as it is understood at least by the layman.

As has been said before, a part of the work of the analyst is destructive, and certain ideas and feelings having been done away with, the patient becomes not only well, as understood by the physician, but in a condition quite satisfying to himself and to his friends. But, as in the case of most destructive work that has been going on among our old ideals and ideas, a corresponding constructive work is often necessary, that we, like ships that have been deprived of an old rudder or anchor, may not drift aimlessly but may have some new steering gear or some new anchor far better than the old. All through the ages the rebound from destruction of old systems of thought has too often been disastrous to the individual or the race; and then, from too great freedom and license have arisen new systems called out by man's inner needs.

Psychoanalysis is generally understood as having to do with some unsteadiness or abnormality in the attitude toward the sexual relations of life—the word sexual being used in so broad a sense that even the most Puritan minded need not be startled. It has to do with the relation of the infant to either parent; of brother to sister or brother to brother, or sister to sister; of boy to boy friend or girl friend, and girl to boy friend or girl friend, and later of man to man or woman, and woman to woman or man, and so on; and all this without any implication necessarily of any moral unfitness or physical grossness. In looking fairly and squarely at this new science of psychoanalysis, one must not shrink before the words sexual, bisexual, homosexual, heterosexual, for these words scientifically used, do not necessarily imply what is commonly understood by them, but only that all mankind is divided into several classes described by these words, as their chief interests, admirations, and affections centre in themselves, or others of the same sex, or of the opposite sex. And just here one would like to suggest to the psychanalyst that if this could be tactfully explained at the outset to some patients, it might save them the shock of feeling that they are being unjustly and ruthlessly accused of some feelings or acts of which they are confident they know nothing. A barrier is too often raised between patient and physician because of the fact that the content of a word or phrase is quite different in the minds of the two. Whatever the difficulty of the patient along these lines may be, the work of the physician must in some measure be constructive. The wrong ideas, the wrong attitude to life as it really is, have, we will assume, been removed. Not often can the patient find for himself the satisfactory new ideas, the new attitude, and so he looks to the one who has destroyed his old standards for help in taking a new and definite attitude toward certain basic facts of all human relations. The analyst therefore becomes in a very great degree his brother's keeper, and the problem is one to call out all that there is of fineness and wisdom in a man whose profession requires that he should himself be essentially fine and wise.

We may roughly classify the cases of a psychanalyst as follows, according to their moral codes

<sup>1</sup>Discussion of the emotional activities and their psychoanalytic value, in several of the aforesaid author's works, will form the basis of a theme soon to be compiled by the writer and L. A. Y.



and their attitudes toward the same. First there are those whose moral code is already a high one, quite unimpeachable even in their most secret thinking life. They have definite and worthy ideals and the will to pursue them. A physician helps them out of some conditions of maladjustment which have been thwarting their full development, and then his work is satisfactorily done. There are those whose moral code has never been high, but who would like to live on a higher plane, who realize there is something better than their own level, and have the will to attain could they but be shown the way. They are not content to remain at ease within their own moral code which they have heretofore followed, and they naturally look to the one who best knows their struggle, and whose suggestion has removed many of their difficulties, to make clear the higher plane of living, and once more by suggestion help them to attain it. They want a new moral code and they want to live at ease within it. Will the analyst meet their needs?

Unfortunately there is another kind of patient whose moral code has been inferior, and this class is not a small one. There are those who are not only content with their present ideals, but will have no other. They cannot conceive of any pleasure for them in a life on a higher plane of moral standards. Their wills are strong to follow their own devices. They have through some obscure conflict of their personalities, through some unnatural thought or feeling, fallen into an uncomfortable condition of mind and body or both. They wish these discomforts removed, which are inhibitions to the full enjoyment of life according to their own moral code. They seek the psychiatrist to have their discomforts removed, but they will not allow any tampering with their moral code. It is somewhat similar to the burglar who enjoys the fascination and gamble of that life, who is eager for all the advice and help he can get to shorten his term of imprisonment, or to prevent detection and arrest, but who would resent any attempt to make a better man of him, that is, to change his moral code. The work of the physician with these is not ideal. Perhaps it is this class more than any other which causes most dissatisfaction with this new science of psychoanalysis—still in a very experimental stage. Surely this is a hard problem for the physician who cares. No law of nature or society is more true than that we are known and judged by our fruits and, in these cases, the fruits of neither patient nor physician seem worthy.

In the last class may be put all those whose ideals are most unformed and whose minds are most suggestible; who have gone the way of least resistance, but meeting the resistance can as easily turn and go another way. These may be children in years or children in their mental attitudes. With this larger class the physician is indeed his brother's keeper. No hypnotist with all his seeming magic power can so surely control, for better or worse, the destiny of a subject than the analyst a patient of this class. He can not only put the conflicting personalities into harmony, but from the beginning of his treatment of those patients he can persistently, subtly, instill a definite moral code, if he will. Indeed, whether he wills it or not, he must leave

them on some moral level, be it a moral height or a moral abyss, influenced in a large measure by his own teaching. It is not strange that there is great skepticism today as to the worth to mankind of this new science; not strange that there is strong conviction that the analyst may do infinite harm. Such possibilities lie in the hollow of his hand!

To sum up—what shall be the attitude of the physician toward those he can most control? Many a criminal would choose the better way, if the way could be discerned and there were stretched out to him a guiding hand. And many a patient, whatever his standards of living may be, would rise to greater heights could he be shown the way and helped a little. And so there is this great class of patients who should rouse the physician to his greatest and finest effort. The responsibility is great, for the stake is one of ideals.

If it is the province of the psychoanalyst to deal with the most insistent and enduring emotions of the human race; if he can by a suggestion or a series of suggestions change the thinking life, and therefore, the whole life of his patient; if he may alter the character of a grown person who becomes a child again in his teachableness, affecting the rest of a life already partly spent; if he can more easily and more thoroughly alter the character of a child whose days are hardly begun, and whose long unspent life will ever be different because of the way he has been changed at this critical time, different in itself and different in the influence it in turn exerts on many others; then, indeed, the psychiatrist, should be chosen with no less caution than the much feared hypnotist is avoided; and the psychiatrist, if he would do all that he should, must keep his own ideals high. It may be possible to teach a child to be all that one is not one's self; to teach him to hold to ideals which one can conceive of for others, but cannot attain one's self, but this way is far from secure. Unless the teacher lives close to worthy ideals, the pupil who sees sharply and thinks intelligently will be affected not only by what he says, but what he is. It is not enough for either patient or physician that the patient shall be made "entirely at ease within his own moral code." For his own good, for that of society in which he lives, and for the sake of his own deathless influence, which no man can measure, on generations to come, that influence with its never ending ramifications, which is in itself an immortality, necessarily indicates that his moral code must be made the best possible. If the psychoanalyst will not fail, let him look to himself and keep ideals lofty and untarnished. He too must be "entirely at ease within his own moral code," and that moral code must be unimpeachable. Does one ask too much of this new science?

Tennyson says, "Have patience, ourselves are full of social wrong; And maybe wildest dreams are but the needful preludes of the truth"

**Thready Pulse in Typhoid Perforation.**—G. Giacobini (*La Semana Medica*, May 9, 1918) considers that a thready or filiform pulse is a pathognomonic sign of perforation in typhoid fever. Other signs may be present, but this is the one decisive feature.

## SYPHILIS AND MATRIMONY.

BY EDWARD PISKO, M. D.,  
New York.

In choosing this subject, I was guided, in the main, by the frequency with which a physician, who possesses the confidence of a family, is asked advice as to whether a person who has had syphilis ought to marry, and if so how long a period ought to elapse between the infection and the marriage; also, whether, and to what extent, the children would suffer.

Syphilis is a disease that has been well known for centuries and thoroughly studied with the result that there can be no doubt it is a factor to be considered in contracting marriage. While there are still many people who firmly believe that syphilis is incurable, we know better because thousands and thousands of those afflicted have married, enjoyed perfect health and old age; did not infect their wives, and had healthy children and grandchildren. Well, then, their syphilis must have been cured. Still there are many, not only lay people but also medical men, who do not believe that syphilis can be cured. Hebra, Sigmund, Zeissl, Kaposi, Neumann and Finger, of the Vienna school; Lesser, of Berlin; Neisser, of Breslau; Fournier, Brocq and Ricord, of the French school, and Hutchinson and Hunter, of the English school, may be quoted at the outset as authorities that a syphilitic person may marry.

The question is, how long after the infection? Although I do not consider syphilis to be infectious like the rest of the well known infectious diseases, it is not within the scope of this paper to discuss these points nor to differentiate between ordinary infection and constitutional disease, but I would like to state right here that I believe that syphilis is constitutional with the most peculiar initial lesion—the Hunterian chancre—a unique lesion never showing up again on the body no matter how long the patient exhibits any lesions. In the very regular course that syphilis takes we meet the sclerosis only at the very onset and it is my belief that the disease at that point is already constitutional.

That a person with florid lesions is forbidden to marry is a matter of course, but how about it if there is no active syphilis after four or five years of routine treatment during that period? The answer to this question must be given first. Up to the beginning of this century it was left entirely to the discretion of the clinician whose sole guidance was his clinical experience, there being no other means. Then almost simultaneously came the discovery of *Spirochæta pallida*, salvarsan, and the Wassermann reaction, almost revolutionizing all previous teachings.

It is a well established fact that a virus has a limited life, just like any other life, whether it be animal or vegetable: we are not able to correct nature and so lengthen life or preserve it. There is no such thing. If the *Spirochæta pallida* is concerned in the causation of syphilis, isn't it more than likely that in fighting it, we may do more harm to the finer structures such as nerves, vessels, etc.?

There was a time when every surgeon followed

Lord Lister's theory of antiseptics; even now carbolic acid and the bichloride are used for cleaning and cleansing utensils and instruments, but not in the operation field; sterilized water and saline solutions are used exclusively and asepsis is preached and practised, whereby the finer tissues are not destroyed.

I wish specifically to emphasize that up to date it must be admitted that those of us who see thousands of syphilis cases have comparatively few cases of neurosyphilis, syphilis of the brain, of the medulla, tabes dorsalis, and paresis. To me, personally, it is clear that we have joggled along quite comfortably on old lines of the recognized schools, but I am more than convinced that when the time comes, say after fifteen or twenty-five years, that we shall see results of salvarsan treatment, especially after the energetic and heroic attitude that some authors have adopted of late, and I am very much afraid that the proportion will be increased materially—our bodies and systems are in the habit of forming their own antibodies, and those brought in from without must necessarily act as foreign bodies and consequently must have a destructive effect.

Nursing is another important point in syphilis and matrimony. We all know that there are many instances where artificial feeding is contraindicated, and in the case of the mother being unable to nurse her baby, it is imperative to order a wetnurse. Here the Wassermann reaction is a godsend, in the truest sense of the word. While we had to go by data collected before the time of the Wassermann test, today we simply and offhandedly reject a person with a positive Wassermann, and in this way we save the child from infection. The four plus speaks for itself, and so there are many more points that I could enumerate, but it is of course impossible to include everything in this short paper.

For the last few years, syphilis has been listed as a communicable disease by the Health Department of New York, and is to be reported; also before a marriage license is granted both parties are asked whether they ever have had syphilis. Now, what does that mean and what kind of a protection is it? How many practitioners report their private cases in order to help the health authorities to look up these records and refuse the license? How many men will admit to the officer that they have had syphilis and how many men are there who have had it and did not know it? Is there one single woman who would make a positive statement? How will this problem be handled after the war, when these thousands of men will come home infected in the same or similar proportions to those quoted in the *Hospital World*?

The British army, up to April 23, 1917, had 71,000 cases of gonorrhea, 21,000 cases of syphilis and 6,000 cases of soft chancre! In the Canadian army, up to March 31, 1917, there were 18,335 cases of venereal disease. Several of the Canadian camps visited showed 90 per cent. of the returning soldiers infected with syphilis—two thirds of one division infected with syphilis before it had been six months in England! Two Australian regiments completely incapacitated by venereal disease before reaching the trenches!



I believe every man returning to this country ought to undergo a rigid test and with a positive Wassermann; he must be told of the danger of infection and also his family—be it a single man or a married man—or else we will have to fight a greater war against venereal diseases than the great world war. These figures lead us to the only solution, dealing with the stamping out the root of the evil of venereal diseases: licensed prostitution.

Coming back to and concluding our subject—syphilis and matrimony: A negative Wassermann reaction does not mean anything at all and does not amount or lead to anything. But what about a positive reaction, taking it for granted that we do not deal with leprosy, tuberculosis, cancer, scarlet fever, etc., that also give a positive Wassermann reaction? The question is whether this indicates that there is an active process of syphilis going on somewhere and why are we not able to locate the focus? My idea is that after four or five years of routine treatment there is no need of further treatment if we cannot ascertain *clinically*—and I emphasize the word *clinically*—the seat of the process.

When it comes to the question of marriage, I believe it is the duty of the family physician to send such persons to a syphilographer and it should be left to him to decide whether such persons had enough antiluetic treatment during the past four or five years. Here, too, there is a hitch, because some of the so called specialists are so mercenary that they do not *discriminate* enough. Another great drawback with these unfortunate patients is the secrecy; it is not like a hip disease or a pneumonia. Shame or fear or ignorance—in most cases the three factors combined—land these unfortunates at the offices of the advertising quacks.

To get down to bed rock: after four or five years of treatment I deem it imperative to wait another year with a positive Wassermann reaction; the outline of treatment is four months of active treatment, about seven or eight of salvarsan or its equivalent, and routine injections of salicylate of mercury, then about two or two and one half months of mixed treatment by the mouth, no treatment whatsoever for the second half year, and then again a Wassermann blood test taken at the end of the year—of course the patient is to be watched and seen at least once a month, but no treatment given, and I am convinced that it matters very little whether the Wassermann has remained positive, because after all we are guided by the clinical findings, and if there were none during the past year, we may safely allow the parties to contract matrimony.

**Hepatic Form of Spirochetosis.**—Manine (*Presse médicale*, September 19, 1918) states that spirochetosis, as met with in an epidemic form at Lorient, in 1917, proved to be an infection with variable course and manifestations, with a rather high mortality—five per cent. of marked gravity in its meningeal and typhoid forms, and justified a guarded prognosis on account of the frequent persistence of visceral sequelæ. The disease probably occurs everywhere sporadically.

## RENAL AND URETERAL INFECTION WITH THE GONOCOCCUS.\*

By LEO BUEGER, M. D.,  
New York.

Although the literature contains a fair number of observations on the effects of invasion of the kidney, ureter, and bladder by the gonococcus, the practical lessons that can be deduced from a study of recorded cases are insufficiently defined to enable the clinician, cystoscopist, or surgeon to formulate a clear picture of the pathological processes peculiar to this form of infection, when it involves the upper urinary tract. What the cystoscopist is particularly desirous of knowing is the configuration or even the general appearance of the lesions of the bladder, especially about the ureteral orifices, if any such are characteristic in this affection. From a perusal of the literature he would like to obtain, in succinct form, a well defined picture of what he is to expect when he examines the bladder in which gonorrheal infection plays the most prominent part. This, strange to say, he cannot glean from a review of the recorded cases, for most of the descriptions of the bladder lesions, as well as the circum-ureteral changes—if such exist—are so vague as to be of no practical value.

In our own experience, two cases of undoubted gonorrheal infection of the bladder, ureter, and pelvis of the kidney, the vesical and circumureteral lesions were sufficiently characteristic to warrant being brought to your attention, for if our observations are confirmed by other observers, true diagnostic points will have been discovered. From our own limited number of cases, however, these can be regarded merely as suggestive and in no sense as pathognomonic.

In recounting the case histories, cystoscopic findings, and pathological changes found in two cases of gonorrheal infection of the bladder, ureter, and kidney, I feel that I am bringing to your attention lesions sufficiently characteristic to warrant future investigation. In one instance, the alterations were confined to the bladder; in the other, they were so striking and well developed about one ureteral orifice, so confusing in their simulation of tuberculous lesions, so complexly associated with stricture of the ureter, that we felt that we were confronted with pictures worthy of the application of more refined diagnostic methods.

**CASE 1.**—Gonorrheal infection of the bladder and the lower portion of a kidney with separated pelvis and ureters; hydropyonephrosis; and gonorrheal stricture of the corresponding member of the duplicated ureters.

B. G., male, age twenty-one years (referred by Dr. S. Rose); consulted me on February 28, 1918, because of the persistence of a gonorrhea, which he had incurred about one year previously, and because of pyuria. There had been the usual complications, namely, a rightsided epididymitis some nine months previously, pain in the ankle, and aches in the tarsal joints, off and on for almost eight months. The

\*A lecture delivered at the New York Polyclinic Medical School and Hospital, March 14, 1918.

urethral discharge had subsided about six months ago, only to reappear again from time to time. More recently a leftsided epididymitis had developed (five weeks ago), but this seemed to have cleared up entirely, whereas the lesion of the right epididymis seemed not to have disappeared altogether. More recently the patient complained of a pain in the right lumbar region, particularly near the vertebral column, a constant dull ache, which on only one occasion was accompanied by colic. In short, a history of gonorrheal infection lasting for about one year, with bilateral epididymitis, joint symptoms, recurring urethral discharge, recent dull continuous lumbar pain, with one attack of renal colic, and a persistent pyuria. The family physician wished to know the reason, first for the continued pyuria, and, secondly, for the refractory nature of the gonorrhea in this case.

*Physical examination.*—Disclosed a fairly well nourished, but not robust young man, presenting nothing worthy of note outside of the genitourinary tract.

*Urine.*—Turbid, amber, acid, a trace of albumin, sugar negative; macroscopically and microscopically showed abundant pus, but no red blood cells. Examination of spreads of urinary sediment showed tubercle bacilli negative; a moderate number of intracellular and extracellular gram negative diplococci, morphologically gonococci.

*Cultures.*—Gonococci in pure culture.

*Abdominal examination.*—Some tenderness in the right costovertebral angle; right kidney somewhat enlarged; distinctly palpable. Both epididymes somewhat enlarged and tender. Prostate very slightly enlarged; prostatic fluid on two occasions showed a very few pus cells; but no gonococci. In short, gonococci present in the bladder urine and absent in the prostatic secretion.

*Cystoscopic examination* (March 4, 1918).—After thoroughly irrigating the anterior urethra, the cystoscope was introduced and the bladder fluid collected in a sterile tube. This bladder urine contained numerous gram negative diplococci (gonococci).

The bladder picture was unusually interesting, both because of the presence of an anomaly in the shape of two ureteral orifices on the right side, and also because of most unusual lesions about one of the ureteral orifices, namely, that which drained the infected portion of a double kidney with duplicated ureter.

The two orifices on the right side will be described in Fig. 1 as the right upper (in reality posteroexternal), and the right lower (or distal). At first glance the lesions about the right upper ureter could be mistaken for those associated with renal tuberculosis. The inner lip of this orifice is raised, has a crenated or scalloped edge, so that the orifice itself marks the outlet of a sort of a tunnel, which is roofed by the swollen inner lip. This whole region, as well as the trigone, is edematous and hyperemic. Grouped about the right upper orifice, as depicted in Fig. 1, are polypoid edematous protuberances, not unlike those seen and regarded as edema bullosum in tuberculosis. Just beyond the right upper ureter, except for the loca-

tion of a small patch of exudate hanging or attached to the floor of the orifice itself, is a whitened area, which is suggestive of cicatrization subsequent to a previous inflammatory process. The lower right ureter shows none of these lesions, presenting only that slight hyperemia and edema common to the general trigonal inflammation.

*Ureteral catheterization.*—The ureteral catheter meets an obstruction at ten cm. (that is from the bladder orifice) in the right ureter; no urine could be obtained over a period of some twenty minutes. From the right lower ureter and from the left ureter, a good flow of perfectly clear urine was obtained, the renal function as estimated roughly by the excretion of indigo carmine showing good excretion from both the right lower ureter and the left ureter. Shadowgraph catheters were then inserted into the two right ureters and a radiogram taken.

*Summary.*—Peculiar lesions suggestive of renal tuberculosis about the upper of the duplicated right

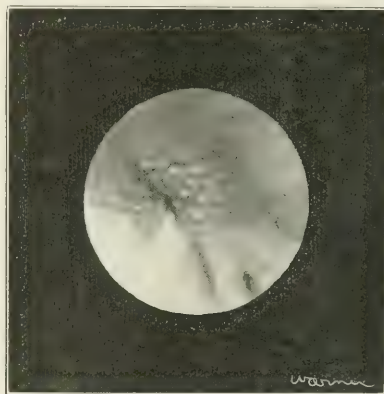


FIG. 1.—Cystoscopic picture of circumureteral lesions in Case 1; note edematous and polypoid lesions about upper right ureter, and normal lower ureter.

ureteral orifices; general edema and evidences of inflammation about the trigone, with evidences of cicatrization just beyond the right upper ureteral orifice; ureteral stenosis at ten cm. in the right upper ureter; clear urine, free of any abnormal elements, and suggesting fairly normal function of both the left kidney and of the upper separated portion of the right kidney.

*Examination of specimens.*—The specimens from the right lower ureter (namely, from the upper portion of the right kidney) and from the left kidney contained no gonococci, no pus cells, the urine being otherwise negative. The bladder urine contained numerous gonococci. No urine was obtained from the right upper ureter.

*Tentative diagnosis.*—Ureteral stricture involving that one of the duplicated ureters on the right side which leads into the lower pelvis; infected hydronephrosis of the lower portion of a double kidney on the right side (probably infected with gonococci); intermittent evacuation of some of the contents of this hydronephrosis when the tension is



great; a noninfected upper portion of the right kidney; and a noninfected left kidney.

*X ray examination* (March 4, 1918).—Negative as far as calculus is concerned. Left kidney normal in size and position; right kidney outline not sufficiently definite to warrant any statement regarding its size.

Plates were also taken with shadowgraph catheter



FIG. 2.—Radiogram showing shadowgraph catheter in lower right ureter passing into normal upper pole; another meeting obstruction in infected ureter.

ters in situ, these having been placed in the two ureters on the right side, immediately after the cystoscopy described above had been completed. The ureter leading from the upper right ureteral orifice is seen to be discrete, completely separated from its neighbor as far as the catheter goes, namely for a distance of some ten cm. (Figs. 2 and 3), whereas the catheter in the lower ureter is seen to pass into the kidney.

Examination of the urine for tuberculosis was again made on March 6th, and found negative. In spite of the presence of gonococci, it was thought advisable to rule out tuberculosis with certainty by the application of intravesical biopsy practised according to the method which I suggested some years ago. Pieces of the inflamed edematous ureteral lip are excised through the author's operating cystoscope and submitted to the pathologist for microscopical examination. Miliary tubercles are usually found where macroscopic ureteral lesions are present. Unfortunately the patient was recalcitrant and refused to submit to this procedure, so that we were forced to relinquish the hope of absolute substantiation of our tentative diagnosis of gonorrheal infection of bladder, ureter, and kidney by a positive exclusion of tuberculosis. However, the finding of pure cultures of gonococci in the bladder specimen on two occasions, the absence of tubercle bacilli af-

ter careful search in two catheterized specimens, the presence of considerable pus in the bladder, which was doubtless derived to a considerable extent from the infected right lower pelvis—all these data seem to justify the assumption that we were dealing with a gonorrheal infection of the bladder, a gonorrheal stricture of one of the duplicated ureters leading to the right kidney, and a gonorrheal pyohydronephrosis of the lower portion of a double kidney with separated pelves. The anatomical rule that the upper or proximal ureter leads into the lower portion of the kidney, the distal ureter draining the upper pole, was confirmed and shown to obtain in this case by the shadowgraph catheter (Figs. 2 and 3), as well as by the findings at operation.

*Operation.*—A nephrotomy was performed March 7, 1918. It was seen that the upper portion of the kidney comprised at least two thirds of the total mass, and was fairly normal in appearance; that the lower portion of the kidney was flaccid and very adherent. The upper pole was easily delivered. And, in order better to expose the lower pole, and get an idea whether a horseshoe kidney or evidence of fusion was present, it was deemed advisable to sever the vessels of the upper portion first. When this was done, a very thorough inspection of the lower half of the kidney was possible, its adherent ureter and enlarged pelvis being easily brought to view.

While the diseased portion was being attacked, it was found to be very adherent, the lower pole flaccid (hydronephrotic), and giving rise to a pyriform extrarenal pelvis, just as large as the lower pole itself (Fig. 4), the latter being separated from the normal kidney by a distinct furrow. From this point downward the extrarenal pelvis of the lower part of the kidney and the normal ureter were fused together in an inflammatory mass, which could be traced downward. The two ureters were then separated by dissection, the small or normal ureter first cut through and then the thickened one, the latter being indurated and enlarged to the size of a man's little finger. Then the kidney was removed, the stump being carbolized. Closure was done in the usual fashion, with a rubber tube for drainage.

*Pathological specimen.*—The kidney measured five and one half inches in length, presenting an upper portion, which measured about two thirds of the renal mass (exclusive of the pelvis), and a lower portion, made up of dilated parenchyma and a fusiform, very much dilated prolongation, namely, the dilated pelvis (Figs. 4 and 5). The total kidney mass measured five and one half inches in length and might be divided into a larger upper portion, about three and one half inches in length, separated by a furrow from a flaccid hydronephrotic smaller lower pole, which fused into a larger pyriform mass, the dilated sacculated lower pelvis and ureter (Fig. 5). Externally the upper portion of the kidney, that which corresponded to the normal two thirds of the renal parenchyma, showed practically no abnormalities, no external adhesions except near the furrow, which separated it from the lower hydronephrotic part. Its ureter emerged from a separate hilus or indentation in the inner

border, was of normal size and coursed almost vertically downward, being bound by adhesions to the pyriform sacculated distended pelvis referred to above (Figs. 5 and 6). The external appearance of the lower hydronephrotic and infected portion with completely separated renal parenchyma, pelvis, and ureter, was, in main, that of a typical infected hydronephrosis, except for the small size of the area of renal cortex that capped the much larger distended pelvis. This indicated that the lower portion of the separated renal parenchyma must have comprised only one third or less of the total functioning tissue. The pelvis of this part of the kidney is enormously dilated, pyriform, very much thickened, edematous externally, covered by thin adhesions, and leads into a much thickened and dilated ureter. On section (Fig. 5) the upper renal mass was seen to be perfectly normal with a normal pelvis, drained by a practically normal ureter. The lower portion of the kidney was converted into a pear shaped sac, a portion of whose wall is made up of very much attenuated parenchyma, which showed the usual appearance of atrophy. It was impossible to detect any tubercles, although a number of incisions and a careful search were made throughout the limited area of cortex. Some of the flattened papillæ (Fig. 5), nowhere occupied by ulcerations, present here and there pinkish elevations that are suggestive of tubercles (pseudotubercles), which, however, did not show any tuberculous lesions in microscopic sections. Most interesting, however, was the interior of the dilated pelvis and ureter, which had a rosy red, and in places angry red, granular, strawberrylike appearance, having in practically every respect the typical earmarks of the strawberry gallbladder, and would be easily mistaken for such if its origin was not known. The fluid content of this sac was a turbid bloody urine. Cultures were made from this fluid and found sterile. Histological examination of a number of sections removed from the attenuated parenchyma, particularly where pseudotubercles were to be seen, failed to show any of the lesions of tuberculosis, nor were there any tuberculous lesions found in the pelvis.

*Summary of the pathological lesions.*—In short, we were dealing here with a kidney with separated pelvis and ureters, divided into an upper normal portion, free from infection, provided with a practically normal ureter, and a lower hydronephrotic and infected portion with dilated pelvis and thickened ureter, with peculiar lesions simulating those of the strawberry gallbladder, lesions produced by the effects of inflammation and ureteral stenosis, due undoubtedly to the gonococcus, and altogether different from anything that we usually encounter as the result of the action of the usual pyogenic organisms, including the colon bacillus. The small size of the anomalous lower dilated and infected portion of the kidney, the situation and conformation of the pelvis, would suggest that exceptional anatomical conditions obtained in this part of the kidney before the superadded lesions of inflammatory ureteral stricture had supervened to bring about the finished pathological product.

*Clinical courses.*—The patient made an uneventful

recovery after the nephrectomy, although a sinus remained for some three weeks before the wound was completely closed.

*Epicrisis.*—We were dealing, then, in this case, with an unusual instance of gonorrheal infection of the bladder, ureter and kidney, with bladder lesions that were suggestive of tuberculosis, with stenotic, indurative, and periindurative lesions of the ureter, with intensive periureteritis, with corresponding dilatation of the ureter and pelvis of the kidney beyond the coarctation, with the production of unusual lesions in the involved portion of the kidney, the pathological pictures encountered being sufficiently striking and exceptional to be regarded as possibly characteristic of gonococcus infection.

Worthy of discussion are the following observations:

1. The bladder lesions suggestive of tuberculosis.
2. The ureteral stricture.
3. The periureteritis.
4. The lesions in the pelvis and kidney, with the absence of gonococci in culture.

1. *Bladder lesions.*—How closely the circum-ureteral lesions simulate those of tuberculosis can be readily appreciated by a glance at the illustration (Fig. 1). Such extensive proliferative and edematous changes about one ureteral orifice, however, when they are the expression of a tuberculous process, are most frequently associated with other blad-



FIG. 3.—Radiogram showing pelvic course of the two right ureters.

der lesions suggestive of this process. Here none such could be detected. When tubercle bacilli are absent the most reliable method of diagnosis (when permitted by the patient) would be the removal of portions of the edematous tissue by means of a punch forceps through the author's operating cysto-



scope, and the histological examination of such tissue for miliary tubercles. Although the histological changes of tuberculosis cannot always be demonstrated, when the tuberculous lesions about a ureteral orifice are minimal in extent, they would, in our experience, be very apt to exist and be easily

discoverable where the lesions are as extensive as in this case. The absence of tubercle bacilli, therefore, in the bladder specimens, the absence of miliary tubercles in excised tissue about the ureteral orifice, with the presence of gonococci in sufficiently large numbers in the bladder specimen, would speak for the gonococcus as the causative agent.

#### 2. Ureteral stricture.

—The presence of a ureteral stricture at 10 cm. from the bladder orifice of the ureter was ascertained first by the introduction of an ordinary ureteral catheter, and then again when the shadowgraph catheter

was inserted for the demonstration of the double ureters. Its existence, therefore, could be accepted without hesitation, all the more so since no urine could be collected through the ureteral catheter, and since the operation disclosed an enormous amount of periureteritis, a dilated ureter above and a hydronephrosis. Just how much this coarctation of the ureter contributed to the impediment of the urinary flow and how much the periureteral indurative process was responsible therefor it is difficult to say. Interesting, however, from the standpoint of diagnosis, and in so far as it adds to our knowledge of the pathology of gonococcus inflammation of the ureter, is the fact that the ureteral lumen is prone and subject to the same stenotic influences that obtain when the gonococcus invades the urethra.

3. *Periureteritis*.—So extensive was the periureteral inflammation about the lower ureter (that is, with the upper or posterior vesical orifice) that it offered no little difficulty in the removal of the kidney. It involved the larger portion of the ureter as far as could be discovered with the limited exposure afforded by the operative field. In the absence of any calculus, and in the absence of any tuberculous lesions, this periureteral inflammation, coupled with the narrowing of the ureteral lumen seems noteworthy from both the pathological and therapeutic viewpoint. For from the standpoint of treatment it would suggest the advisability of early injection of the ureter with the silver salts, lest the process be allowed to progress so far as not only to jeopardize the integrity of the ureteral wall, but to implicate the tissues about the ureter as well. A comparison of the ureteral and periureteral lesions of this case and those of the second

will show how alterations destructive of both ureter and kidneys were prevented in our second case by the timely introduction of the ureteral catheter and the injection of argyrol solution.

4. *Lesions of the kidney, its pelvis and the absence of gonococci in culture*.—As for the changes in the kidney and pelvis, there are two points worthy of consideration: First, the peculiar strawberry appearance of the interior of the hydronephrotic sac and its pelvis, giving the general appearance of a "strawberry gallbladder"; and, secondly, the presence of pseudotubercles, without any demonstrable lesions of tuberculosis either in the parenchyma or anywhere in the pelvis, a sufficient number of sections having been made to discover the existence of any tuberculous lesions, had such been present. As for the absence of gonococci in culture, this fact cannot be accepted as precluding the existence of a gonococcus inflammation, since the exclusion of a hydronephrotic sac, for some time at least, as a consequence of the ureteral stricture, had doubtlessly resulted in the gradual disappearance and death of most of the organisms, an analogous phenomenon in the case of infected Falloppian tube being rather the rule than the exception. Possibly cultures from the lower stenosed portion of the ureter would have been positive.

*Summary*.—We have learned, therefore, from this most unusual case, first, that gonorrheal lesions in the bladder and about a ureteral orifice may simulate those of tuberculosis; secondly, that extensive stricture of the ureter may ensue; thirdly, that marked thickening of the ureter, with periureteral inflammation, can exist as the result of gonorrheal inflammation, without the presence of calculus or any other specific type of infection; fourthly, that such ureteral coarctation may result in attenuation of the renal parenchyma and its destruction; fifthly, that the lesions of such an infected hydronephrotic kidney and its pelvis may be unique, differing essentially from those produced by other pyogenic organism; and, sixthly, that our case is unusual in that only one ureter, pelvis, and its corresponding renal pelvic tissue were involved, the other portion of the separated kidney and ureter remaining free.

CASE II. Gonorrheal infection of the bladder; gonorrheal ureteritis with stricture formation; gonorrheal pyelitis and ureteritis cured by lavage with argyrol.

*Past history*.—L. B., male, thirty years of age (referred to me by Dr. Jos. A. Herb, January 4, 1916), said that he had "an infection" (presumably gonorrhea) about one year previously. Although



FIG. 4.—Drawing of the pathological specimen showing external view, the upper normal portion separated from the lower hydronephrotic by a furrow.

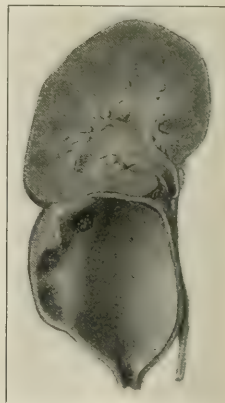


FIG. 5.—Section of the pathological specimen showing hydronephrotic sac.

the usual source of infection was denied there seemed to have been no doubt regarding the diagnosis, because he had had a severe infection of the conjunctiva, that was attributed by the eye specialist to the urethral discharge. Over a period of a year he had sought the advice of numerous physicians; had received bladder irrigations almost daily for a period of more than seven months, and, on July 27, 1915, was said to have had a very severe cystitis with considerable pus in the urine. Latterly he gave up all treatment because of the persistence of his symptoms, the pyuria, the vesical symptoms, bladder irritability continuing, in spite of the vigorous treatment he had received during the past year.

*Present complaint.*—Of late he thinks that the pain on voiding has diminished, so as to be very slight; but the pus in the urine is present as before, and he is anxious to know whether he is able to get married or not.

*Physical examination* (January 4, 1916).—Prostate was slightly enlarged; the right epididymis was indurated; the kidneys were not palpable; the urine was very turbid, containing macroscopic pus.

*Cystoscopic examination* (January 7, 1916).—Showed rather unusual lesions, which may possibly be characteristic of gonorrheal inflammation of the bladder. The floor of the bladder showed a considerable amount of inflammation, particularly about the left ureter, where the edema, the thickening and velvety condition of the mucosa extended somewhat over the paratrighal regions and distally well into the sphincter. There were numerous strawberrylike papular lesions, more angry red than the follicular lesions seen so frequently in the cystitis of females, and in the posterior wall of the bladder there were numerous minute bodies, some of which seemed to be lymphoid follicles, others cystic (cystitis follicularis et cystica). The specimens obtained from the right kidney showed that indigo carmine appeared in good concentration after a lapse of fourteen minutes, the urine being perfectly clear. From the left kidney, however, the urine was turbid. From this side, on introduction of the catheter, a fairly copious flow of very turbid urine was at once obtained, the urine being slightly blood tinged (specimen 1). Then, after the catheter was pushed further upward to a point of about twenty cm., meeting and overcoming an obstruction in its passage, an even more copious flow of urine followed (specimens 2 and 3), as if the ureter was dilated with retained urine. The catheter was then drawn outward again to a point between ten and fifteen cm., and, again, slightly turbid and bloody urine was collected, whereas the specimens obtained from a point higher up were much more watery and less cloudy.

From this examination it appeared that there were evidences of retention of urine in the left ureter; that there was an obstruction in the lower ureter that could be overcome with manipulation; that there were evidences of ureteritis, and possibly pyelitis, the involvement of the lower ureter being indicated by the fact that more turbid urine was obtained from the lower ureter than from the upper. In short, a tentative diagnosis of gonorrheal ureteritis with a tendency to stricture formation, and

of gonorrheal pyelitis was made. For confirmation of these suppositions the following specimens were sent to the laboratory for examination of spreads, cultures and the usual routine. Five specimens in all were collected from the left ureter, two from the right and one from the bladder.

The following is a copy of the urine report received from the bacteriologist, Dr. E. P. Bernstein, on January 10, 1916:

	Right.	Left 4 and 5.	Bladder.
Reaction	Alkaline	Alkaline	Alkaline
Albumin	Trace	Trace	Trace
Sugar	.....	.....	Negative
Urea	0.8 per cent.	0.4 per cent.	0.6 per cent.
Microscopical	Few epithelial cells	.....	.....
	Few red blood cells	Many red blood cells	.....
	No pus cells	Many pus cells	Many pus cells
	No casts	No casts	No casts
Spreads for gonococci	Negative	Positive	Positive
Culture for gonococci	Negative	Positive	Positive
		Left 1.	Left 2 and 3.
Spreads for gonococci		Positive	Positive
Culture for gonococci		Positive	Positive

From this it can be seen that no gonococci could be found in either the spreads or cultures from the right kidney urine. Gonococci were found in culture and the spreads

from all the five specimens collected from the left kidney, a fact which practically rules out contamination with the catheter. Positive findings were also reported in the specimens obtained from the bladder. The presence of pus cells in the left specimens further corroborated the diagnosis of infection of the ureter and pelvis of the kidney with the gonococcus. An x ray examination on January 8th was negative. On January 13th cystoscopy was again done, and the pelvis of the kidney and ureter were washed out with fifteen c. c. of a twenty per cent. argyrol solution, about five c. c. being allowed to remain in the renal pelvis, the pelvis and ureters being irrigated with the rest of the solution. In short, a case of undoubted gonorrheal infection of the left ureter and left renal pelvis and bladder wall, the patient having been given treatment of the pelvis and ureter with twenty per cent. argyrol. The improvement was most remarkable after this treatment, so that on January 26th another cystoscopy showed that the bladder was very much improved, the granular appearance having almost disappeared. There was still evidence, however, of stricture of the ureter at about ten cm. from the bladder, but

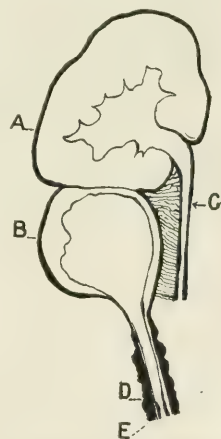


FIG. 6.—Diagram depicting various lesions of the specimen.



this was easily dilated and passed. Argyrol was again injected in ten per cent. strength, some of the solution returning alongside of the catheter. On the 1st of February the urine was practically clear, and from this date on the patient made an uneventful recovery. It is true that in addition to the two ureter and renal pelvic lavages the usual through and through irrigations of the bladder were given together with massage of the prostate, but the striking improvement immediately following the cystoscopic treatment was so definite as to be unmistakable evidence of the influence of the argyrol injection on the infection.

*Epicrisis.*—We have here a very definite case, in which pyuria persisted for about one year, undoubtedly due to the localization of the gonorrheal process in the left ureter and left kidney. Further, the interesting observation was made that the inflammatory process induced by the gonococcus in the ureter has a tendency to produce a stricture of this passage just as in the urethra and that retention of urine above such stricture can be demonstrated to occur.

The peculiar bladder lesions are, it seems to me, worthy of being sought for in cases that may come under the observation of others. Although none of the circumureteral edematous changes which were present in the first case reported by me could be detected here it seems not unlikely that a continuance of the ureteral inflammation over a longer period of time might have resulted in an extension of the edema to the vesical ureteral orifice. The disappearance of the peculiar papular lesions after the treatment seems rather significant and would suggest that they are characteristic of the gonorrheal process. The operative findings in Case I, demonstrated the occurrence of a hydronephrosis after a gonorrheal ureteritis. Here, too, in Case II, such hydronephrosis might have been produced had we not been able to bring about a cessation of the gonorrheal lesions, and a subsidence of the retention of urine by timely therapeutic intervention. Hence the importance of pelvic and ureteral lavage as soon as the diagnosis of renal and ureteral gonorrheal infection is established, not only in bringing about a cure of the gonorrheal process and preventing a reinfection of the distal genitourinary tract, bladder, prostate and vesicles, but also in aborting the destructive renal lesions.

1000 PARK AVENUE.

**Urinary Calculi in Childhood.**—R. Puech and G. P. Souza (*Annales Paulistes de Medicina e Cirurgia*, April, 1918) report thirty-five cases of urinary calculi in children, with the following conclusions: The condition is fairly common in Brazil; the vesical variety is much more common than the renal; fifty per cent. of their cases were in Italians or persons of Italian descent; the condition is much more frequent in males than in females (thirty-four males and one female); and the common age is from three to five years. Ninety per cent. of the calculi were phosphatic, while seventy per cent. of the children had phimosis, which is apparently a contributory cause. There were no recurrences after operation.

## A NEW TREATMENT FOR COMPOUND FRACTURE OF THE LONG BONES.

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The treatment of compound fracture of limbs varies as to the time after injury. Very good results have been obtained by various methods of immobilization of the injured limbs applied soon after the injury was sustained. I am, however, not going to deal with the treatment of a compound fracture immediately after injury. My deductions and experience with this common injury date only from the time the wounded man has reached the permanent base hospital; usually from three days to a week after having been wounded.

These men as they arrive usually are found put up in the following manner: either in skeleton iron extension splints, or in hinged splints of wood. These splints are excellent for the purposes they are made to serve, namely rapid immobilization, convenience of application, and for ease in the dressing

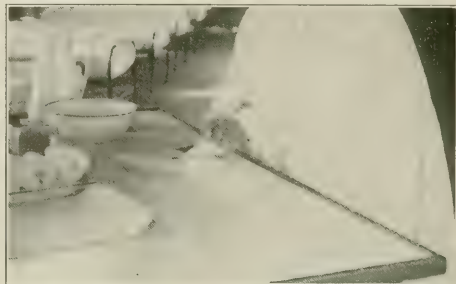


FIG. 1.—Showing how plaster splints are made.

of wounds, but to my mind these apparatus cease to be useful when anything more permanent, more reliable, and more comfortable can be substituted. Besides, there are decided objections, from the patient's point of view, to these rudimentary splints; for example, a skeleton extension splint of the arm or forearm usually confines a man to bed. The back splints in lower extremity cases permit no turning in bed. The hinge splints loosen and go awry, and dressing is painful.

All these objections are eliminated in the immobilization of a compound fracture in the manner described below. Pain is even greatly lessened, in the dressing and manipulating of the injured parts; *absolute rest is given to the part and the setting of the fracture is permanent.*

Many of these men can scarcely be touched without giving them the greatest pain, and the position of the limb must be changed frequently for comfort, while on the other hand, many men who would otherwise have been confined to bed, have, in a comparatively short time, been up and about after the molded plaster splints have been applied. These plaster splints, being made at the time of ap-

plication, can be of any strength or shape desired.

For the arm one or two splints may be made, usually two, anterior, posterior or bilateral. These are easily applied and as easily removed after the plaster has hardened, and the arm or forearm is never out of immobilization. If the patient has but

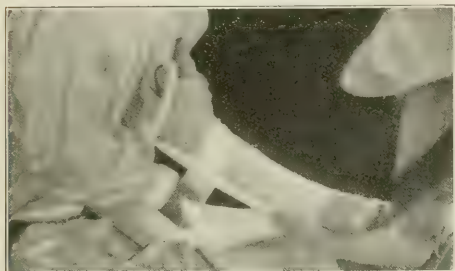


FIG. 2.—Showing the posterior splint being applied to the forearm.

one wound, one of the splints may be bandaged on permanently, and the other removed at will. If there are wounds on opposite sides, first one splint may be removed, wound dressed, splint reapplied and held, while the other is being removed and wound dressed. This prevents absolutely the moving of the injured part, actively or passively. For the lower limb, two splints are also made. One posterior splint turns up at the heel, and is molded into the shape of the foot; the second splint is bilateral and goes round the foot like a stirrup up either side of the limb, internally and externally. The latter splint, when dry and hard, slides off quite easily, and the entire limb can be dressed on three sides, the posterior splint keeping the limb in position. If the wound is in the calf, the lateral splint can be made the permanent one, and the posterior splint the removable one; or, if necessary, the splints can be removed in turn, and likewise reapplied. The splints for the lower limbs have been of the greatest value, as the ordinary



FIG. 3.—Treatment of compound fracture with plaster splints.

splints have sometimes been very trying to the patient as well as to the surgeon. It has often been difficult to make them fit accurately, and give the proper support at all desired points, without great discomfort to the patient. They have often to be padded, and this padding occasionally gives way,

causing pressure sores, no matter how much attention is given to its careful adjustment.

In many cases of multiple wounds, one of which being a compound fracture of the bones of the lower limbs, it is most difficult, if not impossible, to dress all the wounds without turning the patient on his side. This cannot be done in the ordinary way by putting up compound fractures of bones of the lower limbs. Again I wish to say all these objections are eliminated by the molded plaster splints. The patient can be turned about in any manner without pain or disturbance to the injured limb.

The method of procedure is as follows: The wound in the limb is dressed, and the entire limb is bandaged with one thickness of flannel bandage. The limb is measured for the desired length of the splint, then a piece of flannel or muslin bandage, the required length, is moistened and stretched out on a smooth, long table. The plaster bandages are soaked in warm water, to which salt in the proportions are eliminated by the molded plaster splints. This adding of salt makes the plaster harden more rapidly. Now starting at one end of the piece of flannel, the plaster bandages are laid down on this flannel (or muslin) from left to right, and back

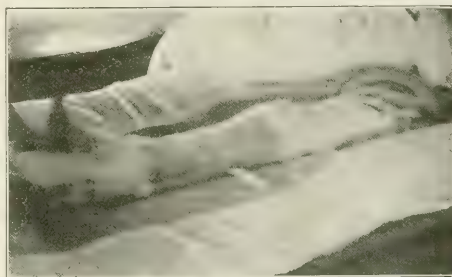


FIG. 4.—Treatment of compound fracture.

from right to left until the entire bandage has been used, and another is now used, if necessary, until the desired thickness is obtained. The plaster splint is now made; it is soft and pliable, and is put on the limb lengthwise, the limb being held in position. The splint is bandaged onto the limb by means of gauze bandage, being molded at same time. The second splint is now made and applied in the same manner. The limb is held in position by means of sand bags until the splints are dry, usually about fifteen minutes. The making of both splints and their application takes rarely longer than ten minutes. It is only a question of unrolling a moist plaster bandage, folding it in layers, and bandaging it on to a limb. Three inch bandages are most useful. For forearm, three such bandages are usually sufficient for both splints, made long enough to immobilize elbow, and going down well onto hand. About seven are necessary for the splints in cases of fracture of the tibia and fibula, immobilizing both knee and ankle.

I am certain these splints can be used in nearly all cases of compound fractures of bones of the limbs. Carrel-Dakin treatment may be carried out, the tubes being brought out between the splints. The



moisture will not materially injure the splints, or even if they are injured, it is no great inconvenience to apply a new set. Again in the latter stages of the fracture these splints facilitate massage of the limb, being so easily removed and reapplied. These splints have worked with the greatest satisfac-



FIG. 5.—Showing results of treatment with plaster splints.

tion to both patients and surgeons in the Sunderland War Hospital. They have been used in many hospitals in New York in the treatment of simple fractures and have proved highly valuable. I make no claim for originality in the making of them. I should also like to bring to attention the fact that these splints are great labor savers, and should they be adopted, would not only be a great comfort to the patients but also would permit the men to go into a convalescent home much sooner, and thus relieve congestion to some extent in the emergency hospitals. Transportation of these patients is also facilitated.

The accompanying photographs illustrate splendidly, by contrast, the conditions dealt with. Figure 1 shows the making of the splints, Figure 2 shows the posterior splint being put on a limb, the tibia and fibula of which were fractured by a gunshot wound. Figures 3 and 4 show the manner in which compound fractures are treated up to the time these men have been sent to the Sunderland War Hospital. They show better than words can describe the helplessness and discomfort of the patients. Figure 5 shows these same patients some time after they have been put up in molded plaster splints. They are both about to be dressed. Both these men have been out of bed two days after the splints had been applied.

In conclusion I wish to report a few cases treated as described above:

CASE I.—Private K. Compound fracture of tibia, and simple fracture of fibula (right leg). On admission was on a posterior frame splint. One wound four inches in length on anterior surface of leg, and about two inches of the upper fragment of the tibia exposed; another wound on calf of leg; both wounds infected. Dressing of the wounds was most painful, due to the manipulation. The discharge was profuse, and necessitated frequent dressings. Patient was forced to lie on back, and could not turn in any direction. When molded plaster splints were applied, patient was able to be allowed out of bed in a chair. Dressings were not painful. Patient could support his own limb and turn in any direction without the slightest pain. The bilateral side splint was the permanent one. Carrel-Dakin treatment was carried out, and there was

no damage done to the splints. Patient was shortly afterwards sent to a convalescent hospital.

CASE II.—Sergeant S. Compound fracture of ulna and radius, upper third of left forearm. On arriving at Sunderland War Hospital was in a skeleton extension splint, similar to the one shown in Fig. 3. There were two wounds each about three inches in length, one anterior and one posterior. Dressing was most inconvenient and painful. Patient was confined to bed and turning about in bed was impossible. Two days after the molded plaster splints were applied patient was out of bed. The splints were kept on for one month. Wounds are now all healed and patient is ready for return to his unit.

CASE III.—Private B. Compound fracture of surgical neck of humerus, compound fracture in elbow, compound fracture of ulna and radius, and compound fracture of little finger, all on the right arm, forearm, and hand. On admission to this hospital he had an iron skeleton splint on arm and forearm. Heavy walking near his bed would jar him so that he winced with pain. He was decidedly septic and exhausted, his wounds demanded frequent dressing. He was operated upon. All the wounds were cleaned out and treated with Bipp except the wound of the surgical neck of the humerus, which was treated by the Carrel-Dakin method. While still under anesthetic the molded plaster splints were applied. When sepsis had subsided the man was allowed out of bed. He has since been transferred to a hospital in London, still wearing the splint. The wounds were healed and union between the fragments had taken place in all the fractures.

I wish to thank Lieutenant Colonel J. W. Alexander, D. S. O., M. D., administrator of War Hospital, Sunderland, for kind permission to publish this paper.

## YALE'S MEDICAL ACTIVITIES AT CHANGSHA, CHINA.

BY AMOS P. WILDER,

New Haven, Conn.,

Secretary-Treasurer of Yale-in-China.

Enthusiastic young men of Yale University thirteen years ago started at Changsha, the capital city of Hunan Province, what they supposed would be a centre of higher education on a missionary basis. This early ideal has been well sustained, some fifty men and women having gone out for a longer or shorter service as teachers. However, the medical



Dr. Branch, of the Yale Mission, Changsha, China, celebrated the opening of the new \$200,000 hospital in January, 1918, by performing an abdominal operation. A doctor from an interior mission has come in to see an expert operate. An American nurse at foot. Chinese pupil nurses at left.

opportunity was so great, and the doctors and nurses sent out were so well equipped and keen in

their work that the medical side of "Ya-li," as the Chinese call it, has developed beyond all expectations. Hunan Province has 22,000,000 people, and while the foreigner was an object of aversion, to put it mildly, before the Boxer year (1900), the Yale doctors made themselves so useful that the Chinese saw an opportunity and for once native conservatism was overcome.

The gentry and literati made overtures for a medical school, which is now in operation under the joint supervision of Chinese and Yale teachers with sixty pupils. A nurses' training school has been developed under Miss Nina D. Gage, who served during the past summer at the Vassar School; and the hospital, a \$200,000 building, the gift of a member of the Harkness family, has



An old powder magazine converted into an emergency hospital at the Yale Medical Mission, Changsha, China.

proved very useful during the recent revolutionary troubles, which largely centred in Hunan. The China Medical Board makes a liberal grant to the medical activities for a period of years; and the provincial government does the same and—which does not always follow in that country of shifting administrations—has actually paid the money for a period of years. While the preparatory school and college are staffed exclusively by men with Yale degrees, among the seven doctors are men of other training; and the hopes of expansion after the war are so great that cooperation from a number of quarters is proposed. The medical students at Changsha represent six or seven provinces. The school has the advantage of a college on the same campus from which to draw largely for its pupils.

As soon as conditions are favorable, the construction of a laboratory, for which the China Medical Board has appropriated \$38,000, will begin. Here the young men will get their biology, physics, and chemistry.

In the Yale school instruction is given in the English language. Just what the scope of the school will be, compared with the more ambitious plants of the China Medical Board at Peking and



A street scene in Changsha, China, showing the "office" of a native doctor who for a cent and a half will put on a plaster while you wait warranted to "cure major and minor infirmities."

Shanghai, remains to be seen. It will depend to some extent on how heartily the Yale alumni body respond to what is undoubtedly a great opportunity. Whether the Changsha school shall become a highly equipped plant, with all that means of departmental development at great cost, for the supreme training of leaders in medicine in China; or whether it must be content to do substantial work on a more modest basis in the training of many merely good physicians remains to be seen. There is a Medical Ad-



Civilian victims of bandits and soldiers of North and South factions brought in to be treated at the Yale Medical School at Changsha, China.

visory Board of Yale graduates in this country, of which the members are Dr. William H. Welch, Dr. Walter B. James, Dr. Samuel W. Lambert, Dr. Harvey Cushing, Dr. Richard P. Strong, Dr. Fred T. Murphy, Dr. George Blumer, and Dr. John Howland.

5 WHITE HALL.



CELLULITIS OF THE UPPER LID DUE TO  
A FOREIGN BODY*Report of a Case*By ALEXANDER ROVINSKY, M. D.,  
New York.

The patient, eight years of age, was brought by his mother, to the eye clinic of the Post Graduate Hospital, with a history of having had a piece of wood "shoved" into his eye by a playmate some eight weeks previous to his presentation for examination. The day following the mishap the eye became swollen and has practically remained so until the present time, notwithstanding treatment afforded it by private and dispensary physicians.

The patient is a boy of average physique, for his age and station in life. The right eye is enormously swollen and entirely closed by mechanical ptosis due to the weight of the edematous lid. The swelling is rather uniformly soft to touch, but conveys no impression of fluctuation. The boy evinces no particular pain or tenderness on manipulation, except when an effort is made to separate the lids. Eversion of the upper lid is of course out of the question, but on forcibly separating the lids the globe proper seems to be untouched, the cornea is perfectly transparent and the pupillary reaction normal. There is, however, considerable chemosis at the nasal portion of the conjunctiva, and a slight ptosis outward; the eye performs its excursions more or less freely, except inward, where its motion is rather limited.

The history of the case and the general appearance of the eye suggested, at first glance, the possibility of a traumatic orbital cellulitis; however, the fact that the condition was practically stationary, having persisted for two months without any invasion of the eyeball and the circumorbital tissues, to judge by the mother's statement, and, what was most important, the behavior of the boy, who seemed not to suffer any pain except as above stated, spoke decidedly against cellulitis of the orbit. To be sure this latter, generally a very serious and often dangerous inflammation of the retrobulbar tissue, while usually accompanied by constitutional symptoms such as chills, fever, headache, general malaise, etc., may sometimes appear in a comparatively light form, run a more or less severe course, and pass without leaving any trace behind. To exclude the possibility of extension of an inflammatory process from any of the neighboring sinuses—hardly probable in one of that age in whom the sinuses are as yet anatomically undeveloped—we took an x ray, the report showing a frontal sinus small and infantile in character, but with outlines and septal markings well defined, and the ethmoid and maxillary apparently clear. The absence of thickening and pain at the margin of the orbit, as far as it could be palpated through the swollen tissue, excluded the possibility of a marginal or orbital periostitis.

He was given some Burow's solution for external application, and the mother was instructed in ordinary eye toilet. The boy failed to report for two weeks, and when he appeared again I found the

swelling had gone down somewhat, his condition otherwise unchanged. On palpating the swelling I detected a firm elongated foreign body immediately under the lid, its proximal extremity toward the inner canthus. A slight pull with the forceps brought to light a sliver of wood about an inch long and one quarter inch wide in its widest portion. The removal of the body was unaccompanied by any reaction, the chemosis disappeared entirely in a couple of days, ophthalmoscopic examination showed the media clear and the fundus normal, with normal vision. There was a slight mechanical ptosis which gradually improved, until at the time of writing, three weeks after extraction of the body, the lid has taken on its normal shape and motility.

The interest in reporting the case lies in the rather unusual size of the foreign body that lay deeply imbedded in the palpebral tissue for ten weeks without seriously injuring either the lid or the eyeball. In dealing with any lid injury, whether a contused or lacerated wound, a burn, an imbedded foreign body or what not, the fact should be constantly kept in mind that, thanks to the considerable elasticity of the skin covering the lids and their loose attachment to the subjacent parts, the edema and ecchymosis resulting from any trauma is much greater than one would expect to find from the nature of the injury, in fact greater than would be found in any other part of the body after a similar injury—comparatively slight contusions are apt to be followed by enormous edema and extensive discoloration. With this in view a thorough examination is called for to determine whether, in addition to the swelling and discoloration, there is also an open wound in the lid, and an involvement of the orbit and the eyeball. It would appear in this case that the edema was so extensive that the foreign body was successfully hidden in the tissues so that a perfunctory palpation failed to elicit its presence. Later on, evidently, when the swelling subsided to some extent it came so much nearer to the surface that it was removed without difficulty.

1340 MADISON AVENUE.

**The So Called Lucid Interval in Manic Depressive Psychoses. Its Medicolegal Value.**—Alfred Gordon (*American Journal of Insanity*, April, 1918) thinks that the attitude of the community towards the manic depressive in the intervals between his attacks is very important. Should he be left at large, and, if so, should he be allowed free control of his affairs? Doctor Gordon relates two cases from his own practice in which the patients, although appearing absolutely normal to the world, showed decided defects of judgment and transvaluation of emotional values. He believes that the length of time elapsing between attacks is some index to the degree of recovery, inasmuch as when attacks occur every year or every few years the subject is less likely to be normal during the intervening period than when many years go by without an attack. In any case this author thinks that such a patient should always be provided with administrators or counsel to protect his affairs.

## Abstracts and Reviews.

### THE ANNIVERSARY ADDRESS OF THE NEW YORK ACADEMY OF MEDICINE.

*Thursday Evening, December 5, 1918.*

The President, Dr. WALTER B. JAMES, in the Chair.

Dr. WALTER B. JAMES opened the meeting and introduced the speaker of the evening in a short address in which he said that all through the war, which had so happily come to a close, the most valuable information to the world had been accumulating and the need for its propagation was becoming more urgent. Constantly through the horrors and terrors of the conflict, certain features which the war seemed to have brought out had attracted marked attention throughout the world. This had been especially true in the direction of biology and the relation of the other natural sciences to the ordinary affairs of human life. The explanation of the various phenomena of life by the laws of chemistry, physiology, biology, and so on, were of great value and interest to mankind. Tonight Professor Edwin G. Conklin, professor of biology in Princeton University, had kindly consented to deliver to the Academy the anniversary address in which he would explain the relation of the laws of biology to true democracy.

#### THE BIOLOGY OF DEMOCRACY. WITH ESPECIAL REFERENCE TO THE PRESENT WORLD CRISIS.

Professor EDWIN G. CONKLIN, of the department of biology, Princeton University, maintained that the outcome of the recent war was in perfect accord with the established laws of biology. The whole course of evolution from ameba to man had been marked by increasing specialization or limitation of constituent parts of an organism and their integration and cooperation in the organism as a whole. Nature invariably sacrificed the individual, if necessary, for the good of the colony or race or species. Many German scientists as well as military men had claimed the sanction of science, and especially of biology, for the beneficial effects of war, for a militarized state and for a hereditary aristocracy. Nevertheless, the war had ended with the victory of the forces fighting for democracy, and it would appear that not only was the world now safe for democracy but that it was unsafe for anything else. If democracy was to endure, however, it must rest upon science as well as sentiment, and it might be profitable on this occasion, in addressing members of the greatest of the biological professions, to examine certain aspects of democracy in the light of biology, for the principles of biology applied to man and his institutions no less than to other organisms.

In looking for the biological bases of democracy, one found many kinds of democracies in many fields of human activity, for example in government, industry, commerce, education, etc., and it was difficult to define the exact meaning of the term. But it would be admitted that democracy in its widest sense meant the ultimate control of all matters of common interest by the people as a whole rather than by any

person or class. The rights of man as man have ever been the foundation stones of democracies. The American Declaration of Independence and also the motto of France, "Liberty, Fraternity, Equality," represent in many respects the fundamental ideals of democracy.

Questions of great biological and social importance were these: How could there be individual liberty together with social organization and harmony, universal fraternity in spite of national and class antagonism, democratic equality in spite of inherited inequalities? Was the ideal state one in which the social bond was as loose as possible and individual freedom was the chief aim, or was it one in which the bond was as close as possible and the good of the nation or race or species was the supreme object? There could be no question as to the biological answer; sacrifice of the individual was to be made, if necessary, for the good of the nation.

If democracy meant decreasing specialization and greater personal freedom it meant disintegration and extinction. Democracy, however, did not necessarily mean this. It was only the early experience of this country as a pioneer society, where it was possible for every person to be a selfsustaining unit, that led to this conclusion. As the country became more populous greater specialization and limitation of individuals and greater cooperation and harmony among them were essential. The freedom of the individual merged necessarily more and more in the larger freedom of society. Democratic freedom of necessity meant the freedom of society rather than that of the individual.

There then remained the problem of overcoming, by the ideal of universal fraternity, the known facts of national and class hostility. It was highly probable that all people of English, French or German stock were descended from the ancestors of a thousand years ago, and therefore it was a biological fact that, if not brothers, they were all at least cousins. If the number of one's ancestors doubled in each ascending generation, as would be the case except for the marriage of cousins of various degree, every one would have had more than one billion ancestors one thousand years ago, and every one was literally descended from royalty and from any and every other person of one thousand years ago who left many descendants, including nonentities or worse. People hunted up their noble ancestors but they carefully overlooked the others. In length of descent all were equal, and in community of descent all were cousins if not brothers. As a result of this common descent human resemblances were vastly more numerous and important than the differences. Racial and varietal differences represented a natural classification based chiefly upon physical characteristics and these differences tended to cause a natural and desirable segregation of races, but they did not justify racial antagonisms. The fundamental instincts of all races were so essentially similar that all might and often did live together in harmony; and the cooperation of all types of men in organized society was so much a matter of education and environment that the most distinct races might work together in mutual helpfulness.



Coming to those minor subdivisions represented by various European stocks, the distinctions were usually so slight that they formed no natural barrier to the most intimate association and cooperation, as had been abundantly demonstrated in this country. The inherent antagonisms between these stocks that agitators and designing politicians talked so much about were really not inherent at all, but were largely created, cultivated and magnified for factional and selfish purposes. The biologist would look with concern upon the breaking up of European nations into minor independent units, just as the intelligent American would deprecate the breaking up of his own country along similar lines. Such a process represented disintegration and devolution rather than progress and evolution.

The most artificial and unnatural classification of all minor class distinctions were those relating to wealth and social position. This did not mean that persons should not prefer association in congenial groups which had common interests and ideals; but when attempts were made to array one group against another and to make these classes permanent and hereditary, an artificial disharmony was introduced into society which could work only disastrously. Autocratic personal or class rule was always bad, for no person or class was wise or good enough to rule other persons or classes without their consent. The strength and stability of governments were proportional to their all inclusiveness, their breadth of base; whereas autocracies were inverted pyramids. Equal universal suffrage and majority rule were the only selfpreserving mechanisms yet discovered for harmonizing conflicting elements in a population; they were the safety valves of society.

Majority rule would level society down to general mediocrity were it not for the instinct of the people to follow leaders. Neither in a democracy nor in an aristocracy did the people make the plans for the form of government, for war or peace, or for anything else. These plans were always made by leaders, but in the one case they were laid before the people for approval or disapproval and in the other they were not. The greatest danger that confronted democracy was not in its slowness and inefficiency, but was plainly represented by the fact that unscrupulous leaders might pervert and misdirect the normal social instincts of the people in order to accomplish selfish and partisan purposes. The only remedy for this great danger was to educate the people as a whole to appreciate the difference between emotional and rational appeals.

The democratic creed of the United States was that "all men are created equal," and yet nothing was more evident than that all men were unequal in personality, intellect, and influence, and biology showed that many of these inequalities were inherited. How should one harmonize the teachings of biology with those of democracy? Hereditary aristocracy was founded upon an obsolete idea of natural inheritance, namely the law of entail. It confused social and biological heredity. A son might inherit the property of his father in entirety, but not his personality; his titles and privileges, but not his intellect and character. "From yon blue heavens above us bent, the gardener Adam and his

wife smile at the claims of long descent." In biological heredity the qualities of the parents were separated and distributed to the offspring so that the latter were mosaics of ancestral traits. The best traits might appear in parents and be lost in their children. This was the great law of heredity discovered by Mendel and it differed fundamentally from the law of entail. The law of entail was aristocratic but the law of Mendel was democratic. No family had a monopoly of good or bad traits and no social system could afford to ignore the great personalities that might appear in obscure families or to exalt nonentities to leadership because they belonged to great families.

Democracy did not mean that all men were equal in personality. It was not a denial of personal inequalities, but only the genuine recognition of them. Rigid class and family distinctions, on the other hand, were denials of individual distinctions. It did mean equality before the law, no special privileges due merely to birth, freedom to find one's own work and place in society. In short it meant that every man was to be measured by his own merits and not by the merits of some ancestor whose good qualities might have passed to a collateral line. Democracy alone permitted a natural classification of men with respect to social value, and it contributed more than any other system of government to the contentment, peace and stability of the peoples of the world.

"Who breaks his birth's invidious bar,  
And grasps the skirts of happy chance,  
And breasts the blows of circumstance,  
And grapples with his evil star;  
And moving up from high to higher,  
Becomes on Fortune's crowning slope  
The pillar of a people's hope,  
The centre of a world's desire."

**Canada's Reconstruction Work for Her Soldiers.**—Mr. T. B. Kidner, vocational secretary of the Invalided Soldiers' Commission of Canada, tells in *The Modern Hospital* for November, 1918, the steps taken by his country in the important work of reconstruction of the returned soldier. Beginning with improvised and altered structures for tendering hospital service to disabled soldiers, Canada later devised and erected special types of buildings at various points throughout the country, which, although of substantial type, are not permanent in their nature. After a time, steps were taken to provide for the placement in civil employment of men who had been discharged, after their rehabilitation was complete, and early in 1916 vocational reeducation was undertaken. Simple workshops were established, followed later by a wide variety of opportunities which enabled every man, under proper hospital supervision, to undertake some form of activity, mental or physical, which would be helpful to him. Public, semipublic, and private agencies have all cooperated in the great problem of the reabsorption of the disabled men into civil life, and Canada's unusual success in this work of greatest importance is well worth the attention and study of America today.

# Medicine and Surgery in the Army and Navy

## RECEIVING WOUNDED FROM OVERSEAS.

*First Patients Arrive at Debarkation Hospital No. 3.—How the Greenhut Building Was Reconstructed.—Largest Kitchen in the City.—Cafeteria Service on a Large Scale.*

A single policeman on a motorcycle turned into the almost empty street from Fifth Avenue at slow speed and stopped just beyond the canopy of the

Eighteenth Street entrance. A long line of khaki colored ambulances followed. Two women in leather coats sat on the driver's seat of each. As the first ambulance drew alongside the curb a tall, pale young man of twenty-five, with whitened hair, stepped slowly down with his roll of blankets, his colored "ditty bag," and his mess-kit in his hands and passed into the open door.

The first patient had come to U. S. Debarkation Hospital No. 3. This first patient, Private Muir, was from Malden, Mass., and was recovering from pneumonia followed by empyema.

The second to step out was from Mississippi. A square browed Celt whose upstanding shock of black hair, fair skin and deep blue eyes proclaimed his origin even before one learned that his name was Murphy.

Murphy "got his" at Soissons on July 20th. He

was a messenger attached to battalion headquarters and formed part of the second wave. A sniper hidden in a tree shot him through the right arm. He fell, rose, tied up his arm and walked back through a rain of bullets to a first aid station. Since then he had passed through one hospital after another, French, British and American, all good, all well managed, but the American best of all. "You are with your own folks."



MAJOR W. J. MONAGHAN, M. C.,  
Commanding Officer U. S. Debarkation Hospital No. 3. In the conservatory.

*Copyright International Film.*

The patients filed into a room fitted with plain benches, for all the world like the waiting room in an out-patient department. Every patient had personal belongings of some kind in awkward, ungainly packages or canvas bags. Many used crutches, and a few were on litters. These, of course, were carried. Across the rear of the room ran a barrier behind which sat ten hospital corpsmen at typewriting machines. Each patient stepped up to the barrier. A typist filled out a clinical brief, form 55A, in triplicate. Taking a copy, the patient passed down the

counter where an officer and an orderly listed his valuables, placed them in a numbered envelope, pinned it up and gave the patient a receipt signed by the officer, the patient signing a carbon duplicate. The patient then passed into an undressing room with a bench along one side. Here



an orderly helped him undress and carried the clothing to the next room where the naked patient and his underclothing were carefully examined for vermin and evidences of contagious diseases by one of ten medical officers standing there. If vermin were found, that fact was noted by the surgeon's orderly. The patient with his attendant orderly passed into a clothing room of which there were two, one for infected and one for "clean" men. The clothing was deposited in three piles, in one the underwear, which went into the laundry chute without identification marks, in another the outer clothing, which had no leather attached to it, and in the third the leather equipment. A bin number tag was at-

same ward, returned to each his papers and conducted the group to the elevator and then to the proper ward. Here the ward surgeon and ward nurse met the group and assigned the men to their cots. This was journey's end—for a while.

The first patient arrived at 12:20 noon on November 23d. In just forty minutes he was seated by his cot writing a letter home on a pad of paper handed him by Major Lamond, the American Red Cross representative.

Presently the patients were led to the dining room on the second floor. This room can seat 2,000. The tables are of unpainted pine. The tops are removable and each board of the top is washed on all



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PART OF THE ADMINISTRATION STAFF OF U. S. EMBARKATION HOSPITAL NO. 3.

Seated, left to right: Lieutenant L. S. Tassman, registrar; Captain W. W. Osgood, sanitary inspector; Lieutenant A. F. Anderson, Adjutant; Major W. J. Monaghan, commanding officer; Captain Ralph H. Jones, S. C., medical supply and property officer; Lieutenant William Baylies, Q. M. C.  
Standing, left to right: Lieutenant F. J. Quist, commanding officer, detachment of patients; Lieutenant A. E. Anderson, chaplain; Captain E. R. McClellan, chief of surgical service; Captain Dennis C. O'Neil, chief of medical service; Captain D. E. Fraser, disposition officer; Lieutenant W. C. Swartout, personnel adjutant; Captain C. H. Haas, mess officer; Lieutenant W. G. Nichols, assistant adjutant.

tached to the outer clothing and the equipment, a duplicate of which was handed the patient. This clothing was later sterilized, the leather goods by formaldehyde, the other by steam, and returned to the patient. The patient then stepped into the shower room where two orderlies scrubbed him down thoroughly with soap, under a warm shower, the temperature of which was governed by thermostat. Two other orderlies dried him with big bath towels and the linen man then handed him a suit of pajamas, a pair of slippers, and a flannel dressing gown. An orderly then collected the patients in groups of five, all of whom had been assigned to the

four surfaces every day. A railed-off passageway, eight feet wide, leads from the door to the serving counter at the opposite end of the room. On each side other railings divide off the passage for outgoing patients. At the door the mess officer, Captain C. H. Haas, M. C., directed all the maimed who seemed unable to carry a tray to tables already set, where they could be waited on. "Say, but I'm glad to wait on those fellows," said one orderly as he passed with a heaped-up tray. "Just think what they've been through! We can't do enough for them." And this spirit seemed to animate every man in the hospital from the commanding officer,

Major W. J. Monaghan, M. C., to the smallest runt of a rookie in the ranks of the medical detachment.

The patients able to wait on themselves, passed on to the cafeteria counter. Here each picked up a tray, knife, fork, etc., and passing down the line received his helping of bread, butter, steak, beans, potatoes, gravy, macaroni and coffee, and found a seat where, between mouthfuls he discussed with his fellows the possibilities of early shipment home.

"After a little experience we can handle incoming patients at the rate of 200 an hour," said Major Monaghan.

They are lucky patients who are assigned to Embarkation Hospital No. 3. It is in the heart of the city occupying the Greenhut and the Cluett buildings, which extend from Eighth to Nineteenth Streets on the east side of Sixth Avenue. The Greenhut Building has a total floor space of 300,000 square feet, or fifteen acres. The building is one of the best lighted of its size in the city, for it has 52,198 square feet of outside windows some of which have a single pane of glass twenty feet wide by fifteen feet high.

The Cluett building, eleven stories high, is used as barracks for the enlisted men, the Greenhut building being devoted to the hospital proper. The main floor of the Greenhut building, on the Sixth Avenue side, is occupied by a Red Cross theatre seating nearly a thousand. Around this auditorium are booths giving some privacy for patients in meeting their visitors.

The main floor also furnishes the receiving rooms already described and a garage for twelve automobiles.

On the roof is a conservatory with over 4,000 square feet of floor space and with glass walls and roof which is fitted up as a lounging room. This has been supplied with palms, ferns, a piano and a victrola through the kindness of friends.

On the mezzanine floor are the offices of the commanding officer and his staff.

The western portion of the second floor is devoted to three surgical wards and the southern portion to one of officers' ward. The eastern portion houses the diningroom and kitchen. This kitchen is the largest in the city of New York and is fitted up with the very latest and best equipment. Every utensil used is of aluminum, this metal being used even for the six big steam jacketed kettles for boiling soup, and six coffee urns, each with a capacity of sixty gallons. The kitchen equipment includes 140 running feet of heavy duty gas ranges, eight steam cookers which carry 350 pounds pressure and four low pressure steam cookers, and an

electrically driven kitchen machine with attachments for mixing dough, grinding meat, whipping cream, mashing vegetables, etc. There is also an electrically driven potato peeler which peels twelve barrels of potatoes in an hour and which does it with such great economy of potatoes that when the hospital is running at full capacity it will save its own cost, \$640, from this economy alone in six weeks.



U. S. DEBARKATION HOSPITAL NO. 3.  
The Greenhut Building, on Sixth Avenue from Eighteenth to Nineteenth Streets, New York. The hospital has a capacity of 3,400 beds.



The cafeteria idea is applied in a modified form to the service for bedridden patients, the cafeteria going to the patient instead of the patient going to the cafeteria. This rolling cafeteria consists of a service wagon on four wheels fitted to receive four covered food containers each twenty-two inches long, fourteen inches wide and eighteen inches deep. Some of these are subdivided. They also fit into the steam tables of the cafeteria in the main dining-room. The nurses will supply each bed patient with a tray, plate, etc. Two of these mobile cafeterias are wheeled to the bedside and the patient served with food and drink direct from the big containers. These differ materially from the service wagons

The dental surgeons, Captain H. B. Reilly, D. C., Lieutenant F. S. Adams, D. C., and Lieutenant C. H. West, D. C., have two dental chairs, with the latest equipment of dental engines, etc., adjoining the surgical rooms.

The x ray rooms are also on the fourth floor and are equipped with three fixed and three portable x ray outfits beside a special fluoroscope apparatus with a screen measuring twenty-four by eighteen inches. The portables can be attached to any electric light outlet and by their use x ray photographs can be taken of a patient in bed in any part of the building.

The dispensary occupies a central position on the



MESS HALL OF U. S. DEBARKATION HOSPITAL NO. 3.

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The dining room has a seating capacity of 2,000, and the cafeteria can serve 800 meals an hour.

usually found in hospitals in that they are built on the principle of a fireless cooker and will carry regular diet for 160 men. They are so geared that one man can push them, and so narrow that they can pass between the cots.

The operating rooms, including the dental office, x ray room, and dressing rooms, are on the fourth floor. The operating room faces south with windows reaching from floor to ceiling. Suspended from the ceiling is a cluster of electric lights in circular form which provides ample illumination devoid of shadows.

fourth floor and keeps four enlisted men busy dispensing prescriptions. Two of these are graduates of the Brooklyn College of Pharmacy and one a graduate of the Rhode Island College of Pharmacy. When the hospital is running at full capacity more help will be required.

Three isolation wards, each of which has fifty beds, are provided in a space on the eastern side of the Greenhut building, completely walled off from the remainder of the building, though communicating doors are cut in the walls.

The clinical laboratory of the Port of Embarka-

tion, under the command of Major E. H. Schorer, M. C., which was described in the NEW YORK MEDICAL JOURNAL for December 7, 1918, is quartered on the roof of the Greenhut building and does all the laboratory work required for this hospital as well as acting as a department laboratory for all the laboratories in the thirteen different hospitals under the supervision of Colonel J. M. Kennedy, the surgeon of the Port of Embarkation.

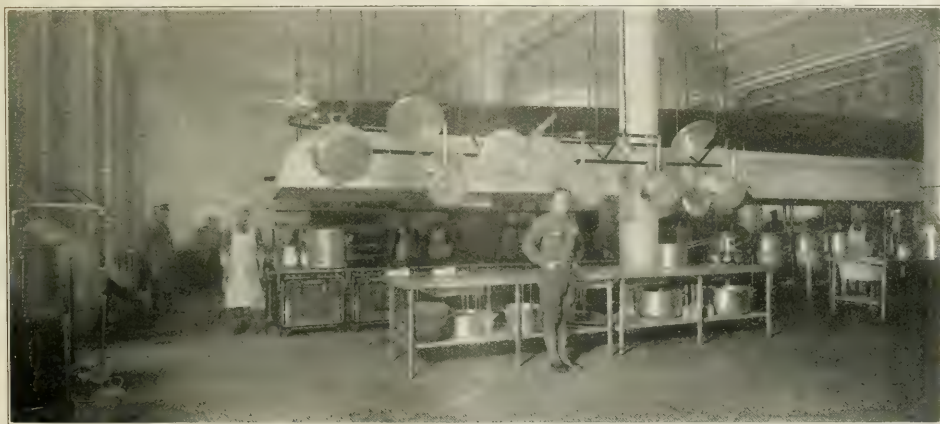
One corner of the basement is occupied by the Post Exchange. When detailed as Post Exchange officer, Lieutenant C. C. Rogers, M. C., an eye specialist from Allentown, Pa., asked for funds to purchase supplies, but none were available. The next day he reported to Major Monaghan that he had purchased 100 quarts of ice cream, fifty dozen soft drinks, and \$200 worth of tobacco and cigars. "But where did you get the money?" asked the major. "I didn't get it," said the lieutenant. "I will pay when I sell the goods." And he has been selling them! One hundred quarts of ice cream

When run at full capacity the boilers consume 350 tons of coal a week.

#### RECEIVING VISITORS.

Visitors are a source of never ending worry in every military hospital. Anxious parents come in droves to see their hero sons and their rights must be recognized though their presence is sadly subversive of discipline unless carefully regulated. The American Red Cross is furnishing valuable aid in handling this problem. An entrance on Sixth Avenue has been designated for visitors. On entering the visitor confronts a desk where Red Cross representatives supply a blank on which the visitor writes the name, rank and command of the patient, and the visitor's relation, whether parent, relative or friend. The whereabouts of the patient, learned from a card index, is inscribed on the blank and a Red Cross messenger dispatched to find him.

The task of converting the former department store into a hospital was placed in the hands of



KITCHEN OF U. S. DEBARKATION HOSPITAL NO. 3.

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Said to be the largest kitchen in the city of New York. It is fitted with the most modern and efficient equipment.

went in the first twenty-two hours. Lieutenant Rogers also has a barber shop with five chairs which took in \$60 a day during the first week, netting a profit for the exchange of \$9 a day. He has also installed a tailor shop where the men can have their clothes pressed at rates as reasonable as those charged in the barber shop—fifteen cents a shave and twenty five cents for a haircut, with absolutely no tipping allowed.

The roomy and numerous elevators, there are twenty-six in the Greenhut building alone, greatly facilitate the transportation of the patients. These are for the most part grouped around a circular space in the center of the building which has a diameter of seventy-five feet. This central hall furnishes an ideal place for parking litters and affords the space needed in handling the patients in large numbers.

The building has its own heating and lighting plant, including ten boilers and eight dynamos.

Major S. F. Voorhees, S. C., a New York architect; Captain Walter E. Lang, M. C., and Lieutenant Russell H. Kettell, S. C., who prepared the plans for the reconstruction. These plans were executed under the direction of Major Charles W. Noble, construction quartermaster. When the building was taken over it was an empty shell. The plans originally made provided for division into small treatment wards of about twenty-five beds. These plans were changed on the ground that the institution was to be primarily an evacuation hospital and not for treatment and the wards were consequently changed to hold from eighty to 125 beds. Each ward is provided with a nurses' room, a linen room, a service room, bathrooms and toilets, so that a patient does not have to go off the floor under any circumstances except for food. When working at full capacity the hospital can accommodate 3,400 patients, whose care will require the services of sixty-five officers,



300 nurses and 900 enlisted men. There will also be attached to the hospital for escort duty sixty officers and 400 enlisted men.

The nurses are quartered at the Trowmart Inn on Abingdon Square, which has been chartered for that purpose by the Government. While this is in walking distance of the hospital, the nurses are carried to and from duty in ambulances, if it is so desired.

The personnel of the staff of a hospital as large as Debarkation Hospital No. 3 changes frequently. When the first patients arrived there were forty-nine commissioned officers and 400 enlisted men on duty. This number was increased on the next day by the addition of 300 enlisted men sent over by Colonel Hughes, personnel officer of the office of the Surgeon of the Port of Embarkation. New officers and men have been added *pari passu* with the arrival of additional patients. On December 5th the roster showed the following officers on duty:

*Administrative staff.*—Major W. J. Monaghan, commanding officer; Captain W. E. Lang, assistant to the commanding officer; First Lieutenant A. F. Anderson, adjutant; Second Lieutenant W. G. Nichols, S. C., assistant adjutant; Captain D. E. Fraser, disposition officer; Captain C. H. Haas, mess officer; Captain R. H. Jones, S. C., medical supply and property officer; Captain W. W. Osgood, sanitary inspector; Captain H. G. Walker, assistant mess officer; Captain W. C. Williams, receiving officer; First Lieutenant E. Anderson and First Lieutenant E. E. Davis, chaplains; First Lieutenant C. H. Doty, detachment commander; First Lieutenant R. M. Hall, assistant commanding officer of the detachment of patients; First Lieutenant F. J. Quist, commanding officer of the detachment of patients; First Lieutenant C. C. Rogers, exchange officer; First Lieutenant W. C. Swartout, personnel adjutant; First Lieutenant I. S. Tassman, registrar; First Lieutenant W. S. Wallace, assistant commanding officer of the detachment.

*Surgical service.*—Captain B. H. McClellan, chief surgical service; Captain L. H. Beals, assistant to chief; Captain T. B. Bond, general; Captain John Cook, surgical; Captain H. S. Dowell, eye, ear, nose and throat; Captain W. Gauch, general; Captain H. J. Herrick, eye, ear, nose, and throat; Captain George L. McKee, assistant chief surgical service; Captain C. H. O'Crowley, genito-urinary; Captain Charles Whelan, x ray; First Lieutenant T. McG. Brennock, assistant to chief; First Lieutenant T. P. Govan, assistant to chief; First Lieutenant C. H. Johnson, assistant to chief; First Lieutenant T. B. King, x ray; First Lieutenant J. P. Mayer, assistant to chief; First Lieutenant F. E. Montgomery, anesthesia; First Lieutenant M. S. Nelson, surgical, and First Lieutenant Morris Rosenfeld, assistant to chief.

*Medical service.*—Captain D. C. O'Neill, chief medical service; Captain J. B. Campbell, assistant to chief; Captain J. P. Comegys, assistant to chief; Captain M. M. Denlinger, internal; Captain W. H. Enders, assistant to chief; Captain H. L. Hayes, assistant to chief medical service; Captain R. R. Hoskins, medical; Captain T. P. Martin, general; Captain H. C. Mowery, general; Captain J. Steffens, internal; First Lieutenant J. F. Ahern, assistant to

chief; First Lieutenant M. M. Andrews, medical; First Lieutenant R. Callaghan, internal; First Lieutenant C. V. Calvin, internal; First Lieutenant J. G. Cottrell, internal; First Lieutenant W. J. Davidson, internal; First Lieutenant J. A. Farrell, neurology; First Lieutenant F. A. Glass, medical; First Lieutenant W. D. Maccabee, internal; First Lieutenant E. A. Miller, assistant to chief; First Lieutenant H. W. Patton, assistant to chief; First Lieutenant N. L. Reynolds, internal; First Lieutenant C. W. Rutherford, assistant to chief; First Lieutenant E. W. Schlemmer, internal, and First Lieutenant D. S. Strong, assistant to chief.

*Dental service.*—Captain H. B. Reiley, D. C.; Lieutenant F. S. Adams, D. C., and Lieutenant C. H. West, D. C.

There are at present also 660 enlisted men attached to the habitat. In addition to the personnel attached to the hospital there is an escort detachment quartered at the hospital which takes charge of the transference of patients to other hospitals. When a patient leaves the building Major Monaghan's responsibility for him ceases. He turns him over at the outer door to the escort detachment, under Major C. M. Thomas, M. C., who has fifty-three officers and 274 enlisted men at his disposal to accompany patients who need escorts when they are transferred. These men are specially trained for the purpose and know how to meet such emergencies as might arise in the train or steamer. When necessary, patients will be accompanied by surgeons.

All this is but one of the thirteen hospitals under the supervision of Colonel J. M. Kennedy, surgeon of the Port of Embarkation, who from his office in Hoboken keeps tab on the health of the men and women going to and coming from Europe. Now that the tide of travel has turned he has converted his embarkation hospitals into hospitals for debarkation and all of them will soon have every bed filled.

## WAR HELMETS.

Doctor Bonnette, of the Medical Corps of the French Army, writes in *La Presse Médicale* for September 23, 1918, that the belligerent armies have all adopted the metal helmet for troops holding the trenches and making attacks. At the resting cantonments they use a soft, light headgear, such as a *kepi*, or cap, a felt hat, a Tam o' Shanter, etc.

In a general way, the helmet has an almost hemispheric shape, like that of the head, which it protects against shrapnel bullets, ricocheting balls, and against the small shell fragments, called *grenailles*, that rain over a battlefield on the day of an attack. Thanks to this protection, cranial traumatism has been diminished in frequency and gravity; the bone erosions and small fissures that are so frequently followed by the bursting of the vitreous lamina, have become rarer and the necessity for trephining less common.

Previous to the adoption of the helmet, the surgeon was recommended to explore all cranial sores, even the minutest and mildest, lest grievous accidents ensue. These explorations were made under anesthesia, by opening the wound, examining directly the bony surface, and making ready to

trephine, in case it was deemed necessary (Koechlin's thesis).

At present there exists three types of helmet:

1. *The Anglo-American helmet.*—This steel helmet, very low and rather widened, is cast in a single block, both crown and brim. The metal is sonorous when struck with a metallic object. Outwardly it has no military insignia; inwardly, three rivets are seen which adjust to the hollow and the side walls the throat strap and the inner gear. This strap, toward the base of the crown, holds an oval ring which is composed of felt, or leather, made up like black rubber, covering and encircling the head. This ring carries a crown of twelve cushions 0.025 cm. thick 0.025 cm. long and 0.015 cm. wide, separated by 0.03 cm. spaces, which favors ventilation. This elastic cushion crown deadens the cranial shocks and this slight mobility favors the deflection of projectiles. Its weight varies between 1,000 and 1,080 grams, being therefore somewhat heavier than the French helmet (which averages 800 grams) and lighter than the German helmet (which averages 1,400 grams). The fore and after brim is 0.03 cm. wide and the side brim 0.05 cm. This defensive weapon is rather unesthetic, but as a practical prop-

esthetical, the lightest of all, and affords good protection against shrapnel and small metallic fragments.

3. *The German helmet.*—This steel casque is the newest born, its adoption dating back to no more than two years. It is molded in a single block, as is the Anglo-American head piece. However, instead of being very low and widened like the latter, the walls of the crown are almost vertical. Only the visor is a little raised. The lateral walls cover the nape and the ears. It is seventeen cm. high, and at the base, thirty-one cm. long and twenty-three cm. wide. It weighs between 1,350 and 1,400 grams. Its color matches the field gray uniform of the German soldier.

Outwardly, the crown shows five metallic rivets, three for adjusting the inner coil and two for the throat strap. Besides, on the lateral surfaces of the crown there are two rounded metallic projections, perforated with a central channel for aeration. These projections serve as the pivots for holding a shield, which is attached to the helmets of the scout sentries or sharpshooters. The German helmet bears no military insignia. Inwardly, at the lower edge of the crown a flexible leather ring is found which carries three wide cushions, a frontal and two lateral ones (parietooccipital) that adjust the helmet and distribute the weight evenly. Through the interstices of these cushions the ventilating air is filtered. The German helmet is heavy and not esthetic, but very resistant.

*Shields or bullet protectors.*—For the scout sentries the Germans have devised a steel shield, four millimetres thick, that embraces the frontal region of the helmet above the visor. The posterior borders of this cuirass carry a notch that enables it to be joined and fixed at a level with the two lateral metallic pivots of the helmet. This bullet stopper weighs 2,500 kilograms. It is attached to the helmet at the rear by a leather band, which in a case of surprise permits its being removed quickly. According to German medical testimony, this frontal cover is very efficient, even against bullets with a flat trajectory.

*The leather pointed helmet.*—These legendary helmets are no longer tolerated at the front, but are still used at the rear. This headgear has as a distinctive sign the heraldic emblem of the original country and the national cockade on the left side.

*The cap.*—The German soldier continues to wear the ancestral and ridiculous round cap, made of field gray stuff, as a headgear when in repose. The two cockades, the color of the file, and of the piping, permit one to recognize the nationality and the province of the wearer. The upper cockade (black, white, and red) is that of the empire and is borne by men of all organizations; the lower cockade, placed over the file, denotes the country of origin (Prussia, Bavaria, Saxony, Württemberg, Baden, etc.) The regiments of the guard have a cockade with two black circles embracing a white circle.

All the belligerent armies have felt the necessity of adopting a steel helmet for their front line troops. Thanks to this efficacious protection, the cranial wounds have notably diminished both in frequency and in gravity.



TYPES OF HEADWEAR USED IN THE WAR.

1. German helmet. 2. French helmet. 3. Anglo-American helmet. 4. German helmet for advance troops. 5. German sharp shooters' helmet with removable visor. 6. Soft fatigue cap of Germans.

osition it stands the test of experience. In short, the secret of its efficacy rests on the resistance of the metal and also on its light mobility under shock.

2. *The French helmet.*—The Adrian helmet, used by the French, is composed of a crown of plated steel and a metallic border, with a steep slope that, unlike the American helmet, has a five cm. fore and after brim and only a two cm. brim at the sides on the level with the ears. It weighs between 700 and 800 grams, according to height. It is horizon blue for the metropolitan troops and khaki for the colonials. On its front it shows the military insignia of the different army services.

On the middle upper posterior part there runs a small metallic headpiece that covers a depression of the hollow, ending in two air holes. Interiorly, there is a black leather coil, terminating in seven little strips which can be more or less tightened, thus regulating the fitting of the helmet. At the base of the crown and under the coil are found four corrugated metallic thongs that give access to the air around the skull and let the air out through the upper holes of the headpiece. The Adrian helmet is



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

### Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine*

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NEW YORK, SATURDAY, DECEMBER 14, 1918.

### THE WOUNDED COME HOME.

Almost every day for the past week transports and liners have arrived at New York bringing back soldiers from overseas. Every ship brings some sick and wounded and the two naval hospital ships *Comfort* and *Mercy* have brought patients only, and, for the most part, those who were seriously wounded. They come from every section of the Western front and present almost every phase of disability. As they arrive these patients are sent to some one of the three debarkation hospitals now in commission, Ellis Island, Fox Hill, Staten Island, and Debarkation Hospital No. 3, in the Greenhut Building, which is described at some length in this issue. These institutions are being used as evacuation hospitals, where the patients are sorted as to their complaints and needs, and forwarded for treatment to that hospital best adapted to their requirements. The arrangements made for forwarding the patients to treatment hospitals includes the organization of an escort detachment, composed of officers and men of the medical department who accompany the patients,

collected in groups, to the respective hospitals to which they are forwarded, giving them any needed attention en route.

While these evacuation hospitals are not intended primarily for treatment, they are provided with an adequate staff of surgeons and with a complete equipment, including operating rooms and x ray and clinical laboratories, so that the treatment of the patient is not interrupted while in these hospitals. The patients are under constant supervision and the development of any morbid characteristic or untoward symptom is immediately noted and followed up with proper treatment. Where a tuberculous patient develops unfavorable symptoms, an x ray is at once taken, and in several cases where the presence of large quantities of pus was shown operations were performed, immediately giving relief. In several cases of cranial injury x rays have shown the presence of foreign bodies or of suppuration, and the patients have been promptly relieved by operation. Where indicated by the condition of the patient routine treatment is also given.

The location of one of these debarkation hospitals in the heart of the city has awakened the public to a better realization of the work being done by the medical department, and volunteers of all sorts, both organized and unorganized, have offered their services in many directions. The patients have been lionized to an extent calculated to turn the head of the most matter of fact man. They have been deluged with invitations to entertainments, to dinners, and to automobile rides. The hospital in the Greenhut Building is provided with a large auditorium and a stage, where Broadway favorites have volunteered to present their plays. In fact, the hospitality and hero worship of the general public have imposed a considerable burden on the administrative staff of this particular hospital. In view, however, of the salutary effect of these attentions on the morale of the patients, such attentions have a distinct therapeutic value. This enthusiasm will probably wane as the novelty wears off and will cease to be embarrassing. There is no question, however, that back of the excitement of the moment there exists in the hearts of our citizens a feeling of gratitude toward the young men who have made such sacrifices for our country and that the public will continue to extend a cordial and a heartfelt welcome to all the wounded as they come back, even though that welcome may be a shade less demonstrative than that accorded to the first contingent which landed after the signing of the armistice.

## CANCER OF THE CLITORIS.

Of secondary malignant growths of the clitoris little need be said, as they are devoid of interest, but the same does not apply to primary cancer of the organ.

The etiology of the primary type is obscure and the process is of great infrequency as well. Out of a total of 3,349 cases of malignant diseases of the genitalia, Gurlt was able to find only eighty-one cases concerning the vulva, and only ten instances of primary cancer of the clitoris. However, forty cases of primary cancer of this organ have been found scattered through the literature by Bjorquist and Jacoby, but many of the case reports were incomplete.

Cancer of the clitoris is more prone to occur at the time of the menopause or later in life, but there are exceptions to this rule. Thus, Launois met with an instance in a little girl five years of age, and it would appear from statistics that it is less common before the age of fifty years than after that of seventy.

As to the etiological factors, properly speaking, there is much divergence of opinion, and although in most reported cases the patients were multiparæ, it is difficult to affirm that labor had anything to do with the development of the neoplasm. Masturbation and repeated traumatism have likewise been invoked, and the late Sir J. Hutchinson, who certainly possessed a keen diagnostic acumen, maintained that syphilis was an etiological factor, stating that luetic ulcerative processes can degenerate into cancer in such a gradual and imperceptible manner that it is impossible to say where one process begins and the other ceases. A number of French observers are of the same opinion.

Ordinary pruritus has been invoked as a causative factor of malignant disease of the clitoris, and it is quite true that many patients complain of pruritus, not as a symptom at the onset of the process but before papillomatous growths of the organ have been known to undergo malignant transformation, as in other regions of the body.

Buccal psoriasis is an affection which, *par excellence*, predisposes to the development of cancer; the same applies to leucoplasia of the vulva in the case of primary malignant disease of this structure. The histologic structure of epithelioma developing on a leucoplastic spot has been described in a masterly way by Le Dentu, Pichévin, and A. Pettit. They noted the presence of epidermic globes and caught the transformation of the leucoplasia into cancer in the act, so to speak, and they conclude that the epithelioma is

not merely an accident resulting from mechanical changes of the horny plaque, but rather an ultimate evolutive phase of leucokeratosis; while P. Petit, from his studies, concludes that from leucokeratosis to cancer is but one step, if even leucokeratosis is not in reality the early stage of cancer.

It is, therefore, fair to assume that most, if not all, cases of vulva leucoplasia end in cancer, and the logical conclusion would be that the same applies to cancer of the clitoris, thus attributing the most important place to leucoplasia as an etiological factor of primary malignant growths of the clitoris.

## HIGH HEELS IN MEN.

It has been for so many years the custom of the trousered sex to ridicule the foibles of the restless sex that it is with rather a wry laugh that we find the tables turned nowadays in some particulars. For example, the tightness of women's shoes and the height of their heels have been a stock joke, but any one who has spent much time in examining the feet of prospective recruits will wonder why the female sex was singled out in this regard. Such a quantity of corns, bunions, hammertoes, and flat feet certainly were never seen in any other age.

A recent writer [Sylvester D. Fairweather, M. B., Ch. B., Aberd.: Boot Heels as a Cause of Flat Feet, Soldier's Heart, Myalgia, etc., *British Medical Journal*, September 21, 1918] has told how heels of even moderate height may cause not only flat foot, but such other affections as myalgia, soldier's heart, asthma, varicose veins, and scoliosis. He calls attention to the fact that in a barefoot man standing erect, the weight rests on the heels and the balls of the feet, not on the arch or the inner sides of the feet. If, however, heels of even one quarter of an inch in height are used the body weight is thrown on the arch; if in a man of average height three quarter inch heels are worn the head is thrown nine inches off the vertical, and the muscles of the back, thigh, and foot must come into action. Three things combine to flatten the arch: the weight of the body, the action of the peroneus longus and brevis, and the loss of support of the tibialis anticus. The muscles most concerned in preserving the erect position against these odds become strained, and myalgia results.

A soldier of average height and weight, wearing a heel three quarters of an inch in height, has to exert strength equal to that employed in constantly lifting fifty-six pounds from the ground to retain his balance. Fairweather believes that this constant strain is one of the causes of soldier's heart.



He thinks that the sole and heel should be of the same thickness so that, even if flat foot is present, it need be no handicap.

The writer adds that if heelless shoes were worn by women there would be no need of corsets. The war may bring about a great many changes for the better in our social organism, but it will not bring about the millenium nor will it introduce us to the spectacle of women without heels and without corsets.

#### AN OLD ENEMY OF PUBLIC HEALTH.

This is a time of rapid advance toward national prohibition of the public sale of alcoholic beverages, and, consequently, of a phenomenal advance toward public sanity.

Russia, that backward, benighted, but none the less vast and important realm, has set a most enlightened and advanced example in prohibiting the public sale of vodka and allied poisons, and the United States has come near seconding her example in giving at least a majority vote in the House in favor of national prohibition. It is true that the edict for prohibition promulgated by the Czar was for war purposes, but its results in advancing human efficiency in all lines are proving so beneficial that it is likely that the ban upon this public poison will never be removed. What is beneficial in war times, will, in this case, prove even more so in times of peace.

Since the discovery of the process of making fermented drinks, those who have had private or public welfare at heart have fought to suppress intemperance; but it was not until the thirteenth century, when distilled liquors came into existence, that very vigorous opposition to the use of alcohol as a beverage was aroused. Alcohol, even for medicinal purposes, has proven anything but the "water of life" its early users fancied it to be, and the nations which gave it a place in their midst have suffered enormously under its depressing influence.

The first temperance organization in the world was founded in New York, in 1808, and it was not until a decade later that a similar society sprang into existence abroad. New York was also the leader in the state prohibition movement, passing in 1845—a bold step for those groggy days—a law forbidding the sale of liquor. Since that time the tide of prohibition sentiment has been steadily gaining within recent years, through the recognition of economic gain accompanying temperance.

The antialcohol movement has been and is more than ever a movement for public health,

physical and psychical; these, of course, always go together. Though it has become so commonplace and lacks the spectacularity of efforts along other lines of sanitation, it none the less needs and deserves the vigorous support of the medical profession. We make much of the suffering and economic waste from tuberculosis and typhoid, and we take pains to check the use of morphine and cocaine, but the abuse—and we might as well say the use—of alcohol is still a greater source of sickness, crime, and poverty, of a diseased body politic, than any of the above causes. We take infinite pains to round up and segregate the typhoid carrier, but we leave wide open at all hours the door of the public drinking house. It is difficult to obtain an opium dream, but delirium tremens can be had without the least difficulty whatever. It is always the unusual phenomenon that stirs both the private and public imagination, and if alcohol were a less familiar cause of disease and death it would have been long since abolished amidst a general burst of enthusiasm over the "triumph of modern science."

#### PSYCHIC INFLUENCE UPON TUBERCULOSIS.

The vagueness and the constant emotional flux of the psychical life make difficult the explanation of its influence in comprehensible terms, therefore the intellect welcomes a concrete expression of this in the language of physiology. Indeed, the physiological activity is in itself a definite and pointed expression of the mental impulse which has in the last analysis no other means of speech. Motor activity of the vocal organs and other voluntary muscles, and the somewhat less voluntary facial expressions, are familiar language. The language of involuntarily controlled organs, of inner secretory glands, is also becoming familiar through the physiological experimental laboratory, as well as through clinical observation.

Doctor Ishigami has presented the result of his observations and experimental work on the opsonic index in tuberculosis to determine the influence of psychic states upon this disease [Tohru Ishigami: *The Influence of Psychic Acts on the Progress of Pulmonary Tuberculosis*, *American Review of Tuberculosis*, October, 1918]. He calls attention to the several spheres in which experimentation has already proved an unmistakable relationship between psychic states and their varying conditions and physiological func-

tioning. This was first noted by certain observers and then more definitely confirmed by such workers as Pawlow in the case of gastric secretion, Cannon and his fellow workers in regard to the adrenal secretion and the movement of blood sugar, and others who have demonstrated these effects and the innervation through which they are accomplished.

Ishigami himself has worked for a number of years to determine first the relationship of the opsonic index to the progress of tuberculosis and the influence of psychic states upon the opsonic factor. He has found that in advanced tuberculosis this index is lower than in the less advanced stages of the disease and that treatment raises the index. In untreated cases a higher index is shown where the prognosis is favorable; a fluctuating index accompanies an unfavorable prognosis. He finds, further, that change in the index is to a great extent dependent upon the mental condition, anything that causes anxiety or depression at once lowering the opsonic index which again rises when the mental depression has passed. If the cause of worry is prolonged, a "cumulative negative phase" persists. Moreover, certain patients, in spite of extensive local manifestations and the presence of many micro-organisms, show a comparatively high opsonic index and proceed favorably. These are an optimistic type of patients who do not easily yield to worry. In chronic cases progressing fairly well, the opsonic index may be suddenly lowered by sudden misfortune and the disease will at once take an unfavorable turn.

In order to place these observations upon a more exact basis the author performed a number of experiments, supplementing urinalyses made regularly upon the patients, to determine the physiological pathway by which psychic events produced this definite effect. It was shown that glycosuria was frequently present in advanced cases, particularly in nervous subjects. It was demonstrated also that glucose and adrenalin have an inhibitory action upon phagocytosis in general, this being particularly confirmed in the case of consumptive patients, and that in the less severe cases the phagocytosis was still present to a more marked degree than in the more advanced ones. The writer believes that this represents the overstimulation through psychic conditions of a normal compensatory mechanism which Cannon has described, whereby through an increase of adrenalin output and increase in blood sugar the individual is prepared for sudden emergency. Here the stimulation, set in motion

by the psychic reasons playing upon the patient, cause an increase in these products in the blood, for which there is no adequate opportunity for utilization, and they therefore remain to affect the lowering of the opsonic index, of which they have been proved capable. Other disturbances of physiological processes, such as interference with the digestive function, are at the same time psychically initiated, which aid in the deterioration process.

It is interestingly noted that in Japan, from which this report comes, tuberculosis is especially prevalent among those of school age and among primary school teachers. This fact the author attributes to the inadequacy of prophylactic measures during the school age, the peculiarly heavy strain attendant upon linguistic difficulties and the didactic method of teaching, and the severity of examinations, beside the severe living conditions for which only low teaching salaries are provided. Mental strain on the part of both teachers and pupils favors the spread of infection from one to the other.

This report of these very important observations and studies has maintained itself on the strictly conscious levels of the more obvious play of psychic factors upon these essential physiological processes. It is only from these as a starting point that the intimate relation of psychic and physiological processes can first be established, but it should awaken medical thought to the fact that this, after all, is the approach to a larger field of much responsibility and much fruitful result for the future, prophylactic as well as curative, as the author suggests it from the more obvious point of view. There are unfathomable depths of psychic activity where unconscious psychic factors are operative, with a force that has scarcely begun to be measured, in the lives of each individual. The avenues that are being opened into their recognition and study present a fascinating possibility of approach to the treatment of tuberculosis on the psychic side as well as toward a prophylaxis through a strengthening of psychic health and resistance. The value of this can be estimated only through the patient and determined cooperation of future physiologists and psychologists.

#### MANUAL TRAINING IN SHELL SHOCK.

In one of the American hospitals in the Toul sector interesting work is being carried out in the use of a manual training in shell shock. At this hospital is a young woman, Miss De Zeller, who had conducted special classes for mentally defective chil-



dren in the public schools of New York. She had received special training for the work at Columbia University and the results obtained with these children suggested the possibility of applying similar methods with soldiers whose nerves had broken down under the strain of battle. The results have been most encouraging. Men and officers in all stages of mental unbalance have gradually regained their self-control and it is expected that this hospital will be maintained for months, so long as there are patients to supply it. Various kinds of handiwork are taught, but carpentry furnishes employment for most of the patients, even for some who are unable to walk. The teacher is generally referred to as the "lady carpenter" and her work has been commended by many high officials both French and American. It is found that even the most melancholy and depressed patients can gradually be won back to a normal condition by being given something to do with their hands.

Officers and privates work alongside each other and soon become interested and frequently develop great ingenuity and skill in some sort of handicraft. While no formal report has been published on the subject private letters show that this method of reclaiming the shell shocked contains great promise. The ordinary therapeutic methods including special baths are, of course, made use of at the same time.

## News Items.

**Demobilization of the Army Medical Corps.**—Of the 649,000 men who have been designated for demobilization in the United States, 2,000 are in the medical corps. These men will be returned to civil life as fast as the army can return them.

**\$10,000,000 for Medical Research.**—The will of Captain Joseph Raphael De Lamar, who died in New York on December 1st, leaves nearly half of his estate, estimated at about \$25,000,000, to the Harvard University Medical School, the medical department of Columbia University, and Johns Hopkins University, to be used for research into the causes of disease and the principles of correct living.

**Meetings of Medical Societies to Be Held in New York Next Week.**—Monday, New York Academy of Medicine (Section in Ophthalmology), Medical Association of the Greater City of New York, Psychiatric Society of Ward's Island, Yorkville Medical Society; Tuesday, New York Academy of Medicine (Section in Medicine), Federation of Medical Economic Leagues of New York; Wednesday, New York Academy of Medicine (Section in Genitourinary Diseases), Geriatric Society, Medicolegal Society (annual), Northwestern Medical and Surgical Society of New York (annual), Alumni Association of City Hospital; Thursday, New York Academy of Medicine (stated meeting), New York Celtic Medical Society; Friday, New York Academy of Medicine (Section in Orthopedic Society), Clinical Society of New York Post Graduate Medical School and Hospital (annual), New York Microscopical Society, Brooklyn Medical Society.

**Government Returns Properties to Owners.**—Hotel Nassau, at Long Beach, N. Y., which was taken over by the government to be turned into a war hospital, has been returned to its owners. It was to have been Debarkation Hospital No. 4. Seaview Hospital, Staten Island, and North Brother Island have also been returned by the government.

**Influenza in Army Camps.**—An official summary of the results of the influenza epidemic in army camps and military centres in the United States, made public by the War Department on December 10th, shows that there were 338,257 cases of the disease up to December 1st, with approximately 17,000 deaths. Because deaths resulting from influenza and pneumonia were not separately grouped only approximate figures were given for those due to the epidemic. From September 13th the date of the outbreak, to December 1st, 19,694 deaths from all causes were reported by military stations in the United States. Army medical authorities estimate that about 2,000 of these were due to causes other than influenza and pneumonia.

**Influenza and Pneumonia Increasing.**—New cases of influenza and pneumonia reported to the Department of Health of the city of New York for December 8th and 9th show that the extent of the two diseases has neither grown nor diminished in comparison with the figures of the last few weeks. The new cases of influenza for the two days were 227, and those of pneumonia amounted to eighty-seven. There were thirty-eight deaths from influenza for the two days and seventy-eight pneumonia deaths. In Boston thousands of new influenza cases were reported throughout greater Boston last week, and many fear a return of the ravages of the recent epidemic. Cities and towns fifty to 100 miles away report increases during the last few days. Two hundred new cases were reported in Boston proper on December 8th and 9th, with a score of deaths. Framingham, fifteen miles from Boston, reports more than 1,000 cases. Authorities gain hope from the fact that the proportion of deaths is much smaller than before.

**Medical Organization of the Army.**—In the annual report of the Secretary of War, it is stated that on November 11, 1918, we had eighty fully equipped hospitals in this country with a capacity of 120,000 patients, while there were 104 base hospitals and thirty-one evacuation hospitals in the A. E. F., and one evacuation hospital in Siberia, with ten other auxiliary units operating abroad. The army hospitals in the United States cared for 1,407,101 patients during the war, while those with the A. E. F. cared for 755,354, a total of 2,162,545. In addition 931 medical officers of the army were detailed to serve with the British forces and 169 for service in base hospitals turned over to the British. Several ambulance sections have been operating with the Italian army. On November 11, 1918, there were 4,429 dentists in the army and 5,372 in the reserve corps not yet called to active duty. The growth of the medical department is shown by the fact that at the beginning of the war there were 750 officers, 393 nurses, and 6,619 enlisted men in the department, while in November there were 39,393 officers, 21,344 nurses, and 245,652 enlisted men.

**The Health of the Army.**—The annual report of the Secretary of War states that for the year ending August 30, 1918, the death rate from disease among troops in the United States was 6.4 in a thousand; in the A. E. F. it was 4.7; for the combined forces it was 5.9. Pneumonia, either primary or secondary to measles, caused 56 per cent. of all deaths among troops, and 63 per cent. of the deaths from disease.

**British War Casualties.**—The British War Office has issued a correction of its recent statement that the British losses during the war totaled 658,704. It is now announced that this number did not include the men who were reported missing and who actually lost their lives but of whom there was no trace, nor did it account for the men who had died at the front of sickness. The corrected number is nearly 1,000,000, killed or dead through various causes.

**The Return of the Wounded.**—The hospital ship *Comfort* reached New York Monday morning, December 7th, two days late, with 401 wounded soldiers on board. The American transport *Sierra* which also arrived in port on Monday, had thirty-five officers and 1,581 men from Brest, practically all wounded at the western front. On Tuesday the *Empress of Britain* brought 406 wounded men and on Wednesday the hospital ship *Mercy*, with 398 men from the American Hospital at Bordeaux, arrived in port. The British steamship *Siamese Prince*, sailing from Liverpool, also reached New York on Wednesday with 398 men on board, all surgical cases, and the *Kroonland* brought 704 sick and wounded, and the *Tenadores* 882, the latter being medical cases not requiring special attention. The sailing of other ships from European ports bringing home the sick and wounded is being announced almost daily.

**Dr. Joseph B. Bissell.**—The executive committee of the medical board of Bellevue Hospital records, with profound sorrow, the death of their esteemed colleague, Dr. Joseph Bidleman Bissell, major, Medical Corps, United States Army, chief of the surgical service at Fort McHenry, Md., and visiting surgeon and surgical director of the fourth division of Bellevue Hospital.

His selfsacrificing devotion and unflagging energy were always given to the sick poor of this hospital. In his death Bellevue Hospital has lost a skillful surgeon, the community has lost a useful and patriotic citizen, and his colleagues have lost an amiable and lovable personality.

At a time of life when most men of his age might reasonably expect that the defense of our nation's right might safely be left to younger men, he volunteered for active duty in the service of his country. He died in that service as a result of the strenuous life incident to camp duty, and his death is no less glorious than if it had occurred in the face of the enemy and on the field of battle.

Signed, George D. Stewart, M. D., president,  
Charles E. Nammack, M. D., secretary,

*Executive Committee, Medical Board, Bellevue Hospital.*

**Medical Association of the Greater City of New York.**—A stated meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, December 16th, under the presidency of Dr. Edward E. Cornwall, of Brooklyn. The topic chosen for discussion is Pneumonia Complicating Influenza. Dr. M. Goldberg, Dr. H. E. Smith, first lieutenants, Medical Corps, U. S. Army, will present the bacterial findings in 500 cases of influenza pneumonia at Camp Mills. Dr. Thomas F. Reilly will read a paper on Clinical Varieties of Pneumonia Observed in the Recent Epidemic of Influenza. There will be an open discussion of the pneumonias in the recent epidemic of influenza, each speaker being limited to five minutes.

**Personal.**—Lieutenant Colonel Rafaele Bastianelli, professor of surgery in the University of Rome and consulting surgeon to the Italian Army, has been granted an honorary fellowship in the New York Academy of Medicine by a unanimous vote. Colonel Bastianelli recently delivered before an enthusiastic audience at the academy a remarkable lecture on lung surgery at the Italian front.

Colonel C. F. Craig, Medical Corps, U. S. Army, who is now on duty at Yale University, met with a serious accident recently which will incapacitate him from duty for some time. He fell down an elevator shaft in one of the university buildings and broke both legs.

Dr. Colin Foulkrod, of Philadelphia, has been elected by the board of governors of the Maternity Hospital to fill the vacancy on the staff caused by the death of Dr. Clarence H. Gray.

Dr. William V. P. Garretson was recently appointed consulting neurologist to the Hospital for Functional Reeducation of Disabled Soldiers and Sailors, which is affiliated with Cornell University Medical College, New York.

Major General Robert E. Noble (lieutenant colonel, Regular Army) and Colonel Walter D. McCaw, Medical Corps, United States Army, who have been serving with the American Expeditionary Force in France, were nominated on December 3d for the rank of brigadier general in the Medical Corps of the Regular Army.

Dr. Anthony Bassler has been appointed professor of gastroenterology at Fordham University Medical School, New York.

Dr. William T. Shoemaker, of Philadelphia, has been appointed ophthalmologist to all the American hospitals in England and recently left France to enter upon his new duties. Doctor Shoemaker went to France in May, 1917, as ophthalmologist to the Pennsylvania Hospital unit. Two of his sons are in the service, one with the engineers in France and the other with the Naval Reserves.

Dr. Joseph S. Diamond has been appointed chief roentgenologist to Beth Israel Hospital, New York.

Captain Ethelbert Talbot Smith, son of the late Dr. E. Franklin Smith, of New York, has been recommended for decoration for special bravery in the face of the enemy. During two days of terrific fighting at the Italian front in the latter part of October with only twelve ambulances under his command, he rescued 2,000 wounded.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### POLYVALENT SERUM THERAPY IN CEREBROSPINAL MENINGITIS.

By LOUIS T. DE M. SAJOURS, B. S., M. D.,  
Philadelphia.

(Continued from page 1002.)

Clinical and other observations indicating the advisability of using a polyvalent serum in cerebrospinal meningitis, instead of a serum prepared by injection of the typical meningococcus alone, were referred to in the preceding issue. Netter's comparative trials with monovalent serum and the Flexner serum, prepared with a number of different bacterial samples from clinical cases, were mentioned, and the perceptibly lower mortality following treatment with the latter serum emphasized.

The superiority of the polyvalent serum, among Netter's observations, was shown even more strikingly by its effect in cases already treated without apparent benefit for a number of days by monovalent serum prepared at the Institut Pasteur, of Paris. Thus in the case of a child treated ineffectually with three injections of Dopter's serum—100, 120, and sixty mils, respectively—fifteen mils of Flexner serum brought about a permanent reduction of temperature to normal. The difficulties apprehended by some in inducing active minimization of a single animal to various types of meningococcic organism have been definitely shown to be non-existent, Flexner and Amoss, after inoculating identical horses with cultures of fifteen typical meningococci and fifteen parameningococci, having obtained a uniformly high agglutinating power against each of the organisms employed.

Netter's results since 1911 have shown, however, a progressive improvement in spite of the substitution of differently constituted sera for the Flexner product. In 1911 and 1912 the average mortality under treatment consisting nearly always of Dopter serum was thirty-four per cent., or with omission of patients dying within twenty-four hours and cases in which death could not be ascribed to the meningococcic infection, 24.5 per cent. In 1913 and 1914, during which Netter used a mixture of antimeningococcic and antiparameningococcic sera, the corresponding mortality rates were reduced to twenty-five and fourteen per cent., respectively. Again, in the year 1915, in which the same mixture of sera was largely used, but also the Flexner serum in some instances, with sixty-eight as the total number of cases treated, the mortality rates were 20.6 per cent. and 8.6 per cent., respectively. The procedure followed in this mode of treatment was to inject the mixed serum at the outset but also to isolate at once the causative organism in the individual case and ascertain its nature by agglutination tests, thereafter employing the corresponding serum alone in the treatment.

In this procedure one notes, in the adaptation of the treatment to the precise nature of the cause in

the individual case, beginning recognition of the fact that the type of organism causing meningitis varies greatly under varying circumstances and in different epidemics. Syk, 1917, has emphasized the variability of meningococci at different seasons, and Paleani, 1917, the advisability of using serum made from the strains of meningococci prevalent in each individual epidemic. Whereas Dopter states that before the war the true meningococcus was found in ninety-six per cent. of all cases of cerebrospinal meningitis, during the conflict a striking deviation from this state of affairs was observed, the cases dependent upon the true meningococcus often constituting only a minority in the reported series of cases. Thus, among thirty-six cases in which satisfactory cultures were obtained by Nicolle and his coworkers, 1917, only twelve yielded Nicolle's true meningococcus or Type A, while twenty-four showed organisms belonging to the Type B—a group corresponding to Gordon's Types II and IV. Similar observations were made by Ellis, Gordon, Bloch and Hébert, and others. The authors last named, 1917, describe parameningococci as having often been found in cases of epidemic meningitis on the Eastern firing line. According to Amoss, an American worker, eighty per cent. of cases of meningitis are due to the normal strain of meningococcus or to the parameningococcus, and almost all of the remaining twenty per cent. to two intermediate strains, A and B.

Along with these variations in the type of organism present under different circumstances is to be considered the possibility of a distinction between the several types in regard to their changes in virulence and their effects upon the human system. Andrews, from researches recently conducted in England at St. Bartholomew's Hospital, was led to conclude that under ordinary circumstances the bulk of the saprophytic meningococci of the pharynx are of primitive type and low pathogenic power, for the most part falling into that which he terms Group II or the parameningococcic group, some, however, still remaining indeterminate. In nonepidemic times certain strains in this group nevertheless possess sufficient virulence to attack the very young, causing sporadic instances of cerebrospinal meningitis. When, for reasons as yet unknown, certain strains increase in virulence, they show at the same time an increased complexity in the structure of their antigenic component. This increase of virulence may occur in either Group I or Group II, but in general is seen more markedly in Group I; thus, whereas in the less virulent form of the disease organisms of Group II are the commoner, in the more virulent forms the organisms of the two groups become more nearly equal in number. According to Netter, the organisms included in Nicolle's Type B are especially concerned in cases of generalized meningococcic infection in which purpuric manifestations and extrameningeal involvements are relatively common.

On the whole, recent studies of meningococci plainly indicate marked variations in the nature and behavior of the virus. Consequently, the serum treatment of meningococcic meningitis should, it would seem, not only take into account mainly those varieties of the meningococcus which are most often pathogenic, but also make provision for diversity in the constitution of the virus at different times.

(To be continued.)

**Cæsarean Section in Eclampsia and Placenta Prævia.**—George L. Brodhead (*New York State Journal of Medicine*, October, 1918) believes that in a large proportion of cases of eclampsia and placenta prævia Cæsarean section is unwarranted and unjustifiable. This is true where the fetus is dead or not viable, when the patient is in active labor with the cervix partially dilated or readily dilatable, and when the advantages of a well equipped hospital and the services of a competent surgeon are not available to the patient. On the other hand, the operation appears to be nearly the ideal method of treatment in cases of eclampsia when the patient is a primipara at or near term and has had but one or few seizures. Cæsarean section for eclampsia, performed by various surgeons, gave a maternal mortality of slightly over twelve per cent. and a fetal mortality of about nineteen per cent. in a series of 174 cases. A later series of cases, all but two being in primiparas, gave a maternal mortality of a little over fifteen per cent., several of the patients having had many seizures prior to operation, and a fetal mortality of less than six per cent. In a collected series of cases of placenta prævia Cæsarean section gave a maternal mortality of six to eight per cent. and a fetal mortality of slightly over three per cent. The operation was followed in practically all cases by strikingly little morbidity on the part of the mothers, and its results are certainly to be regarded as brilliant. Cæsarean section seems to be of the utmost value in all patients near term in whom there is a central placenta prævia, and in primiparas at or near term in whom there is partial placenta prævia with no cervical dilatation.

**Conservative Treatment of Eclampsia.**—Ross McPherson (*New York State Journal of Medicine*, October, 1918) bases his opinions upon two and a half years' experience with the method to be described and the comparison of the results yielded by it with those obtained with other methods. In a series of sixty-seven patients, every one of whom had had at least one convulsion before treatment began, the maternal mortality from conservative treatment was a little over seven per cent. and the fetal mortality 28.5 per cent. The method of treatment which was followed consisted in taking the patient's systolic blood pressure and securing a catheter specimen of urine immediately upon entrance into the hospital. The woman was then put into a darkened isolation room where it was as quiet as possible. Thirty milligrams (half grain) of morphine sulphate were then given hypodermically, the stomach washed, and two ounces of castor oil left in it when the tube was withdrawn, and the

colon was irrigated with five gallons of five per cent. solution of glucose. If the blood pressure was above 175, blood was removed by phlebotomy to bring it down to 150. No bleeding was done in cases with pressures lower than 175 because of the danger that might arise from further loss of blood during delivery. *Veratrum viride* was not given because of the danger of excessive lowering of blood pressure if hemorrhage should be profuse at delivery. The patient was thereafter kept quiet and given fifteen milligrams (one quarter grain) of morphine every hour hypodermically until the respirations were brought down to eight per minute. By that time the convulsions usually ceased and labor had begun. This was terminated normally or by an easy low forceps operation. Convalescence was then treated in the usual manner, depending upon the symptoms, and was generally strikingly free from complications.

**Immediate Fixation in Fracture of Femur.**—F. B. Chavasse (*British Medical Journal*, October 5, 1918) describes a most efficient plan for the immediate immobilization of the whole lower extremity, combined with powerful extension, which can be applied on the battlefield by the stretcher bearers. All that is needed is a stretcher and two slings, and as each of the four bearers in a squad has one sling, two are always available, while two are left for purposes of carrying. The first step is to expose and dress the wound. Then the adjustable loop of one sling is enlarged to its maximum, slipped over the foot on the injured side, and passed up into the groin. The ankles and knees are next tied together firmly with bandages, the stretcher is opened and a small pillow (the rolled waterproof sheet will do) is placed on it where the patient's knees will come. The patient is then put on the stretcher so that his heels project a couple of inches beyond the canvas, the heel on the injured side being a little lower than that on the sound side. The loop of the second sling is adjusted to be equal in length to the distance between the poles and is slipped over one of the handles. The sling is then passed across the soles of both feet, up across both insteps, behind both ankles, down across both insteps, through the loop and across the soles of the feet to the opposite handle. All this winding about the feet is made very tight. The end is then secured tightly to the end of the opposite pole by means of the small strap and buckle. The foot of the stretcher is then raised gently, almost to the perpendicular, and the patient is drawn downward head first. It may be necessary to maintain this position for a few minutes to tire the muscles and secure their relaxation. When extension is good the back part of the sling loop should be well behind the buttock and the loop adjusted so that the grip plate will lie almost on the surface of the stretcher when strain is taken. This tends to correct flexion, abduction, and external rotation of the upper fragment. Very heavy tension is then put upon the groin sling and it is secured round the upper pole handle. The stretcher is then levelled again, a bandage is tied about the stretcher and the patient's pelvis, and a rifle is bandaged along the outer side of the extremity.



**Infantile Scurvy.**—J. Comby (*Presse médicale*, September 19, 1918) maintains that any child artificially fed with sterilized food—milk or milk substitutes—for several successive months, to the exclusion of fresh, living food, is threatened with scurvy. The proper procedure under such conditions is, therefore, to administer prophylactically, every day, from a teaspoonful to a tablespoonful of orange juice or, if this is not available, of grape or diluted lemon juice. Of fifty-five cases of infantile scurvy that have come into the author's hands, forty-five had previously been wrongly diagnosed and treated as rheumatism, acute poliomyelitis, syphilis, acute osteomyelitis, coxalgia, Pott's disease, etc. To avoid overdosing infantile scurvy, the following four diagnostic features must be constantly borne in mind: 1. The patients are infants from six to eighteen months old, artificially fed with sterilized or otherwise devitalized milk. 2. All exhibit more or less prominently a painful pseudoparalysis of the lower extremities. 3. Some show swelling of the shaft of the femur or tibia, due to subperiosteal hematoma. 4. Most of the children that have teeth exhibit red, swollen, ecchymotic, and sometimes bleeding gums; when the child cries, its mouth fills with blood. As regards treatment, the mother should be instructed to leave the child in its cradle and avoid moving, rubbing, bathing, and dressing it for a few days. Whatever devitalized milk preparation is being used must be at once and permanently discontinued, and fresh boiled milk substituted. A teaspoonful of grape or orange juice should be given twice a day, and in slightly older children, a few spoonfuls of potato purée may be added. Under these measures recovery is likely to occur in a week.

**Suppurative Gingivitis with Alveolar Involvement.**—Arthur Zentler (*Journal A. M. A.*, November 9, 1918) employs this term to include the more advanced cases commonly called pyorrhea alveolaris and holds that the condition is purely a surgical one. The condition is of such a nature that nothing short of the radical removal of all of the diseased soft and bony tissues will suffice for cure. The most satisfactory operation is a modification of Robitzek's, in which the diseased tissues are completely excised. Under procaine-epinephrin conductive anesthesia the parts to be operated upon are swabbed with tincture of iodine and a flap is reflected over the affected teeth by means of parallel lateral incisions extending from the cervical free border of the gum to the apex of the tooth and a horizontal incision along the festooned edge of the gum. The incisions pass through the periosteum and this, together with the overlying structures, is retracted until the diseased bone is completely exposed. All the inflamed, infected, granulated tissue between and about the roots of the teeth is removed with curettes and knives. Next all infected bone is chiseled off with delicate chisels, the roots of the teeth are well curetted, and the remaining free edges of alveolar bone are smoothed off evenly. The inner surface of the flap is inspected for adherent diseased tissue, which is thoroughly removed with the minimum of disturbance to the healthy periosteum. The parts are washed with normal saline solution,

swabbed with half strength tincture of iodine, the wound surfaces freshened, and the flap is replaced and sutured. The sutures are taken at each end of each lateral incision and at points on the free margin between these two, when more than three or four teeth have been exposed. Finally the parts are again swabbed with tincture of iodine and covered with a strip of iodoform gauze, which is changed once or twice at intervals of twenty-four hours. The sutures are removed on the fourth or fifth day. The loose teeth usually become firm and the periosteum becomes completely reattached, except in cases with very extensive necrosis and removal of some of the teeth. The operation is not usually followed by any discomfort, and the slight swelling and pain, which sometimes come on after the effect of the procaine has gone, can be relieved promptly by the application of an ice bag for fifteen minutes every hour, for two or three hours. The operation can be performed in any area of the mouth, but where there are devitalized teeth in the areas to be operated upon these must first be treated and root canals must be thoroughly and aseptically filled. Apicoectomies can be performed at the time of the operation, but nonvital multirooted teeth with apical abscesses had better be extracted.

**Electrothermic Treatment of Cancer of the Oral Cavity, Jaws, and Throat.**—William L. Clark (*Journal A. M. A.*, October 26, 1918) believes that these methods are peculiarly adapted to the treatment of malignant disease in these locations. Electrodesiccation by the Oudin type of current is especially suitable for the removal of small or moderate sized growths when localized and a good cosmetic result is desired. The desiccation can be so well controlled in both depth and area that even a small corneal lesion can be removed without injury to vision, or a growth on the vocal cord destroyed without impairing phonation. It produces very slight trauma and no secondary inflammation, and hence no scarring. Electrocoagulation by the d'Arsonval type of current is more penetrating and intense than the desiccation method and is useful for the destruction of large growths, including those involving bone. Both electrical methods are specially suited for growths in any part of the oral cavity, since the tumor can readily be attacked without the need of surgical measures to expose it. In the case of growths in inaccessible locations, such as the antrum, or when normal tissues cover the growth, the tumor should be exposed or the gross mass even removed by surgical operation before the application of the electrothermic treatment. Both of the electrical methods have the great advantage over surgical removal in the avoidance of opening of blood and lymph channels, these being, on the contrary, completely sealed by the coagulation. When the cervical glands are involved they should be removed surgically, followed by deep crossfire röntgen treatment. When the glands are not involved they should be treated by the deep röntgen rays after electrothermic treatment of the primary lesion. A section should never be removed for diagnosis until immediately before operation, since such removal leads to rapid extension and metastasis of the growth.

**Dichloramine-T Chlorcosane Solution in Treatment of Infections of the Upper Air Passages.**—D. Bryson Delavan (*Medical Record*, July 20, 1918) reports excellent results with a two per cent. solution of dichloramine-T chlorcosane, taking care to first expose the recesses of the tonsils, the nasal chambers, and pharynx by washing with an alkaline solution and then applying adrenalin. The oil solution must be sprayed under pressure to all recesses, and better results will be obtained with a condenser than with an ordinary hand bulb.

**Superior Longitudinal Sinus in Children: Its Value in Transfusion and for Rapid Medication.**—Louis Fischer (*Medical Record*, September 7, 1918) considers that the superior longitudinal sinus in infants is the ideal vessel, from its accessibility, for transfusion, administration of alkaline and other medicinal solutions, removal of blood for Wassermann and other tests. It is readily entered at the posterior angle of the anterior fontanelle, and the risk of trauma is negligible even when the puncture of the sinus is repeatedly done. Salvarsan injections are conveniently given by this route as well as antitoxin in diphtheria.

**Sensitization to Ipecac by Emetine Injections.**—Billard and Blatin (*Presse médicale*, September 12, 1918) resorted tentatively to ipecac medication in twelve cases of severe anebic dysentery in which emetine hydrochloride had lost its effect. Ingestion of but 0.05 gram of powdered ipecac in all cases brought on pallor, nausea, vomiting, and diarrhea within a few minutes. In four instances cardiovascular depression to the point of temporary syncope was observed, and in one an actual narcolepsy persisted for over eight hours. Whether these disturbances were due to anaphylaxis or simply to sensitization by the emetine the authors have not as yet been able to ascertain.

**Primary Depression and Secondary Rise in Blood Pressure Caused by Epinephrine.**—Hugh McGuigan and Emory G. Hyatt (*Journal of Pharmacology and Experimental Therapeutics*, September, 1918) find that a quick rise in the blood pressure of dogs is followed by a rapid fall and a secondary rise when adequate doses of epinephrine in the form of adrenalin are administered intravenously (0.5 to one c. c. of 1:10,000). After studying various hypotheses to account for this, they conclude that the primary rise is due entirely to peripheral action, and the secondary rise is apparently due to a central action of the epinephrine acting through the sympathetic ganglions. This central action can be prevented by pithing of the brain or removal of the head. Section of the vagi or atropine does not prevent it, and in many cases, section of the vagi accentuates the secondary rise. Nicotine, given until the ganglia are paralyzed, will prevent the phenomenon. Changing the intracranial pressure with a water manometer through a trephine hole in the skull will modify the blood pressure to give a typical secondary rise, while a greater increase in the pressure may again prevent the secondary rise. Changes within the cerebrospinal fluid also modify the blood pressure tracing of epinephrine.

**The Capproni Method in the Treatment of Pleurisy with Effusion.**—M. Maurizi (*Riforma Medica*, June 27, 1918) reports seven cases of pleurisy with effusion treated by this method of injection into the pleural cavity, with two to four grams of iodoform in ten to twenty c. c. of glycerin. His results were excellent and he warmly advocates this procedure as simple, harmless, and easily carried out in any surroundings.

**Radical Cure of Sciatica by Lumbar Anesthesia.**—C. Mancini (*Riforma Medica*, June 1, 1918) describes a method employed by him for many years in the treatment of sciatica. He injects twelve to fifteen c. c. of a five per cent. novocaine solution into the third or fourth lumbar interspace, thus producing an anesthesia lasting from three quarters of an hour to two hours. The injection may be repeated every seven days but repetition is not usually necessary. The advantages claimed for the method are direct contact with the diseased nerve fibres, simplicity and innocuousness.

**Treatment of Shock.**—J. Regnault (*Presse médicale*, August 8, 1918) conceives of shock as a nervous inhibition which upsets the equilibrium between the tonic actions of the vagus and sympathetic nerves. In severe, painful wounds, early operation may forestall or lessen shock by eliminating afferent nervous stimuli which, if kept up, would have brought on hypotonia of the vagus, the latter, in turn, resulting in congestion, and later in cellular changes in the viscera. Study of the reflexes is in itself partly sufficient to suggest a proper line of treatment for inhibitory states, including shock.

**Treatment of Chronic Prostatitis.**—Oswald S. Towsley (*Annals of Surgery*, October, 1918) says that the treatment of this condition consists, for the most part, of prostatic massage followed by a cleansing of the urethra, either by irrigation with silver nitrate or potassium permanganate solutions or by the passage of urine followed by instillations of argyrol, silver nitrate, or other antiseptic solutions into the prostatic urethra. Every two or three weeks the urethra is dilated with sounds or, preferably, by the Kollman dilator. Thomas, of Philadelphia, in a recent publication has concluded that: 1. Chronic prostatitis may be and is at times a surgical disease requiring prostatectomy for its efficient treatment. 2. Chronic prostatitis is not infrequently associated with hyperplastic polypoid, papillary, or nodular formations of the mucosa of the prostatic urethra and vesical orifice demanding removal by treatment coincident with that directed to the prostate. 3. Fulguration or the high frequency spark promises to offer the best method of intraurethral treatment for this purpose. 4. In the protracted cases of chronic prostatitis cystourethroscopy is always indicated and may be obligatory for proper diagnosis and treatment. Rarely will a case fail to respond to the palliative methods described above, provided the treatment is continued for sufficient length of time; hence, surgery of the chronically inflamed prostate should be a very rare outcome, although there are cases in which it would appear to be justifiable.



# Miscellany from Home and Foreign Journals

**Purulent Bronchitis Complicating Measles and Rubella.**—W. M. Macdonald, T. R. Ritchie, J. C. Fox, and P. Bruce White (*British Medical Journal*, November 2, 1918) record the observation of an epidemic of these two diseases involving 418 men from New Zealand. They believe that the measles was contracted when the ship carrying the men stopped at an American port. In a large majority of the cases in this epidemic the exanthems were complicated by severe purulent bronchitis, or copious mucopurulent bronchorrhea. At the same time as this epidemic was prevailing among these men there was an epidemic of measles and rubella which involved 146 British troops resident in the same district, but among these there was only one case of purulent bronchitis and this was in a motor driver who had been engaged in the transport of the New Zealand troops. In the early stages of the bronchitis the most striking feature was the presence of the copious purulent expectoration along with absence of physical signs of marked involvement of the lungs. Later, in the more severe cases, the physical signs became more marked and evident bronchopneumonia was present in many. Pleural effusion was rare and there were no cases of empyema. One or more varieties of streptococci were found in the smears and cultures of all but two of the cases examined, the varieties apparently being the hemolytic and viridans types. The *Staphylococcus aureus* was also found in large numbers in practically all of the cases. Of forty cases examined the *Bacillus influenzae* was found in smears or cultures, or both, in twenty-nine. Blood cultures, when positive, almost invariably yielded only the streptococcus. Pathologically the fatal cases showed the constant presence of petechiae or larger hemorrhages on the surface of the lungs, especially toward the base and in the interlobar fissures. Otherwise the findings varied, according to the severity of the case, from typical purulent bronchitis through bronchopneumonia to complete lobar consolidation. Serofibrinous pericarditis was found in six of fourteen cases examined.

**Unrecognized Forms of Septicemia.**—De Gauljéac and Nathan (*Bulletin de l'Académie de médecine*, September 24, 1918) point out that, aside from the well known febrile type of septicemia, there has been revealed in war surgery a whole class of afebrile, latent, monosymptomatic septicemias. The most perfect type of these is the septicemia that follows attrition of cancellous bone tissue. Such an injury, even when extensive, is at first nearly always painless and apyretic, pain and functional disability appearing only about the tenth day, when the compact bone tissue and neighboring joint have become involved. Throughout the initial period but one sign of the septicemia exists, viz., tachycardia, the pulse remaining at ninety to 110 in the presence of temperature of but 37.5° C. There are no constitutional disturbances nor any other physical signs. That a septicemia actually exists is shown in that in nearly all instances blood culture reveals a

microorganism—almost invariably the enterococcus, rarely the pneumobacillus of Friedländer. Cultures from the injured bone tissue likewise nearly always reveal these organisms. Where the contused bone tissue has been completely removed, the septicemia is forestalled or remains insignificant in its external manifestations. If removal has been incomplete, chronic osteoarthritis, with a tendency to ankylosis, sets in; the patient becomes pale and cachectic. In several such cases a positive blood culture was obtained months after the injury. Apart from these war septicemias the authors have observed a number of afebrile and latent septicemias, often due to the tetragenus organism, which, after fatigue or an ordinary contusion, becomes localized in the osteoarticular system, causing osteomyelitis in a child, an attack of arthritis in a subject with congenital coxa vara, and in other instances a spondylitis or an involvement of the knee joint with a tendency to extend. The latent septicemias are linked with the grave septicemias through a series of intermediate forms. In making the blood cultures, both aerobic and anaerobic media should be used.

**Application of a Colorimetric Scale to the Bordet-Wassermann Reaction.**—A. Bergeron and E. Normand (*Presse médicale*, September 12, 1918) use as primary color standard, 0.2 mil of a one in ten dilution of sheep erythrocytes. For the colorimetric tests this is further diluted, one in five, by the addition of saline solution. In a series of hemolysis tubes, numbered one to ten, are introduced in succession 0.1, 0.2, 0.3, etc., of the resulting fluid. Enough hemolysin and alexin are then added to induce complete hemolysis, and the amount of solution made up with saline to 2.5 mls in each tube. The tubes are then placed in the incubator until hemolysis has occurred. The tint in the first, or 0.1 mil tube, corresponds to that produced by a ten per cent. hemolysis of red cells employed in the Wassermann reaction; that in the 0.2 mil tube to twenty per cent. hemolysis, etc. To offset the additional coloration imparted in the actual reaction by the patient's serum and the antigen, 0.2 mil of any human serum and 0.3 mil of antigen are added in each tube, thus bringing the total volume of solution to three mls. In carrying out a colorimetric determination, the centrifugated Bordet-Wassermann tubes are compared in turn with the ten tubes of the color scale. If the tube containing the least amount of antigen shows the same tint as tube three of the scale, it is known that enough free alexin has remained to hemolyze thirty per cent. of the erythrocytes in the first instance and ten per cent. in the second, and the reaction is put down as positive at 30-10. If the eighth and sixth tubes are matched, the reaction is negative at 80-60, and if the sixth and fifth, it is suspiciously negative at 60-50. This precise method permits of ready comparison of the successive findings of a single observer as well as of the results obtained in different laboratories. The scale is independent of the procedure used.

**Mitral Stenosis and Raynaud's Disease.**—J. Chalié (*Presse médicale*, September 12, 1918) lays stress upon the manifold etiology of Raynaud's disease and the importance of cardiac disorders, especially mitral stenosis, among its several causes. He reports no less than six cases, personally observed, which occurred in association with mitral stenosis. In all the cardiac condition, judging from the physical examination or the anamnesis and the time of appearance of the functional disturbances, preceded the Raynaud condition. As mitral stenosis is rather easily overlooked, it should be examined for carefully and repeatedly in cases of Raynaud's disease. That both the heart defect and the Raynaud condition may result from acute rheumatism is not probable, a considerable interval generally elapsing between the last rheumatic attack and the involvement of the extremities. In three of the six cases no rheumatic manifestation was elicited. Tuberculosis as a cause of Raynaud's disease deserves greater attention, and its rôle in some instances is gradually being accepted. Roque has emphasized the marked similarity of Raynaud's syndrome with a series of skin manifestations of the extremities, belonging to the group of the tuberculides of Darier, and believes that the tuberculous toxins, acting upon the vasomotor centres, play the chief etiological rôle, while the concomitant heart disorder exerts an adjuvant influence. Among the author's cases three had manifest tuberculous disease, to which the heart condition is ascribed. The strictly nervous, vasomotor theory of Raynaud's disease does not appeal to the author, though he recognizes vasomotor change as an exciting factor where there are underlying pathological conditions, cardiac or vascular, which reduce peripheral blood flow and blood pressure and predispose to gangrene.

**Military Aspects of Status Lymphaticus.**—James Ewing (*Journal A. M. A.*, November 9, 1918) says that during the past thirty years pathologists have come to believe that the fate of the human body is in general controlled by certain congenital intrinsic physical tendencies. This conclusion is quite in line with the doctrine of a constitutional predisposition to disease, the importance of which has been largely submerged by the advent of the germ theory, so that clinical observers have not been much impressed with the importance of the constitutional factors. The recent experience of the Army Medical Department has shown that many factors in physical makeup which escape ordinary physical examination soon become most emphatically evident under the stress and strain of military life. Since these constitutional defects are not amenable to remedy their discovery at the earliest possible time is of the greatest importance to the army. Among these defects that of status lymphaticus ranks as one of the most important and is also one which should be recognized clinically in the majority of cases, when attention is directed to its detection. The clinical features and the physical stigmata of this constitutional defect are set forth in detail by the author and the military importance of the condition is shown in many ways. Cardiac and arterial hypoplasia dominate the picture in adults and the small and feeble heart renders the

subjects victims of early fatigue, palpitation, dyspnea, irritable heart, deficient muscular energy, lack of stamina, and low blood pressure. Many such persons also die most suddenly after trivial exertions. Many also seem to respond most unfavorably to the injection of foreign proteins, arsphenamine, antiserum, and vaccines. They also provide the cases of precocious apoplexy in young adults. When they fall victims to the infectious diseases they usually do so very badly; they seem to provide all of the fulminant cases of meningitis, a large proportion of those of pneumonia, the rapidly fatal cases of typhoid fever, and over a fourth of the fatal cases of diphtheria. Many cases with exophthalmic goitre show evidences of status lymphaticus and such cases seem to give a high mortality under operations. Other susceptibilities and defects associated with the occurrence of this constitutional anomaly might be mentioned, but sufficient has been presented to indicate the great military importance of its early recognition among recruits and the discharge of its victims from the military forces.

**Syphilitic Peritonitis.**—M. Letulle (*Presse médicale*, September 19, 1918) believes syphilis of the peritoneum far more frequent than is generally thought. Ordinarily it occurs in conjunction with hepatic cirrhosis of the so called alcoholic type. Out of 154 instances of "alcoholic" cirrhosis in which the Bordet-Wassermann reaction was carried out, no less than seventy-four gave a positive result. Furthermore, antisyphilitic medication in such cases, in the form of intravenous injections of biniodide of mercury, potassium iodide in large and ascending doses, arsenobenzol, and many other preparations of arsenic, sulphur, or mercury, in some instances yielded surprising results. Pathologically, the syphilitic peritoneum is characterized by thickening, a washed out appearance, a milky white coloration, and even an enamelled aspect. The loops of the small bowel may appear less numerous than normally, and are of increased size, thick, whitish, and hard. The jejunum may have undergone an actual shortening of one to four metres, counterbalanced by the increase in thickness. The large bowel may exhibit obliteration of all its normal irregularities of surface by a thick "icing" of sclerous chronic peritonitis. Kinks of the colon, leading to obstruction and necessitating operative intervention, may exist. Histologically, the syphilitic process is characterized by hyperemia, lymphocytic infiltration, follicular formations or miliary gummas, and in particular, by destruction of the elastic coat and an overgrowth of connective and vascular tissue—the latter two peculiarities especially differentiating it from tuberculosis of the same structures. Ascites occurs and often returns with disconcerting regularity and rapidity after puncture, as much as a litre of fluid collecting in twenty-four hours. At times, however, spontaneous absorption of the ascites occurs, or the syphilitic peritoneum may remain dry throughout. Any hepatic cirrhosis causing ascites should bring to mind syphilitic infection. Again, in any hepatic cirrhosis it is worth while to try systematic and prolonged antisyphilitic treatment.



**Production of Meningococcus Antiendotoxin.**

—M. H. Gordon (*British Medical Journal*, September 28, 1918) obtained a highly toxic endotoxin from young cultures of meningococci of the two commonest types, and in testing these endotoxins against various samples of antimeningococcus serum found that several sera were very deficient in neutralizing the endotoxin although they were high in agglutinins and opsonins. Two samples of serum proved very active in neutralizing the endotoxin, and one of these was one which had given the best results in the clinical treatment of meningitis. Efforts were then made to determine a method for the preparation of serum of high anti-endotoxic value against the two commonest strains of meningococci. The rabbit was found capable of elaborating such a serum, but to secure it of a high degree of potency it was found necessary to avoid overdosage of the antigen in the case of Type I meningococcus. The most satisfactory antigens for the production of highly potent antiendotoxic serum were suspensions of the dried coccus or the sensitized raw coccus.

**Death from Influenza.**—Henry A. Christian (*Journal A. M. A.*, November 9, 1918) brings forth evidence and offers strong arguments in support of the idea that practically all fatal cases of epidemic influenza are complicated by a pneumonic involvement before the fatal issue. Thus not a single patient out of 126 consecutive fatal cases failed to show physical signs justifying a clinical antemortem diagnosis of bronchopneumonia. Every one of twenty-two consecutive necropsy cases of influenza showed bronchopneumonia. In the necropsy cases the pulmonary changes were generally more extensive than the clinical findings during life had indicated. Careful clinical study of nonfatal cases indicated that practically all fairly severe to severe cases had bronchopneumonia. The author does not deny the possibility of fatal results to influenza patients from an overwhelming toxemia without pulmonary involvement, or from meningitis or encephalitis, but such cases did not occur in his large experience. As a corollary it would seem both unjustifiable and misleading to classify deaths as due to influenza and pneumonia separately, as was done by many boards of health.

**Dakin's Solution and Dakin's Oil in the Normal Peritoneal Cavity of the Dog.**—Ernest G. Grey (*Bulletin of the Johns Hopkins Hospital*, October, 1918) describes experimental work on dogs in order to draw attention to the fact that the indiscriminate use of the chlorine antiseptics is not entirely devoid of danger. Injections into the normal peritoneal cavity of a dog of the neutral solution of chlorinated soda (Dakin's solution) or dichloramine-T in chlorinated paraffin (Dakin's oil) lead to an inflammatory reaction which varies in direct proportion to the amount of chlorine antiseptic used. When injected in a sufficient amount (less of the oil suffices) death ensues. Injection of either of the chlorine antiseptics into the gallbladder of a dog caused no abnormal symptoms, but the gallbladder does become thickened and shrunken, while the remainder of the biliary tract shows no change. An injection of Dakin's oil into the normal

pleural cavity was performed without anesthesia. There was an immediate and marked reaction: restlessness, evacuations of the bladder and rectum, muscular spasm of the abdomen, and some degree of extensor rigidity of the legs, and finally death. The clinical course is comparable to the pleural reflex deaths described by the French. Grey concludes by saying that since Dakin's oil has been used without recognizable ill effects in some infections of the abdominal cavity, his work suggests that the wall of an abscess cavity, or sinus, must play an important part in protecting the peritoneum in general from the effects of free chlorine. It also suggests that the maintenance of an adequate drainage tract is an indispensable part of the technic for using antiseptics of this nature within the abdomen. The use of the chlorine antiseptics in intraabdominal infections should be undertaken with caution.

**Psychiatric Family Studies.**—Abraham Myerson (*American Journal of Insanity*, April, 1918) has made a study of the psychoses of brothers and sisters in seventy-four families to find out whether there is a tendency toward likeness or unlikeness; he is also interested in the relation between two great groups of dementia præcox and manic depressive to each other. Although he regards his studies as based on too little data for generalization, Myerson is inclined to the following opinions: True paranoia is closely allied to dementia præcox, while true epilepsy belongs fundamentally to a different class from either dementia præcox or manic depressive. These last two psychoses do not occur, as a rule, in the same family group. He believes that in the causation of psychoses predisposition plays the greatest part. He expresses it in the following way: "Difficulties in synthesis due to disharmonious development and action of the various emotions and desires break down the personality."

**The Rat and Poliomyelitis.**—Harold L. Amoss and Peter Haselbauer (*Journal of Experimental Medicine*, October, 1918), in order to test Richardson's theory that the rat and its parasite, the flea, are active agents in the transmission of poliomyelitis, tried to transmit this disease to monkeys by inoculating the central nervous and visceral organs of rats caught in Brooklyn, where the epidemic prevailed in the summer of 1916. Such material was injected into monkeys under conditions sufficient to incite infection, if the poliomyelitic virus had been present in the internal organs of the rat in any considerable amount, and of any real virulence. The monkeys failed to respond to two large inoculations, made two weeks apart, so it appears that none of the rats tested carried demonstrable amounts of poliomyelitis. Experiments to show the power of survival of an active virus of poliomyelitis, when injected into the brain of rats, proved that it does not survive there as long as four days in a form or in amounts sufficient to cause infection when inoculated intracerebrally into monkeys. This was not due to the quantity introduced, as at the end of one and a half hours after the injection, the excised inoculation site when injected into the monkey caused typical experimental poliomyelitis. It does not seem probable that the rat acts as a natural reservoir of the virus of poliomyelitis.

# Proceedings of National and Local Societies

## THIRD RESUSCITATION COMMISSION.

*Meeting Held at the Rockefeller Institute, New York, Friday, May 17, 1918.*

*Under the Auspices of the Committee on Safety Rules and Accident Prevention of the National Electric Light Association.*

Dr. S. J. MELTZER, of New York, in the Chair.

There were present at the meeting Passed Assistant Surgeon E. F. DuBois, U. S. Naval Reserve Force of the Bureau of Medicine and Surgery, Navy Department; Dr. D. L. Edsall, professor of medicine and dean, Harvard Medical School; Mr. W. C. L. Eglin, chairman of Committee on Safety Rules and Accident Prevention of the National Electric Light Association; Dr. Yandell Henderson, professor of physiology, Yale University, and consulting physiologist of the Bureau of Mines; Dr. William H. Howell, professor of physiology and assistant director of the School of Hygiene and Public Health, Johns Hopkins University, member of the National Academy of Sciences; Dr. Reid Hunt, professor of pharmacology, Harvard Medical School, secretary of the Commission; Professor A. E. Kennelly, professor of electrical engineering, Harvard University and the Massachusetts Institute of Technology; Dr. Charles A. Lauffer, medical director of the Westinghouse Electric Company, Pittsburgh, Pa.; Dr. S. J. Meltzer, Rockefeller Institute, chairman of the Commission, member of the National Academy of Sciences; Dr. Joseph Scherschewsky, assistant surgeon general, U. S. Public Health Service; Dr. G. N. Stewart, professor of experimental medicine, Western Reserve University, Cleveland; Professor Elihu Thomson, General Electric Company, West Lynn, Mass., member of the National Academy of Sciences; Lieutenant Colonel Edward B. Vedder, Army Medical School; Major Frank G. Young, ordnance division of the War Department.

A telegram was received from Surgeon General Gorgas that Dr. Charles H. Frazier, professor of surgery, University of Pennsylvania, was to represent his office. (In a subsequent communication Major Frazier accepted his appointment.) Conferees: Mr. P. H. Bartlett, Philadelphia Electric Company; Mr. Wills MacLachlan, Electrical Employers' Association, Toronto, Canada; Mr. C. B. Scott, chairman of the subcommittee on accident prevention, National Electric Light Association; Dr. F. E. Schubmehl, General Electric Company, West Lynn, Mass.

The chairman stated that the object of the Commission was to consider efficient methods of artificial respiration in emergency cases, as *they were met with in peace as well as in war*. For more than a century, England has had several lifesaving societies, and many special commissions have been appointed to investigate the methods employed in resuscitation. In this country, about six years ago, a Commission on Resuscitation from Electric Shock was created for the first time, through the initiative

of the National Electric Light Association. It was now generally recognized that efficient artificial respiration was for such conditions the best and practically the only means available for resuscitation. It required but little consideration to realize that the need for an efficient means of artificial respiration was very widespread. It would be of value in such emergencies as injuries to the head which stop respiration; injuries to the chest—especially double pneumothorax; in laparotomies, during which the respiration ceases occasionally; in cases of shock which occur in peace and more so in the present war; in poliomyelitis with stoppage of respiration; in postdiphtheritic paralysis; in poisoning by opiates, by volatile gases, ether, chloroform, etc.; by mine and fuel gases; poisoning by magnesium salts, in electric shock, and in drowning. The Committee on Safety Rules and Accident Prevention of the National Electric Light Association, of which Mr. Eglin was the chairman, agreed that the Third Resuscitation Commission should consider its problems from a general point of view.

**Mechanical Methods.**—Doctor MELTZER demonstrated, in the laboratory for physiology and pharmacology, the efficiency of the method of pharyngeal insufflation in an etherized dog, after complete removal of the anterior wall of the thorax, in which the lungs and heart were exposed to full view. This was followed by a demonstration by Doctor Rossiter, of the Carnegie Steel Company, who exhibited the latest device of the Pulmotor Company, which is not identical with the original pulmotor. He also showed the original pulmotor. He stated that he had resuscitated eight gas cases in which the respiration had stopped. This was done by the original pulmotor, in which he had more confidence. Dr. James M. Booher, medical director of the Life Saving Devices Company, demonstrated the lungmotor. He showed a number of bloodpressure tracings taken from animals which had received artificial respiration by means of this apparatus. In reply to a question Doctor Booher stated that in these experiments the lungmotor was connected with the animal by means of a tracheal cannula. In human cases the lungmotor was applied by means of a face mask. Doctor Booher left with the Commission histories of a number of cases in which the lungmotor had been used. The Commission found no time to examine these written histories, but Doctor Booher mentioned especially two cases. One of these cases was subsequently investigated by the chairman. It was in connection with a poliomyelitis patient, with complete paralysis of the respiration, whose life was maintained for thirty-six hours by means of the lungmotor.

In introducing Mr. Foregger the chairman explained that unfortunately the physician most competent to present the details of the apparatus of the Foregger Company could not be present, as he was in France. He explained that the apparatus consisted in modifications of the insufflation apparatus of Meltzer. Among other changes, the apparatus carried an oxygen generator tank. In reply to a



question Mr. Foregger stated that the oxygen thus generated might last eight or ten minutes.

**Manual Methods.**—Mr. Eglin read a letter from Mr. M. W. Alexander, of the General Electric Company, stating that he hoped the "Commission would be very definite in recommending the prone-pressure method, as experience has proved its value."

Mr. C. B. Scott stated that the Accident Prevention Committee of the National Electric Light Association had reached the point in its investigation where it felt that the prone-pressure method was best to recommend, bearing in mind that machines were not always available in emergencies. His own company had had nine successful cases of resuscitation by the prone method and three unsuccessful cases in which mechanical means were used. Dr. Schubmehl stated that the prone-pressure method had been most successfully applied by their 225 first aid men. Mr. MacLachlan stated that it was his duty to train, possibly, 3,000 men in the prone method. Their system required the men to practise this method at least once a month. The men were instructed not to desist in less than three and a half hours, and not until then should they listen to advice from a physician who might tell the operator that the patient was dead.

The secretary read the following parts of a letter from Professor Schäfer, of Edinburgh, to the chairman: "The prone method has been adopted exclusively for about twelve years by the Royal Life Saving Society, the only important organization in the British Empire whose object is the resuscitation of the apparently drowned. It has also been adopted for several years by the London and other police forces, by the Board of Trade, by the Army and the Navy." "The most important thing is, in cases of drowning, to have something ready which any man can use, which will effect respiratory exchange—whether exactly as much as normal, matters very little."

#### RESOLUTIONS ADOPTED BY THE COMMISSION.

In the discussion following the presentation of methods and evidence to the Commission, the following important facts were emphasized: 1. That in most accident cases no resuscitation apparatus was at hand for immediate use. 2. That reliance upon the use of special apparatus diminished greatly the tendency to train persons in the manual methods and discouraged the prompt and persevering use of such methods. 3. That police officers or physicians often interfered with the proper execution of manual methods, in that they directed that the patient be removed in an ambulance to some hospital, thus interrupting the continuance of artificial respiration. 4. That in many hospitals the members of the staff were not all acquainted with the methods of artificial respiration. 5. That in medical schools instruction was not properly provided for students in the manual methods of artificial respiration.

In view of these facts the following resolutions were adopted by the Commission:

1. The prone-pressure or Schäfer method of re-

suscitation is preferable to any of the other manual methods.

2. Medical schools, hospitals, fire and police departments, the Army and Navy, first aid associations, and industrial establishments in general, should be urged to give instruction in the use of the prone-pressure method of resuscitation.

3. Individuals who, from accident or any other cause, are in need of artificial respiration, should be given manual treatment by the prone-pressure method immediately, on the spot where they are found. It is all important that this aid be rendered at once. The delay incident to removal to a hospital or elsewhere may be fatal, and is justifiable only where there is no one at hand competent to give artificial respiration. If complications exist or arise which require hospital treatment artificial respiration should be maintained in transit and after arrival at the hospital, until spontaneous respirations begin.

4. Persons receiving artificial respiration should, as much as possible, be kept warm and the artificial respiration should be maintained till spontaneous breathing has been permanently restored, or as long as signs of life are present. Even in cases where there is no sign of returning animation artificial respiration should be kept up for an hour or more.

5. A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently the patient, after a temporary recovery of respiration, stops breathing again. The patient must be watched, and if normal breathing stops the artificial respiration should be resumed at once.

6. Artificial respiration is required only when natural respiration has ceased. In cases of simple unconsciousness, from any cause, in which natural respiration continues, artificial respiration should not be employed without medical advice.

7. The Commission recommends that in cases of gas asphyxiation, artificial respiration, whether given by a manual method or by special apparatus, should be combined when possible with the inhalation of oxygen from properly constructed apparatus.

8. With regard to the employment of mechanical devices for artificial respiration the Commission feels that it ought not at present to take a definite stand, either for or against any particular form of apparatus. However, the Commission recommends that the use and installation of apparatus should be confined, for the present, to properly equipped institutions under medical direction. The Commission recognizes the great need of simple devices capable of performing artificial respiration reliably and efficiently. It therefore recommends a careful study of the problem, directed toward the development of a reliable method appropriate for general adoption.<sup>1</sup> Such studies can best be carried on in properly equipped hospitals and laboratories which offer opportunities and facilities for critical observation and experimentation.

In view of the importance which the knowledge of proper methods of resuscitation possessed for

<sup>1</sup>See Appendix.

public health and safety, and considering the fact that many practitioners, members of hospital staffs and graduates of medicine were not thoroughly familiar with the methods of resuscitation, especially that of the prone-pressure method, the Commission recommended: a, That medical journals and other scientific and practical journals which were interested in the problem of resuscitation be asked to publish the resolutions adopted by the Commission; b, that a copy of these resolutions be sent to the medical colleges with a request that proper instruction in this subject shall be arranged for in the college schedules; c, that these resolutions be sent to as many hospitals as possible, with the recommendations that members of the house staff familiarize themselves with the methods of resuscitation; d, in order that the resolutions of the Commission may be brought to the attention of interested circles (fire and police departments, industrial plants, etc.) it was agreed that they be communicated to the Associated Press (by the National Electric Light Association).

It was voted that the Third Resuscitation Commission should be properly organized and continue its existence, ready to respond when requirements arise. The following officers were elected: President, Dr. S. J. Meltzer; vice-president, Dr. Yandell Henderson; secretary, Dr. Reid Hunt; treasurer, Mr. W. C. L. Eglin. It was voted to appoint a committee for the collection of verifiable data relating to resuscitation. The following members were appointed to this committee: Dr. D. Edsall, chairman; Dr. Reid Hunt, secretary; Professor Elihu Thomson, and the president, ex officio.

#### APPENDIX.

The Commission consisted of fifteen members. Fourteen members approved the foregoing report without qualifications. The fifteenth member, Dr. Yandell Henderson, qualified his support of the resolutions by the following statement: "While I concur in a considerable part of the report of the Resuscitation Commission I dissent from the statement in Resolution 8, recognizing 'the great need of simple devices capable of performing artificial respiration reliably and efficiently.' Devices which are excellent from the mechanical standpoint are now available and widely sold; but the evidence regarding them indicates clearly, I believe, that even if these devices were on the spot where several gassings or electrocutions occurred, and if all the victims were treated with them, except one who was given manual (prone-pressure) treatment, this one would have much the best chance of recovery. In actual practice the apparatus is seldom right on the spot adjusted and ready. Critical time is lost, and thus in the above supposititious cases, as they actually occur, the only victim with any considerable chance of resuscitation (aside from those who recover spontaneously and are credited to the apparatus) is the one treated manually. Even more important is the fact, demonstrated now by universal experience, that when apparatus is known to be obtainable, it is sent for and the manual method neglected. Thus today the apparatus in public use is, on the whole, contributing very materially to decrease the saving of life."

## AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Fortieth Annual Meeting Held in Atlantic City, N. J., May 27-29, 1918.*

The President, Dr. THOMAS H. HALSTED, of Syracuse, in the Chair.

**A Diagnostic Clinic for Pay Patients:** The President's Address.—Doctor HALSTED in opening his address said that while the organization of hospitals for the care of ward cases and dispensaries for free ambulatory cases had been well organized, there had been no combined arrangement for the care of private patients; hence it frequently happened that a diagnosis could not be made because of the expense involved in calling in as many physicians as the case really demanded. Ofttimes the patient sought relief by consulting various physicians of his own volition, with disappointing results. It sometimes happened that the right physician was accidentally consulted, and the cause of the obscure symptoms found, with a resulting cure. It was for the profession to devise the means of correcting this very grave fault. As a result there had arisen many institutions in which the medical staff was comprised largely of specialists in different branches. While some of these institutions were excellent in every way, the great majority were not, and as long as they remained purely commercial organizations they never would be. The scheme devised, worked out and practised for nearly three years by the Clinical Club of St. Luke's Hospital, San Francisco, offered the best foundation from which to build a diagnostic clinic. The medical staff of this hospital consisted of twenty-four full staff members, four consultants and ten assistants, with an excellent clinical laboratory and complete x ray department. In a hospital with which he was connected, Doctor Halsted said that the first choice was given the regular staff, after which the assistants were given an opportunity when vacancies arose. The staff was divided into two groups serving on alternate months, with a third group known as the auxiliary group, made up of those specialists whose services would not be required in every case. The latter became available in any case in which the group chairman considered such service desirable. The chairman was responsible for the history of the case, and after making his examination arranged for the visits of the other members of the group together with such members of the auxiliary group as he may desire. Records were kept by a supervising nurse whose duty it was to attend to the financial end of the work, see that specimens were furnished the laboratory, arrange the details of the physician's visits, to be present at all examinations, typewrite the notes and attend the general consultations, taking the minutes and transcribing them. After all examinations, clinical and laboratory, have been completed, a general consultation of all who have had to do with the case was held, and every possible diagnosis arrived at, the physician who referred the case being present and participating in the consultation. A satisfactory conclusion having been reached, a report was sent to the referring physician, a second copy to the



patient or his responsible relative—whenever this seems desirable, and a third retained in the files of the clinic. Only cases that were obscure and complicated and apparently could not be diagnosed by the average physician, were accepted by the clinic. A minimum fee of \$50 and graded upward, according to the patient's financial situation, was charged. Such fee included the services of the medical man and of the laboratory and x ray departments, as well as of the supervising nurse. In addition, the hospital charged regular room rates for time occupied. The portion of the fee remaining would finally be divided equally among those who had examined the case, to be received by them individually or be voted by them for the purchase of new equipment for improving the service of the clinic of the hospital, the latter being expected to be the disposition of the funds for some time to come. In rendering this service they would themselves receive much knowledge and should benefit greatly through these examinations and consultations, adding materially to their diagnostic ability. The hospital would benefit by the steadily increasing efficiency of its staff.

Finally, Doctor Halsted called attention to the work of its committee in the National Council of War Defense, and requested a quick response to the appeal of the surgeon general for voluntary medical service to meet the demands of the drafted army. Each man must weigh the matter for himself and, putting aside all argument and questions of personal advantage, reach a decision that he would be willing to submit to the scrutiny of his fellows and abide by their decision. Those who could go were to be congratulated; they were to be envied, as they were the favored ones of the profession. A doctor who in this emergency could conscientiously go and failed to respond to his conscience and his country's call, putting a selfish profit first, was to be pitied.

**Report of Interesting Cases of Vincent's Angina.**—Dr. CLEMENT F. THEISEN, of Albany, said that there were two distinct clinical types of the disease, one form to be differentiated from diphtheria and other pseudomembranous anginas occurring almost exclusively in young people, while the other form had a localized ulceration simulating syphilis occurring mainly in adults, usually, in his experience associated with carious teeth, especially in those whose mouths were not well cared for. The odor was distinctive and characteristic, and if not promptly treated, extensive ulceration of the fauces occurred with fatal ending. There had been, in the speaker's experience, two fatal cases; one previously reported in 1912, and the other a recent case in a man thirty-two years of age. The uvula and part of the soft palate had been practically destroyed, and there was deep ulceration of both tonsillar surfaces and of the gums around the last molars. The ulcerated surfaces were covered with a tenacious pseudomembrane. The molar teeth were badly decayed, and the gums bled easily when touched with a probe. The odor was so bad that it required a good deal of courage to examine him. The patient said the condition had been going on for several weeks, but he had received no treatment. He had

been using a mouth wash of peroxide and water. He was in an extremely weakened condition, because the pain in swallowing was so severe that he had not been able to take much nourishment. No history of syphilis could be obtained. Smears from throat swabs verified the diagnosis of Vincent's angina. He was given a strong solution of potassium chlorate, powdered alum, carbolic acid, glycerin and water, to be used as a gargle, and locally the ulcerated surfaces after cleaning were swabbed with a saturated solution of methylene blue in alcohol. Potassium iodide was given in large doses. This was always administered in Doctor Theisen's cases, whether a history of syphilis was obtained or not. Blood count showed a moderate leucocytosis. The patient failed steadily in spite of all efforts, and died about two weeks after he was first seen. The larynx was not involved in this case. Salvarsan was used both locally and intravenously without any appreciable effect. There was no autopsy.

Pure alcohol swabbed on the ulcerated surfaces was also extremely valuable in these cases. The greatest difficulty was in having the severe cases get enough nourishment, because the pain in swallowing was often so great. A solution of orthoform in olive oil, swabbed on the ulcerated surfaces before meals, afforded a certain amount of relief. A spray of carbolic cocaine in the worst cases gave more relief than anything else, if used a few minutes before meals. In some of the adult cases of the ulcerative type we were probably dealing with a combination of syphilis and Vincent's angina, even when we failed to obtain a history of syphilis. That might be one reason why salvarsan acted so promptly in some cases, although the consensus of opinion seemed to prove that the arsenic preparations had a specific action. Doctor Theisen had known cases of this kind in which there was a positive Wassermann (with no syphilitic history), with the typical clinical and microscopic evidence of Vincent's angina.

**Discussion.**—Dr. CHRISTIAN R. HOLMES, of Cincinnati, inquired as to the temperature of the patients; whether blood cultures had been made in the two severe cases, and whether the alcohol treatment has been applied locally or not. In Camp Sherman there had been quite a run of Vincent's angina among the soldiers, but none had been seriously ill. All were the kind of cases that yield readily to treatment. This consisted of the nitrate of silver bead applied in the crypt, using it on a heavy silver wire; also of permanganate of potash and peroxide of hydrogen used as a gargle. Gargling with vinegar diluted with equal parts of water had been tried lately and appeared very effective.

Dr. LEWIS A. COFFIN, of New York, said that from the papers on this subject, it was evident that patients have gotten well under various forms of treatment. He thought that if these patients were seen early, recovery might be looked for, if any of the various methods were applied vigorously. The speaker referred to a case which he had treated twice daily for about a week, at the end of which time he told the patient that he was practically well and need not return for forty-eight hours. That same afternoon, after sitting out during a ball game,

the patient was seized with a chill, which was the ushering in symptom of a typical attack of follicular tonsillitis.

Colonel HERBERT S. BIRKETT, M. D., Montreal, Canada, said that perhaps there was no condition which was more prevalent than Vincent's angina among British troops. He had seldom seen it in any of the colonial troops, and this he thought was due to the fact that the mouth conditions were very well cared for among the Canadians. The condition was found not only on the tonsils but also on the gums, even as far forward as the incisor teeth; it seemed as if this was due rather to direct infection. His experience with this condition was that it yielded rapidly to treatment, consisting of an application of hydrogen peroxide, liquor arsenicalis, and vin ipecac.

Dr. EMIL MAYER, of New York, expressed the opinion that it was relatively easy to make a diagnosis of Vincent's angina when there was an exudate and it was possible to make a smear, but he had recently seen an instance in which the diagnosis had been a great surprise. A woman of much refinement who took good care of her teeth, had consulted him on account of a spasmodic cough. She had a skin affection for which she was being treated. There was a simple, mild exudate on her soft palate, which seemed to be an evidence of the skin infection on her mucous membrane. Doctor Mayer felt that she had a similar condition on her trachea, because of the negative result of all of the examinations. Her sputum was really more saliva than anything else, and he was intensely surprised at the report that it was full of the fusiform bacilli. There was an absence of anything like a membrane, yet the condition occurred, and in a person not neglectful of her teeth or general condition. It probably occurred much more frequently than was generally believed in this class of cases.

The treatment that had answered best in Doctor Mayer's experience was the local application of salvarsan, together with the iodine and glycerin, which he had recommended at the time he had reported the first case in the English literature. He had never seen the severe fatal cases. Arrowsmith reported a case in which the patient nearly died. It was important to be on watch, for cases would probably be discovered where least expected.

Dr. GREENFIELD SLUDER, of St. Louis, referred to the solution of methylene blue in alcohol alone, of which Doctor Theisen spoke. He was glad to know of that. Doctor Sluder had also used the methylene blue, but in powder and in aqueous solution, and likewise found it to answer the purpose.

Dr. CLEMENT F. THEISEN, of Albany, replied to Doctor Holmes's question regarding blood cultures. Blood cultures had not been taken but blood counts had been made and the leucocytes in both cases were increased. There was an increase in the polynuclears. The method of treatment was a combination of old drugs, practically a specific, either as a gargle or in the spray form. This combination consisted of potassium chlorate, powdered alum, glycerin, and water. The results were excellent. Alcohol was used locally.

(To be continued.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Pretty Lady.* By ARNOLD BENNETT. Illustrated. New York: George H. Doran Company, 1918.

Men and women—even so righteous and well intentioned a body of citizens as the Antivice Committee of Fourteen—may stand off at a distance and say what ought to be done. The only difficulty is, and it is a serious one, that because of the aloofness with which they are able to form judgments, make reports, and agitate legal reform, they are too prone to draw a veil before the real issue that lies in the lives of the men and women whose actions they place under surveillance but whose inner psychic impulsion they fail to reckon with. Their duty as guardians of the outer decorum of society places them in a false superficial position. Their work is a necessary one as far as it makes it easier for men and women to find the fuller, more constructive, therefore the higher exercise of their impulses and powers. It will nevertheless fail of such a deep and lasting end if it does not more sincerely know the individuals and the conditions with which it has to do, in the most profound psychological significance.

It takes courage and human sympathy, as revealed in this book, *The Pretty Lady*, to discover that prostitutes, "clerks," and profiteers under the Raines law have certain inner reasons for their course of life, which are far more profound, more complex, more universally human, than the mere seeking of material advantage of the plying of a trade into which outward circumstances or the following of some single impulse forces them. Until society and the representatives it sets to aid it in its progress upward through reforms comprehend this with more than an intellectual acquiescence or that of a superior selfrighteous "sympathy," real aid will not come. In this story of Bennett the prostitute is one because of a very human course of events combined with a special mental makeup on the part of the mother and of the Pretty Lady herself, which had gradually worked together to set the daughter's life in this particular sphere. Here she proved herself a sincere, consistent heroine in her own way. It was a limited one and made her complacently accept her career and fulfill it. Her sincerity and consistency were greater than of the man who deserted her when he came, as he thought, upon some episode in her history which proved her unworthiness and baseness. He had a psychology too limited and too dependent upon the conventions and advantages of his upper social world to admit that there might be further explanation for her apparent defection and unexplained behavior. The instance was the seeking by the Pretty Lady of the soldier to whom a hallucinatory mystic faith had directed her, and toward whom it imposed a sacred duty. This revealed in her not a baseness and impossibility of comprehension and acceptance of a higher position, as her lover thought, but rather the fact that there is also a psychology which is often a pathological one behind such a social career as



hers. This again gives added reason for thoroughly imbuing a scientifically sympathetic psychology into reformers and moral advocates. The book is one in which such workers should take to heart that they may know that they deal not first with social problems but first with individual psychic facts in each man and woman. It is the physician who should first adopt such a standard insisting upon a knowledge of individual psychology and of its relation to social disease of any sort, that is to be comprehended and dealt with. From this point of approach alone can institutions which work for social harm or the individuals who maintain such institutions or make use of them be understood and be enlisted for good rather than for destructiveness and evil. Such a book as this humbles the critic who attempts to judge as he stands apart. In recognizing the living factors in such a character as the Pretty Lady, he comes to ask whether, after all, there is not a revelation of humanity here which his merely conventional attitude, unconsciously protective against such selfknowledge, has prevented him from recognizing in himself.

*Technik der Peritonealen Wunderbehandlung des Weiblichen Beckens.* By OSKAR BEUTNER, M. D., Professor at the University of Geneva. Illustrated. Zurich: Art Institut Orell Füssli, 1918. Pp. 488. (Price, \$15.00.)

We are glad to have this work before us, coming as it does from a conscientious gynecologist who sincerely desires to offer to the surgical world what he supposes to be worthy of attention. But in point of fact, the Geneva professor has not accomplished much from the viewpoint of American surgery.

In 1895, Segond of Paris and Jacobs of Brussels came to the United States to teach the method of vaginal hysterectomy and they returned to their respective cities imbued with our methods of abdominal hysterectomy with peritonization, a method which has held its place since the above date. American surgeons were developing peritonization to quite an extent at that time. Soon after their return, both Segond and Jacobs published papers on the American methods, as done by Kelly, Ernest Cushing, Baldy, the regretted Pryor, and a host of others, which the Germans rapidly adopted, not forgetful at the same time to give their names to these technical procedures. The result, therefore, has been that Beutner in his innocence—or rather ignorance of the American and English medical literature of the past twenty years—has offered matter that to the American profession is an old story, and although it must be admitted that the personal technic described by the author is certainly ingenious, it could hardly be considered important by any practical Anglo-Saxon operator. Even when Beutner describes uterine suspension he depicts Baldy's and Thomson's operations, which have, we believe, been discarded for others, such as the Webster-Baldy technic, etc. Pryor originated his technic of total hysterectomy before 1900, if we are not mistaken, and about 1906 Wertheim gave to the surgical world his copy of Pryor's operation, although of course without mentioning the American surgeon's name.

Beutner passes in review the various technics of Wertheim, Döderlein, Bumm, Veit, Küstner and all the German school of gynecology, revealing the fact

that their methods were founded on what had previously been done in the United States.

The press work and illustrations are of the very best and a credit to the well known publishers.

*Details of Military Medical Administration.* By JOSEPH H. FORD, B.S., A.M., M.D., Colonel, Medical Corps, U. S. Army. With thirty Illustrations. Published with the Approval of the Surgeon General, U. S. Army. Philadelphia: P. Blakiston's Son & Co., 1918. Pp. xi-741. (Price \$5.)

Colonel Ford has given in this book a work which will prove invaluable to military medical officers. It is a large volume, admirably printed, and presents in a concise, interesting, and readily available form, just that kind of information which the civilian surgeon needs on taking up military work. Unfortunately, the constant change in the forms used in the service soon render obsolete any set of forms which may be published, but one who familiarizes himself with the forms laid down in Colonel Ford's admirable work will have little difficulty in adjusting himself to any modifications which may be made by the medical department. We have already made editorial reference to this excellent and informing volume.

## Births, Marriages, and Deaths.

### Died.

- BRADFORD.—In Philadelphia, Pa., on Tuesday, December 3d, Dr. Thomas L. Bradford, aged seventy-one years.
- COLLINS.—In Parishville, N. Y., on Tuesday, November 19th, Dr. William E. Collins, of Massena, N. Y.
- CORRIGAN.—In St. Leo, Fla., on Thursday, November 28th, Dr. Joseph F. Corrigan, of New York, aged seventy-four years.
- ERDMAN.—In Macungie, Pa., on Sunday, December 1st, Dr. William B. Erdman, aged eighty-one years.
- GLONINGER.—In Lebanon, Pa., on Tuesday, December 3d, Dr. Andrew B. Gloninger, aged fifty-seven years.
- GRAVATT.—In Troy, N. Y., on Monday, December 2d, Dr. Edwin J. Gravatt, aged forty-eight years.
- GRAY.—In Shreveport, La., on Monday, November 25th, Dr. Robert A. Gray, of Frankfort, Ky., aged eighty-eight years.
- GREEN.—In Boston, Mass., on Thursday, December 5th, Dr. Samuel Abbott Green, aged eighty-nine years.
- GRIFFIN.—In New York, N. Y., on Saturday, November 30th, Dr. Carlton L. Griffin, aged sixty-eight years.
- HAMBLEEN.—In Bedford, Mass., on Wednesday, November 20th, Dr. Edward J. Hambleen.
- MACFARLAND.—In France, on Thursday, October 24th, Dr. James MacFarland, Captain, Medical Corps, U. S. A., of Burlington, N. J., aged thirty-one years.
- MILLARD.—In Cheyenne, Wyo., on Tuesday, November 19th, Dr. Hugh R. Millard, of Dundee, N. Y., aged thirty-two years.
- PARSONS.—In Palmer, Mass., on Saturday, November 30th, Dr. William Turner Parsons, aged thirty-seven years.
- PETTINGILL.—In Philadelphia, Pa., on Monday, December 2d, Dr. Eliza F. Pettingill.
- ROBINSON.—In Bluffton, Ind., on Wednesday, November 18th, Dr. Homer E. Robinson, aged forty-one years.
- ROSE.—In Brooklyn, N. Y., on Friday, November 29th, Dr. Henry William Rose, aged sixty-nine years.
- RUBIROSA.—In New York, N. Y., on Thursday, December 5th, Dr. Rafael Rubirosa, of the Dominican Republic, aged thirty-three years.
- SMITH.—In Baltimore, Md., on Friday, December 6th, Dr. Kirby Flower Smith, aged fifty-six years.
- SOLTAN.—In London, Eng., on Saturday, November 2d, Dr. Harry B. Soltan, of New York City.
- WHITE.—In France, on Saturday, November 2d, Dr. Clarence H. White, First Lieutenant, Medical Corps, U. S. Army, of Cohoes, N. Y., aged thirty years.

# New York Medical Journal

INCORPORATING THE

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## Original Communications

### A BOLSHEVIK BOLUS.

BY WILLIAM P. CUNNINGHAM, M. D.,  
New York.

Visiting Dermatologist to the Misericordia Hospital; Associate  
Visiting Dermatologist to the Children's Hospital and  
Schools, Randall's Island.

The civilized world has stood aghast at the spectacle in Russia. Under the domination of the socialistic cult, bedlam has broken loose! Disorder runs riot! Violence and crime released from the restraint of established authority have swept abroad like a pestilence! The bulwarks of society having broken down, the dregs of society have seethed to the top. Envy, hatred, greed, and vengeance are running amuck! Perched on the back of the so called doctrine of equal rights; of the brotherhood of man; of the just title of the laborer to the full product of his labor; of the elimination of capital and the distribution of wealth among those only who create it; the most detestable qualities of our imperfect nature have galloped roughshod over the principles and safeguards of our social organization and laid them shattered in the dust. Socialism has had its day in court or rather at court, for it has supplanted a more or less objectionable tyranny with a thoroughly vicious one! Human rights under its ruthless terrorism have vanished into thin air. They were much better recognized under the Czar! Brutish, brainless, blind rapacity, raging in insensate fury against everything of worth or consequence, has constituted itself the apogee of economic freedom, and the be-all and the end-all of socialistic achievement! Here was socialism acted out to the life: here it was in all its naked beauty! Here amid the fires and the thefts, and the murders, and the nameless outrages of mob supremacy, it wrought a perfectly consistent demonstration of destruction and decay! The world without saw and shuddered! Men of reason determined that the lesson was sufficient and that the hideous hydra-headed devil of socialism should never get another chance. It had cut its own throat with the sword of its own forging! But these wise men seem to ignore the power of hydra to regrow the head that is cut off. They seem to think that glaring at Russia and framing resolutions are sufficient deterrent to the reappearance of the evil elsewhere.

Note the ominous signs from Germany! But even where disorder has not given it favorable opportunity, the cunning of the reptile insinuates its

slimy carcass by a hundred devious ways into the forum of legislation. We are tricked by some humanitarian project into accepting a principle of action whose logical consequence can be only Bolshevism. Specious reasoning by clever *ergoteurs* and interested exploiters, who see salaries or profits in the uplift propaganda, blind us as to the real character of the step we are taking. Before we are aware of whither we are going we are treading the path of the Bolshevik. While the administration of the socialistic state has been a wretched fiasco, because of the absence of truth and justice from the fabric of its dreams, nevertheless in the presentation of the case for our suffrages the socialistic orator has a certain facility of expression and a certain speciousness of appeal which are very alluring and deceptive. So that if we are not "armed so strong in honesty" that we are proof against all seduction, we are apt to be entrapped into accepting some shred of his argument and thereby committing ourselves to the propagation of his toxic tenets. These temptations unfortunately do not always proceed from the avowed socialist whose identity would arouse our antagonism at once. They frequently proceed from quarters whence we should expect anything but socialism! They are often advanced by individuals and societies who would shudder at the imputation of socialism! and yet they are socialism nevertheless but so disguised as to be especially dangerous. We may guard ourselves against the open enemy, but the false friend or the smiling traitor or the deluded zealot is hard to unmask; whence it comes that we are encompassed round about today by socialistic stratagems in the hands of nonsocialistic sponsors. To the intense delight of the Marxian doctrinaire, they play the game with perfect artlessness and childlike incomprehension of the damage they are doing! It is certain that these heedless social service marplots gain a wider hearing for unadulterated socialism and put its teaching on a more acceptable footing than all its undisguised exponents put together! They appeal to people whose hard common sense would revolt from the vaporings of the professional propagandist. They get to the susceptibilities of the man of affairs, and the woman of thought, and under the guise of pure Christian altruism lead them in the direction of Bolshevism.

Thus it is that we have the amazing spectacle of our Rockefellers and our Lamberts and our Goldwaters striving with the infatuation of the veriest



soap box orator to advance the standard of red flag internationalism. In so far as they can, they urge the adoption of certain specious features of that abhorrent doctrine under the pretense of ameliorating the condition of the masses! As class conscious as the wildest social revolutionists, they would legislate for the "laboring class"! They acknowledge the principle on which the meddling interference rests. They admit that the State must do for part of its citizens what it is not called upon to do for all! They admit that the State has the right to do this. They contend that it has the correlative *duty* to do it. This involves, of course, the confession that society has been cheating these particular units of its organization. This makes the case for socialism.

So true is this that in speaking of one particularly objectionable proposal in the way of medical legislation they actually use the term "socializing medicine." They not only accept the fact but glory in the brand! There can be but one logical consequence of this deplorable surrender of legitimate democracy and sturdy Americanism, and that is the eventual bolting of the whole loathsome Bolshhevik Bolus! These half informed enthusiasts will not concede the inevitability of that dread disaster, but in so far as they are instrumental in the forcing of bits of the doctrine upon a dull witted electorate, they are bringing nearer the acceptance of the whole. The class distinction that underlies the whole argument of socialism, the granting of special privileges and immunities to certain elements of society, irrespective of their fruitful utilization of the opportunities common to all, is the foundation on which the conception of the destructive philosophy rests. The socialist simply pushes it further than his respectable confederates care to do at present! He claims for a particular class not only distinct concessions, unwarranted in law or nature, but actually the investiture of that class with the title to all the wealth of the world! No one produces but the hand laborer! No one but the hand laborer is entitled to reap the rewards. So in unfortunate Russia where this midsummer madness has got the upper hand by a curious whirl of the wheel of fate the producing (?) class proceeded to appropriate what had been accumulated by the professional and trading classes, and the whole social system fell into clamorous chaos! And curious to relate, the "oppressed and exploited laboring class," imputed to have all the virtue and real worth of the community, no sooner got a taste of the "flesh pots of Egypt" than it promptly threw aside all pretense of the brotherhood of man and set up a tyranny of its own more execrable than any that had preceded it; a tyranny utterly oblivious of the rights of others, and more heartlessly coercive and embruting! The world should have learned its lesson from the martyrdom of Russia; everything savoring of "socialism" should be instantly repudiated. The very beginnings of the hateful scourge should be stamped out. Nothing flavored with it should be aught but a stench in the nostrils of decent men; yet with this example still fresh before us, we are utterly unimpressed and heading straight for the adoption of ideas emanating from the

mephitic whirlpool. Health insurance seems to have gone into a trance, at least under that designation. The war perhaps has brought about such a dearth of available doctors, that it is momentarily impracticable, but it is dear to the heart of its Bolshhevik sponsors, both in the camp of the blatant socialist and his "social service" accessory. It will crop out again, possibly under its own title, possibly camouflaged with a more deceptive one. But meanwhile, as the devil never sleeps, the program of the compulsory health insurers is still offered for approval with its auxiliary features brought into the prominence of the discreetly retired pivotal project.

One of the innovations planned was the establishment of clinics for the exploitation of the specialties in the interest of the poorer "classes"—fee, one dollar. These were to be held at night so that the people employed all day could take advantage of them. As already stated, they were originally to be tagged on to the compulsory health insurance program. Now for reasons of weight they are coming first. And imagine what influence is now supporting this dangerous and confiscatory innovation! The United States Government!

Of course, the United States Government is acting in this instance at the behest of the Medical Department of the Army, Navy, and Public Health Service. The ostensible purpose is to provide clinics for the treatment of venereal diseases among enlisted men. But these clinics, either at once or eventually, are to embrace the general public. It may be remarked in passing that the amount of solicitude expended on the victim of his own libidinous excursions by the various medical boards aforesaid is touching in the extreme. To protect the man from the reward of his folly, he is provided with a prophylactic ointment and wash and if he contracts disease despite this godly precaution, he is handled as if he had suffered in the most meritorious cause in the world. If he goes upon his amorous adventure without notifying the authorities of his commendable and edifying intention and he brings back a chaste memento, he is put in the guard house for an extended period and deprived of the various privileges dear to the heart of the soldier.

When the public has been included in the clinetelle of these venereal clinics the entering wedge of Bolshhevik medicine will have been firmly driven in. The specialties will have come under the fire of the reformers who seek the subjugation of medicine to the dictation of salaried institutionalists. We shall have specialists working set hours for a salary or on percentage and treating large numbers of patients. The net result, upon the specialist, will be the dampening of his professional ardor and the blunting of his diagnostic acuity. We all know what the incentive to investigation and improvement is in workers in our hospitals and clinics. It is certainly not the mere love of the work in hand. If there were nothing beyond but the abstract rewards of intellectual achievement, enthusiasm would quickly fade into apathetic routinism and the dull application of an unprogressive formulary. The drudge in the dispensary is fitting himself for the remunerative employment in other fields of the

knowledge he has thus painfully acquired. The public pays for its advantage in furnishing clinical material for the doctor's education; that is just. Everything in this world that is worth having costs an effort; we all pay. Nothing for nothing is the rule of justice, since we are all under the primal curse of laboring for our needs.

Oh! we all anticipate the protest arising from the throat of sweet charity against this cold blooded proposition. Great services are constantly rendered for nothing in the name of the greatest of the virtues. But this is a faulty apprehension of motives. The service under the impulse of charity is compensated by the knowledge of a humanitarian or religious duty faithfully performed. Attached to this, in the minds of most of the performers, and in no way detracting from the merit of their conduct, is the hope of a great reward in heaven! They cast their bread upon the waters in the expectation of a manifold return. This has been promised and is a perfectly legitimate incentive to self-sacrifice. But when it comes to a question of the monetary payment of special medical skill no one who expects or demands this at a cut rate (at the rate of a few cents a case or consultation) need reasonably anticipate anything more than he pays for. If he does he is flying in the face of human experience since society was organized. If he invests thirty-three and a third cents in a medical opinion he is strangely deluded if he looks for five dollars' worth. He will get thirty-three and a third cents' worth exactly. The dollar paid by the patient is to be divided into three parts, of which the hospital is to get one third, the drug department one third, and the doctor one third. The expert opinion is figured by the institution as no more valuable than the cost of the medication. This knowledge, to be sure, tends to raise the selfappreciation of the vendor of that opinion. His enthusiasm for humanity is marvelously increased by the realization of what humanity thinks of him; his desire to help the aforesaid humanity is augmented by its evident desire to swindle him. What a wonderful rapprochement between the patient and his adviser; what mutual esteem and admiration will be created by a system whereby the parties working under it are either practising or resenting extortion. When a man gives away his services he retains his self-respect; when a man sells them at a ruinous reduction he feels that he has become a bargain counter remnant of his professional self. He is doing his share in the deprivation of his profession. The motives actuating the institutionalists and their Bolshevik confederates are sinister enough, but they have the merit of virility compared to those of the weakkneed Esaus who fall for the beggarly mess of pottage.

Compulsory health insurance or health insurance by the State or government, has been temporarily sidetracked as we have seen, for reasons best known to its supporters. The evil features of this utterly unconscionable interference of the State in the affairs of private life have been shouted from the housetops by earnest men of prescient mind. But it is to be feared that the medical men most liable to the pressure of that iniquitous proposal, have not

been awakened to the meaning of it. They have been so accustomed to legislative raids upon their means of subsistence that they give but scant attention to the warning now going forth. They have seen the qualifications for the practice of medicine rigidly enforced in their case and feloniously relaxed in the case of Christian science, chiropractic, and every other irregular and bizarre design upon the pockets of the credulous. The proponents of any fool scheme with a friend at Albany could obtain the privilege of preying upon the public after a few months nondescript instruction in a mythical "college"; whereas the student in a standard school of medicine is compelled to study four hard years and pass gruelling examinations both at the hands of his own professors and a State board of regents before he is allowed to compete with the charlatan for the business of curing the sick. This discrimination was unfair and unjust and indefensible, but the patient doctor stood it. Now it is proposed under health insurance to reduce him to a condition of practical serfdom by sweeping away his professional independence, and compelling him to work for a beggarly yearly stipend apportioned to the number of patients he has in his "section." It is proposed to extend the "lodge" system of practice to the profession at large and the community in general. Everybody who works for a certain wage is to be forced to take health insurance; if he does not do so he will not be employed anywhere. His family is also insured. His wife is insured against the expense of her confinements; he pays so much a year for the privilege of the doctor whenever he wants him. The sum is ridiculous. Let us say about five dollars a year or ten cents a week. For this magnificent recompense the doctor must respond to any amount of work that may be laid upon him by that man. He is to be at his beck and call, and he cannot refuse to comply. He cannot escape the agreement. He is a contract laborer for the term specified. No matter how distasteful or objectionable the patient may become the doctor must put up with him till the time expires. You will say that the doctor has freedom of choice and need not undertake the service. He has certainly great freedom of choice; with the State compelling its citizens to assume this insurance, and thereby forcing the great majority of people to resort to the physicians assigned to their districts, the physicians who do not sign up for the work will find themselves without any patients at all. A fine freedom of choice, to accept the terms offered or go into some other occupation.

The competition of the State is too powerful to be resisted; the knell of independent practice will be struck among physicians of moderate incomes. There will not be patients enough to keep all occupied when they are herded in sections under the block system, and there will not be remuneration enough, at the figures charged, to maintain all the physicians who might be driven to accept the humiliating situation. Thus many men will be forced to the wall who are now maintaining a modest but respectable establishment. Where the patients, as at present distributed, are sufficient to support many doctors in comparative comfort,



under the proposed revolutionary alteration they would be compacted into the care of fewer men who, themselves receiving less for their labor than before, would be the instruments of extinguishing the incomes of their brethren.

It is strange indeed that the average physician cannot be brought to see the deplorable position in which this will place him. It is strange also that many physicians of prominence are urging the adoption of this scheme of practice for their professional compeers of more modest pretensions. The point of view of the average physician is dulled by his inaptitude for resentful resistance. The point of view of the other sort is that of the complacent commissar of the "common people"; this person is a myopic prig; a mischievous meddler; a constitutional marplot. The poor are so much in need of advice, protection, and patronage, that fairness and common honesty are ruthlessly sacrificed to provide them. To coddle the poor a self-sustaining element of the community is to be reduced to beggary.

But the most menacing part of the whole wretched business is the partnership between this so called uplift element and the out and out socialist. They are both heading straight for the same object. They both acknowledge it. There is absolutely no difference in their arguments or phraseology. They are both set upon the "socializing" of medicine. The language is identical with the smug uplifter and the ranting soap box reformer. Naturally advocating the same thing, for the same reasons, they fall into the same forms of speech. With your eyes shut you could not distinguish in the smooth utterances of Lambert, or Goldwater, and the raucous ravings of the Russian Reds any essential difference in their sentiments and intentions on this particular topic! They are for the socializing of medicine! The doctor is to work for the State; the State is to dictate the terms on which he shall work; the State is to compel the people to accept the doctor and the doctor to accept the remuneration fixed. Both parties to the arrangement are deprived of their character as free agents. Other members of the community, who have no direct interest in the welfare of either party, are to be taxed to help to defray the expense of the project, which also includes sick and death benefits.

The State is the whole actuating force. It compels the debasing of one of its constituent bodies for the alleged betterment of another. It discards equity and decides upon the frankly socialistic principle of the right of the "masses" to what they can appropriate. Vested rights are ignored; the rights of property are coolly abrogated; the right of a man to the product of his labor is perverted into the right of a man to the product of other men's labor. Given the pernicious doctrine that physicians may be fairly reduced to such a servitude on the principle advanced by both avowed and camouflaged socialists, and the whole case against socialism falls to pieces. Admit that men may be forced to work for the State in one industry, and you admit that they may be forced to do so in every industry. Admit that the State has

the right to fix the rate which its citizens may charge for their services in one industry and you admit its right to fix the rate in every industry.

Admit these two contentions and State socialism becomes only a matter of expediency. Its ethical aspect is no longer in controversy. It is the support, endorsement and impetus thus given to State socialism by the advocates of health insurance which constitute the most reprehensible feature of the programme. The way is made ready for the facilitation of the whole confiscatory and demoralizing movement. And when the inevitable attack is made upon some other better buttressed economic factor, the howl of disapproval from these one time associates cannot fail to astonish the whole hog socialist. He will retort, and fairly, that when it was a question of applying the principles of socialism to the invertebrate medical profession, no more ardent socialists ever frothed at the mouth than these now recalcitrant reformers. They sustained the demand for health insurance and upon the very grounds on which the larger inroads are now projected. Perhaps the partners in the socialistic subjugation of the medical profession will now be at odds over the common ownership of land. But surely if the State may coerce the doctor to surrender his income it may coerce the landlord to surrender his rent. If it may organize and socialize the treatment of the poor, it may also organize and socialize the housing of the poor. It may dictate the prices landlords may charge or compel them to turn over their incomes to the common treasury. If a corporation has the control of the manufacture of a certain commodity the State may rightfully appropriate the plant and run it for the benefit of all the people. The feeding of the people is as much the concern of the State as their health. In fact, the two considerations are in some aspects indistinguishable. Health depends as much on food and dwelling as it does on medication. If for the good of the public health the State may dragoon the doctors into unwilling servitude, then for the good of the public health it may dragoon the owners of the natural opportunities into providing the nutriment and the shelter which are requisite for its preservation.

It may compel makers of shoes to turn over their factories or products to the authorities for the better protection of the public and therefore the better conservation of the public health. There is no extension of the socialistic teaching which cannot be justified by the acceptance of the principle of compulsory health insurance. The yielding of a principle for the perpetration of injustice brings its retribution in the form of graver injustice. Those who, in order to reduce the doctors to subservience to their designs, adopt the formulas of the socialists will find themselves a party to the unpalatable application of those formulas to institutions which they wish to uphold. By their cooperation on a former occasion they will have justified the larger demands of their whilom partners. The law of gravitation is operative not only on the massive boulder but on the grain of sand. It is deducible from the fall of a sparrow as well as from the fall of an eagle.

The principle of socialism is as firmly established by compulsory health insurance as it would be by the acceptance of the whole Marxian system; and it is this stealthy invasion of the thing that has destroyed Russia, which we must oppose with all our power. We must not permit the evil beginnings of the economic disease. The smallest seed planted under the cleverest subterfuge may be the origin of a upas tree of great growth and malignancy. It is at the inception of an epidemic that the greatest caution is necessary to prevent its taking hold. It is at the inception that the completest repulse can be administered. The safest course for society is the rejection of all those sweetly worded "social reforms" whereby it is sought to break down the barrier, insurmountable in an honest frontal attack, between socialism and the rights of property. The wrongs of man may be many. But they are remediable by the slow and sure evolution of enlightened public opinion. They are not remediable by the perpetration of other wrongs. The advance to perfect justice is not along the road of confiscation. The happiness of all the people cannot be secured by the ill usage of any. It is a contradiction in terms! Cheating and browbeating the doctors in the interest of the laboring "classes" will rebound to the injury of the latter. There is no profit in dishonesty. Even he who seems to thrive upon it makes tenfold atonement in the loss of selfrespect. And society will the sooner go into convulsions, for the surrender of the smallest safeguards against dishonest exploitations. The doctors wronged will mean the speedier wronging of some other class and the expediting of the coming of the day of Russian madness!

The defeat of the insidious socialistic infiltration is the gravest duty of the thinking man today. The great war is won. It is no longer in doubt; but the sleepless activity of the socialistic propaganda, which had all but lost the war for us by the catastrophe in Russia, is ever moving upon the works of real democracy and by trick and device seeking to find the weak places in its defences. These are often revealed by more or less conscientious idiots who are seduced to give a helping hand to the invader. Under the disguise of patronizing "uplift" of the needy, concessions are made to the less pronounced demands of the internationalists, and the whole case against them is thereby given away. If principle is surrendered details are a matter of little consequence. The energetic apostle will not fail to push them relentlessly, upon the incautious relaxation of that eternal vigilance which is the price of safety. These social service triflers with the fundamental ideas of real democracy admit that some of the conceptions of the socialist are just. This admission was inevitable since they were bent upon the same "reforms." But as the socialistic doctrine is erected upon the hypothesis that the production of wealth is all effected by the proletarian and that in the distribution of wealth he is the only one to be regarded; that capital being the accumulation of wealth thus produced belongs to the laborer; that everyone able to work is entitled to the same reward in the shape of food, shelter, clothing, and recreation, irrespective of his individual productive

capacity; it will be seen that in accepting any of the deductions from this hypothesis, its correctness is inferentially acknowledged. Herein lies the fatal blunder of the zealous "uplifter"; he wants to be a bit of a socialist without admitting it. He wants to run with the hare and hunt with the hounds. The consequence of that course is proverbial. He wants to have a foot in both camps, forgetting that he will be mired by the foot in the socialistic camp. New communities never run to socialism. It is only when the pressure of population increases that the demands of the less industrious or more improvident for an unearned share in the general accumulation take the socialistic form of special legislation for the poorer "classes."

What other men have fought for, striven for, and worked for is to be handed over in part, or in whole, to these less energetic or capable contenders on the ground of "the public good." That is the open sesame of State socialism, "the public good"! The substance of those who have had the brains, the prudence, the capacity to acquire a competence is to be taxed away to make up the deficiencies of those who have neglected natural endowments and equal opportunities. All in response to the shibboleth "for the public good." That cry will justify the infliction of any injustice. It justified the wholesale murders of the French Revolution. It has justified the assassination of individual rulers and philosophers. It is used to justify today the appalling excesses of the Russian socialists. To be sure, society has the right to determine in some measure the conduct of its members. People are to be protected in the exercise of their right to life and property. Disease that threatens to spread by contagion may be lawfully subjected to quarantine and other measures of control; but these are instances of action in selfdefence and not "class" legislation in favor of any particular part of the community.

The segregating of the people by salary limitations and the enactment of special rules of medical practice for those who are on one side of an arbitrary line, and the taxation of the rest of the people for their behoof and benefit is vicious and undemocratic. It is an acknowledgement of the tenet that the community is bound to make good the deficiencies of its members, not only in the matter of ill health, but also in the matter of ill fortune—of whatsoever character. It is an acknowledgement that the community owes this to its members. What is owed, the creditor has a right to collect. From whatever angle this proposition is viewed it leads straight back to State socialism! And that is why we witness the extraordinary spectacle of the settlement workers and uplifters and social service zealots receiving the support and commendation of the cunning Bolshieviki. Every effort put forth by the former is activating the cause of the latter. They are a band of brethren for a piece of the road. When they come to the parting of the ways the Bolshieviki can truly thank their unwitting confederates for the great assistance afforded in making socialistic doctrine pass current in so many respectable quarters.

(To be concluded.)



# FRIEDLANDER BACILLUS THE CAUSATIVE FACTOR IN BRONCHOPNEUMONIA FOLLOWING INFLUENZA.\*

JAMES B. RUCKER, JR., M. D.,

Philadelphia,

Director of Laboratories, Pennsylvania Department of Health,

AND JOHN J. WENNER, PH. D.,

Philadelphia,

Pennsylvania Department of Health.

(From the Laboratories of the Pennsylvania Department of Health.)

During the recent pandemic of influenza instructions by the acting commissioner of health were given to the director of laboratories to proceed to Pottsville, Schuylkill County, Pa., where the epidemic seemed to be ravaging almost the whole community of some 30,000 inhabitants in the heart of the anthracite region of Pennsylvania, the respiratory disease assuming, in that portion of the state, a particularly malignant form. Hundreds stricken with the so called influenza had died from a supervening pneumonia, and the city and its immediate environs were well nigh panic stricken as a result of the epidemic. About half the physicians of the county had entered the military service and almost half of those remaining were ill of the disease and those who were left had been working night and day, giving medical aid to as many of the stricken as possible. Several emergency hospitals were established in Pottsville, Frackville, and Minersville, so that those who could not be given medical attention in their homes could be more easily attended to by the overworked doctors and nurses.

The patients coming to the Pottsville City Hospital and to the emergency hospital were usually desperately ill. They had been taken down with the influenza upon which had been engrafted a pneumonia, and when they were admitted to the hospitals had been up and about with a pneumonia of from two to four days' duration. These patients were in a large majority of cases foreigners, and in many instances especially among the men, were heavy drinkers. Naturally, among these hospital patients the mortality was quite high. Autopsies, however, were rather difficult to obtain, the Pottsville Hospital in over three weeks having been able to get only some sixteen in hundreds who had died. Through the kindness of Dr. J. B. Rogers, president of the Pottsville Board of Health, arrangements were made with the Pottsville Hospital to carry on our work there and Doctor Shafer, pathologist to the hospital, very generously extended to us the use of his laboratory and its facilities, for the necessary securing of material, animal inoculations, and isolations in our researches while in Pottsville.

The immediate stimulus to the investigation as to the etiological factor causing such a malignant form of pneumonia, was that it had been reported in Pottsville and the report came to the ears of the acting commissioner, that the bronchopneumonias were being caused by the *Bacillus pestis*, and that the disease was really the pneumonic type of the plague; and to prove or disprove this theory the director of the laboratories was detailed to make the necessary investigations.

We were fortunate enough to secure, through the courtesy of Doctor Burke, chief resident physician of the Pottsville Hospital, autopsies on the bodies of two persons who had had most typical cases of this very malignant form of acute respiratory disease which we had been detailed to investigate. The first autopsy disclosed the following:

The body was that of a well nourished male, native of Poland, about thirty years of age, weighing around 180 pounds, height seventy inches. When the autopsy was performed he had been dead about six hours. The skin was pale with a yellowish tinge. There was a great deal of postmortem lividity over the back of the chest, trunk, arms, and legs. On opening the thorax, no free fluid was found. Lungs on right side showed almost complete consolidation of the lower lobe, the middle and upper lobes containing large numbers of bronchopneumonic consolidations. The left lung presented many areas of bronchopneumonia in both lobes. The consolidated areas were distinctly lobular in type as opposed to the lobar consolidation in the right lung, lower lobe. On section they appeared dark red in color and exuded a dark red, bloody fluid. There were dense adhesions of the right pleura. There was no enlargement of bronchial or mediastinal glands. The heart was full, no excess of fluid in pericardial cavity. The liver was enlarged, congested, and had the appearance of a passive congestion; the cut section was slightly bile stained. The gallbladder seemed normal; spleen was enlarged, dark red and soft. Kidneys: capsules tense, stripped easily; organs themselves were enlarged and reddened; cut sections indicated an acute parenchymatous nephritis. The small intestines showed an enteritis, especially marked throughout the ileum. No ulcers were observed. Appendix showed catarrhal appendicitis. Cultures were made in as sterile a manner as possible from incisions into the bronchopneumonic areas of the lungs, on blood agar slants. Smears on glass slides were also made from these incisions, and a guineapig was inoculated intraperitoneally with a portion of a section of bronchopneumonic area, emulsified in physiological salt solution. Cultures, smears, and inoculation of a guineapig were made in the same manner from an incision, with a sterile knife, into the spleen. Smears from lung showed streptococci, a few pneumococci, short thin gram negative rods and short thick, coccoid gram negative rods; no short thick bacteria with polar staining appeared. Smears from spleen showed streptococci with a few pneumococci, and short, thick, coccoid, gram negative rods and short, thin, gram negative rods; no short thick polar stained rods observed. Slants from lung on blood agar show thick coccoid gram negative rods in large numbers and a few streptococci and staphylococci. Slants from the spleen gave us the same thing except that there were also present a few colonies of pneumococci. From the slants made from these two organs were isolated on blood agar plates the bacillus of Friedlander, streptococci and staphylococci. The colonies of the Friedlander bacillus far outnumbered the colonies of the other microorganisms.

Guineapig No. 1, inoculated with a portion of the spleen, died in eighteen hours. Autopsy showed

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subcutaneous edema at point of inoculation; abdomen contained a clear straw colored fluid with whitish mucilaginous flakes here and there on the parietal and visceral peritoneum; intestines showed an enteritis; liver and spleen enlarged and congested; lungs normal. No enlargement of lymphatic nodules except in the inguinal region nearest the point of inoculation, which were only slightly enlarged. Smears on glass slides made of the subcutaneous exudate at the point of inoculation, the peritoneal exudate, the splenic pulp and from the inside of the liver showed almost pure cultures of short capsulated rods. Slants on blood agar made from these sites gave practically pure cultures of Friedlander's bacillus with here and there a colony of streptococcus.

Guineapig No. 2, inoculated with portions of pneumonic patches in the lung, died in sixteen hours. Autopsy showed no enlargement of inguinal lymph nodes; small amount of serous exudate at site of inoculation; peritoneal cavity full of clear, straw colored fluid; marked enteritis; liver and spleen enlarged and congested, spleen soft; right lung congested, left normal; heart full. No enlargement of bronchial or mediastinal lymph nodes. Smears of peritoneal exudate showed almost a pure culture of short, capsulated organisms, among which were a few streptococci. Agar slants from the peritoneal exudate and from liver and splenic pulp showed this capsulated organism in almost pure culture, though a few chains of streptococci were seen. Pure cultures were obtained by plating.

The second autopsy was performed on the body of a Polish woman, twenty-five years of age, who had been stricken with influenza followed by pneumonia. She had been in the hospital for about forty-eight hours and had been delivered of twins (dead) twenty-four hours before her death. Autopsy revealed a well nourished female, blonde, weight about 150 pounds, height sixty-two inches. Death occurred five hours previous to autopsy. Postmortem lividity was marked on back and sides of chest, trunk, and arms, and somewhat less on legs. Chest cavity filled with blood tinged fluid exudate. Lungs congested and showed bronchopneumonic patches throughout both organs, while the lower lobes of both lungs were nearly solid with them. Pleura on the right was tightly adherent to lung. The pleura on left was adherent at the left base to the thoracic wall. There was no enlargement of the bronchial or mediastinal lymph nodes. Heart full; no excess of straw colored fluid in pericardial cavity. Liver enlarged and congested, yellowish brown on section; spleen enlarged, dark red on section and mushy. Enteritis was evident throughout, most marked in the ileum. Kidneys were swollen and capsule tense. On section, organs were very red, with thickened cortex, the malpighian bodies standing out as little red dots. Abdominal cavity contained no excess fluid. Appendix was normal. There was no enlargement of lymph nodules anywhere. Smears were made of the exudate in the thoracic cavity, pneumonic patches in the lung, liver and splenic pulp, and blood agar slants made from them.

Inoculation of guineapig No. 3 was made from a portion of the splenic pulp and guineapig No. 4 with a portion of a pneumonic patch in the lung. A portion of the spleen and of the pneumonic areas in the lung were preserved in four per cent. formaldehyde for histological examination. The same technic was carried out in the isolation, recovery, and identification of the microorganisms from the slants made at the mortuary table and from guineapig inoculations as in the first autopsy, and practically the same organisms were found. The encapsulated, gram negative, short, thick rod was found in great preponderance in the cultures from the lung and spleen.

Guineapig No. 3, inoculated with the spleen, died in ninety-two hours after inoculation intraperitoneally, showing a serous blood tinged fluid in the abdominal cavity, enteritis, enlarged liver and spleen; lungs not affected. No enlargement of lymph nodes. Cultures made from peritoneal exudate, heart's blood, liver, and spleen were practically pure cultures of Friedlander's bacillus.

Guineapig No. 4, inoculated with a portion of the pneumonic patches in the lung, died in about eighty-nine hours, showing a large amount of peritoneal exudate of a sticky, heavy white, mucilaginous character. Enteritis was marked; liver and spleen enlarged and congested; no affection of the lungs; lymph nodes, not enlarged. Smears and slants were made of the peritoneal exudate, heart's blood, spleen, and liver. A short, thick, encapsulated, gram negative rod was seen in all the smears, while the cultures made from the same showed very large numbers of this encapsulated organism, practically pure, though on isolation by the plate method, a few colonies of streptococci were obtained. Sputa from six cases of pneumonia with a preceding influenza, were cultured on blood agar plates and smears of these same specimens of sputum made on glass slides. The comparative findings were as follows:

Smears on slides.	Isolation from plates.
Sputum A: B. influenza—a few. Streptococci—many. Pneumococci—many.	Streptococci, staphylococci. B. influenza.
Sputum B: B. influenza—few. Streptococci—many. Pneumococci—few. Staphylococci—few.	Staphylococci, streptococci. B. influenza.
Sputum C: Pneumococci—very many. Streptococci—a few. B. influenza—many. Coccoid, gram negative rod—few.	Pneumococci, streptococci, Friedlander's bacillus.
Sputum D: Pneumococci—very many. B. influenza—a few.	Pneumococci, streptococci.
Sputum E: Pneumococci—very many. Streptococci—many. B. influenza—few.	Streptococci.
Sputum F: Pneumococci Streptococci. B. influenza. Coccoid, gram negative rod. Pneumococci—very many.	Streptococci. Friedlander's bacillus.

The microorganism (a gram negative, encapsulated, coccoid rod), mentioned throughout this report as having been found so universally and in great predominance in the smears and cultures from the pneumonic patches in the lungs and in the spleens at the two autopsies at the Pottsville Hospital, in the cultures from the spleen, liver, peritoneal exu-



date and heart's blood of the guineapigs inoculated with this material from the human autopsies and its isolation from the sputum of two of the six hospital patients ill of the same type of pneumonia, as evidenced by the same train of symptoms and objective findings as those who died and at whose autopsies we obtained the material as the basis of this report, was to our minds the etiological factor in the causation of the malignant type of bronchopneumonia so generally observed as following on the heels of the infection with the bacillus of influenza now epidemic, and has been identified by us as the bacillus of Friedlander, otherwise known as the *B. mucosus capsulatus*. Why it should follow so closely upon infection with the *Bacillus influenzae*, we have been unable to determine. The morphological, biological, and biochemical characteristics of this microorganism as worked out by us, from the material described in this report, are as follows:

Short, thick, rod, sometimes appearing almost coccoid, nonmotile, flagella not observed, negative to the gram staining method, capsules easily demonstrated in smears from the organs and the exudates and in milk; heavy, thick, white mucilaginous growth on agar; gelatin not liquefied, litmus milk, acidified and showing a soft coagulum; bouillon showing a dense turbidity and a heavy stringy sediment, and frequently a very slight surface growth or a ring at the surface of the medium on the glass wall of the test tube. On potato, growth was heavy and dark gray. Colonies on agar were from 0.5 to 1.0 mm. in diameter, circular, entire, grayish white, elevated, and mucilaginous in consistency. When fished with a platinum needle long strings of a mucoid character cling to the colony as the needle is withdrawn from it. Gas is formed abundantly in dextrose, lactose, and saccharose. No indol is formed. It is pathogenic to guineapigs in from sixteen to ninety-two hours.

As our primary object in making this investigation was to determine whether this epidemic of bronchopneumonia was caused by the *B. pestis* or plague bacillus, it might be well here to give the main points wherein the bacillus of Friedlander differs from *B. pestis*; *B. Friedlander* is nonmotile and more irregular in morphology; *B. pestis* is motile, having flagella, and evidences bipolar staining. *B. Friedlander* grows abundantly on agar and potato and its colonies are large and sticky. It coagulates milk, it produces turbidity in bouillon with a heavy stringy sediment and does not form a pellicle. It forms gas abundantly in all the sugars. It is not so rapidly pathogenic to guineapigs as is *B. pestis*. *B. pestis* grows slowly on agar in small colonies which are not mucilaginous in character. In bouillon, *pestis* produces no turbidity but forms a heavy pellicle; it does not coagulate milk, nor form gas in the sugars. It is highly pathogenic to guineapigs, producing death on inoculation in from two to five hours.

As to the type of cases from which our autopsy material was obtained, we have this to say, that Doctor Burke, chief resident physician at the Pottsville Hospital, stated to us that he had performed autopsies on fourteen bodies of those who in life had suffered from this type of bronchopneumonia,

our two autopsies making the fifteenth and sixteenth, and in every one he had found the same conditions pathologically as were found in the two at which we were present and from which we obtained our material for research. In order further to demonstrate that it is the Friedlander bacillus that causes the large number of deaths from bronchopneumonia and not the influenza bacillus, we inoculated one guineapig with a pure culture of *B. Friedlander* obtained from the lung in the first autopsy, and its death occurred in about eighteen hours. A guineapig inoculated with pure culture of *B. influenzae*, obtained from the sputum of a patient very ill of pneumonia, is still alive though he became ill after the inoculation and is now recovering.

A third autopsy, on the body of a man who had died in less than a week after admission to the hospital from an influenza upon which during the last two days of his life had been engrafted a severe bronchopneumonia and seemed to be of much the same malignant type of disease as that seen in Pottsville, was performed at the Hospital of the University of Pennsylvania on October 18th. The body was that of a man weighing 115 lbs., height sixty-five inches, thirty-three years of age, dead about eight hours. Skin over whole body was of a yellowish tinge. Postmortem lividity on back of chest, neck, and arms was marked. Thorax contained a moderate amount of blood tinged fluid. The lower lobe of the left lung was solid, the upper lobe contained many small patches of pneumonic consolidations, as did the two lower lobes and the lower half of the upper lobe of the right lung. On section they exuded a dark bloody fluid. No enlargement of mediastinal or bronchial lymph nodes. Adhesions binding the left base to the parietes were observed. Heart full, no excess of pericardial fluid. Liver enlarged, passively congested, and on section bile stained. Gallbladder normal and common duct patulous. Acute inflammatory reddening of the mucosa of the small intestine especially marked in the duodenum and ileum. Colon was normal in appearance. Spleen enlarged, congested and soft. Kidneys showed cloudy swelling. Portions of the pneumonic patches in the lungs and small portion of the splenic pulp respectively were emulsified in physiological salt solution and two c.c. injected intraperitoneally into two guineapigs. The guineapig injected with the material from the pneumonic patches in the lung died within sixty hours. Autopsy showed normal lungs; heart full; liver and spleen enlarged and congested; and a marked enteritis was observed. The abdominal cavity was filled with a large amount of serous straw colored fluid. Cultures made from the heart's blood, peritoneal exudate, liver, parenchyma, and splenic pulp yielded pure cultures of the Friedlander bacillus, identified by its well known morphology of nonmotility, capsule formation, and its gram negative staining, and by its characteristic growth on artificial media as well as by its biochemical reactions. The guineapig inoculated with an emulsion of the splenic pulp of the case at autopsy became ill for a time, but is now well and in good condition.

In conclusion, as a result of our investigation of

the sputum and of autopsy material from a small number, but of typical cases of the malignant type of influenzal pneumonia, we feel that we are justified in saying that the *B. influenzae* is the etiological factor in the causation of the primary infectious influenza; that the secondary pneumonia and fatal terminations are due to the production of areas of bronchopneumonia caused by the *B. mucosus capsulatus*, otherwise known as the bacillus of Friedlander, and not by the *B. influenzae*; and that *B. pestis* was not a factor in the etiology of the recent epidemic of influenza.

## THE DIAGNOSIS OF SINUS THROMBOSIS.

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Cerebral sinus thromboses may be either noninfectious or infectious. The former are rare. They are usually due to exhausting diseases and do not concern the otologist. Infectious sinus thrombosis is usually otitic in origin. The sinus which is most often involved as the result of suppurative disease of the middle ear and mastoid is the sigmoid sinus. The thrombus may extend from the sigmoid sinus to the jugular bulb, the petrosal sinuses, the cavernous or the superior longitudinal sinus. A primary thrombosis of the jugular bulb sometimes occurs with middle ear disease.

The symptoms of infectious sinus thrombosis may be divided into those which are due to the general systemic poisoning and those which are due to the local inflammatory lesion in the affected sinus. The former symptoms are common to all cases of sinus thrombosis; the latter symptoms differ according to the sinus or sinuses involved. The symptoms due to the local lesion in the sinus may be divided into those which are caused by the inflammation in the sinus wall, and those which are the result of obstruction to the venous circulation, caused by the thrombus.

A. In infectious thrombosis of the lateral sinus, the symptoms which are due to the inflammation of the sinus wall are the following:

1. *Pain*.—The pain of sinus thrombosis varies within wide limits. When it is very slight, it is often impossible to distinguish it from the pain due to the accompanying mastoiditis. When it is very severe, it is usually due to the fact that the inflammation has extended from the sinus wall to the adjacent meninges, and has caused either meningeal irritation, or a serous meningitis. In most cases of sinus thrombosis, there is little or no pain. In fact, euphoria is rather characteristic of sinus thrombosis. In cases, in which, after a mastoid operation, the temperature is very high, and the patient says he feels very well, one should suspect sinus thrombosis. When pain does occur, it may be in any part of the head. It is not necessarily localized about the region of the lateral sinus. It is apt to be sharp and occur suddenly, and disappear just as suddenly.

When the inflammation extends from the sinus wall to the meninges and causes a serous meningitis,

it sometimes gives rise to inflammation of the optic nerve and of the sixth nerve.

2. *Optic nerve changes*.—These occur in only a moderate number of cases of sinus thrombosis. In thirty-four cases of sinus thrombosis reported by Jansen, twenty of the patients were examined ophthalmoscopically. Ten of these had normal discs, seven had well marked changes in the disc, and in three, there were doubtful changes. This is a much higher proportion of optic nerve changes than is reported by most observers. The pathological lesion in the nerve is usually a neuritis, or a hyperemia. Choked disc occurs very rarely. In many cases, the optic nerve changes do not come on until after the sinus has been opened and the jugular vein ligated. For this reason, it is believed by some otologists that the optic nerve changes are due to circulatory disturbances within the skull. However, it is much more likely that they are due to the meningitis which accompanies the sinus thrombosis, because the changes in the nerve are usually inflammatory rather than circulatory in nature. The optic nerve changes are usually unilateral, but they may be bilateral. When unilateral, they are ordinarily on the side of the affected sinus. Marked visual disturbance is uncommon. Recovery from the nerve condition usually takes place, if the patient gets well of the sinus thrombosis. Optic atrophy is rare.

3. *Paralysis of the sixth nerve*.—This sometimes occurs with sinus thrombosis. This, in all probability, is also due to the accompanying meningitis. It is usually unilateral, occurring on the side of the affected sinus. It causes convergent strabismus, diplopia, and inability to move the eye outward. Paralysis of the sixth nerve sometimes occurs in uncomplicated mastoiditis and even with acute middle ear suppuration. A sixth nerve paralysis occurring with a middle ear suppuration, with or without mastoiditis constitutes the so called Gradenigo syndrome.

4. *Perijugulitis*.—The inflammation may extend to the perijugular connective tissue and the lymph glands surrounding the vein. When this occurs, a tender cordlike mass can be felt at the side of the neck, along the course of the internal jugular vein. Movements of the head are painful, and there may be some pain on swallowing. The inflammation may extend from the jugular bulb to the nerves which pass through the jugular foramen, i. e., the glossopharyngeal, pneumogastric and spinal accessory nerves.

5. *Involvement of the glossopharyngeal nerve*.—This may cause paralysis of the soft palate and difficulty in swallowing. Difficulty in swallowing may also be caused by the inflammation of the tissues around the internal jugular vein in the neck.

6. *Involvement of the vagus nerve* may give rise to hoarseness and slowing of the pulse rate.

7. *Involvement of the spinal accessory nerve* may cause spasmodic contractions or paralysis of the sternomastoid and trapezius muscles.

B. The symptoms of infectious thrombosis of the lateral sinus which are due to interference with the venous circulation are the following:

1. *Griesinger's sign*.—This is a painful swelling



at the point of exit of the mastoid emissary vein from the skull, i. e., at about the middle of the posterior margin of the mastoid process. This sign is due to an extension of the thrombotic process from the lateral sinus into the mastoid emissary. The swelling is caused partly by edema from interference with the circulation in this region, and partly by the inflammatory process in the vein and the perivascular tissues. In some cases it is due to the fact that the pus from a perisinus abscess has leaked out of the skull through the space between the wall of the emissary and the margin of the mastoid foramen. In such cases, there need be no thrombus within the emissary, nor within the sinus. The sign is not diagnostic of sinus thrombosis.

2. *A painful swelling in the posterior triangle of the neck* occurs sometimes, when the thrombotic process extends from the lateral sinus into the posterior condyloid vein. The posterior condyloid vein empties into the vertebral plexus, which is situated in the posterior triangle of the neck. The swelling is due to interference with the venous circulation in this region. A swelling may also occur in this location when the pus from a perisinus abscess passes out of the skull through the posterior condyloid foramen, alongside of the condyloid vein. This sign is not diagnostic of sinus thrombosis.

3. *Gerhardt's sign.*—This is an unequal fullness of the external jugular veins on the two sides. Gerhardt found that in some cases of thrombosis of the lateral sinus, the external jugular vein on the affected side was partly collapsed, as a result of the diminished blood supply on that side. However, this is not a very reliable sign.

If the lateral sinus is exposed during a mastoid operation, the appearance of the outer wall of the sinus may or may not give information as to the presence of a thrombus. When a perisinus abscess is present, the outer surface of the sinus wall is usually covered with granulation tissue. This increases the difficulty of determining the contents of the sinus. Usually, when a perisinus abscess is present, there is no sinus thrombosis. The thickening of the sinus wall which occurs with perisinus abscess is an indication of a defensive process against the infection. In the majority of cases, the infection is controlled before the interior of the sinus is reached. However, this is by no means always the case.

In many cases of sinus thrombosis, especially where there is only a partial thrombus, the outer wall of the sinus is perfectly normal in appearance. A normal sinus wall has a slightly bluish tinge and is semitranslucent. In some cases of sinus thrombosis, the wall of the sinus becomes white and opaque, or yellowish, or a dirty gray in color. Sometimes it takes on a blackish discoloration. Occasionally there is a hole in the outer sinus wall. This occurs in cases where the clot has broken down in the centre, and the ends have organized. The abscess which has thus formed within the sinus breaks through the outer wall of the sinus, and a perisinus abscess is formed.

In cases where there is a mural clot, palpation of the sinus wall does not give us any information as to its contents. *The presence or absence of pulsa-*

*tion in the sinus is of no diagnostic value.* The pulsation is transmitted from the brain through the sinus whether the latter contains or does not contain a clot. A normal sinus wall is elastic. When the sinus is completely filled by a thrombus, it has a doughy feel under the finger. In older organized thrombi, the sinus has a firm resistant feel. In some cases of sinus thrombosis, the sinus appears to be collapsed and the outer sinus wall falls away from the sinus groove.

When there is a primary thrombosis of the jugular bulb, no changes are found in the appearance or feel of the lateral sinus. In such cases, a test described by Whiting is of value; after the sinus is freely exposed, he places the left index finger just above the jugular bulb, with sufficient pressure to obliterate it. The right index finger is placed above the left, and with the former, the sinus is milked out as far as the knee, and the finger left there. An assistant presses on the jugular vein in the neck. The lower finger is now removed. If the sinus does not refill, there is a thrombus in the bulb. If the clot is below the bulb, blood from the inferior petrosal sinus or the posterior condyloid vein would fill the sinus, and mislead the operator. This method of examination is not entirely without danger. The manipulation may result in breaking off a portion of the clot, and carrying it into the general circulation. Another method of determining whether there is a thrombus in the bulb is the following: After the sinus is exposed, a plug is placed across its upper end with sufficient pressure to obliterate it. If the sinus is emptied by the aspiratory action of inspiration, there is no thrombus in the bulb.

There are no local symptoms which are characteristic of thrombosis of the superior or inferior petrosal sinuses. There may be an optic neuritis, or a paralysis of the sixth nerve, due to the same causes as in thrombosis of the lateral sinus. Thromboses in the petrosal sinuses are usually extensions of thromboses either in the lateral sinus, or in the cavernous sinus. The condition is usually discovered only at operation. If a thrombus in the lateral sinus extends up above the knee, the following test will show whether the thrombus extends into the superior petrosal sinus: The sinus is packed off by means of a plug above the knee, and by another plug below, near the bulb. The outer wall of the sinus is incised and the thrombus removed. As the superior petrosal sinus enters the lateral sinus at the knee of the latter, there will be bleeding from the lateral sinus at the knee, unless the thrombus extends into the superior petrosal. It is more difficult to determine whether the inferior petrosal is thrombosed. The inferior petrosal sinus enters the jugular bulb, or the internal jugular vein, just below the bulb. If the lateral sinus is incised, and there is no bleeding from its lower end, there may be a thrombus in the bulb, or in the bulb and the inferior petrosal sinus. Occasionally it is possible to drag a clot out of the bulb and get a flow of blood from the lower end of the sinus. When this occurs, one cannot be sure whether the stream of blood is coming from the internal jugular vein, or from the inferior petrosal sinus. For it is possible to dislodge sufficient of the

clot in the bulb to lay bare the orifice of the inferior petrosal sinus, and yet leave some of the clot in the lowermost portion of the bulb and the upper end of the internal jugular vein. When this occurs, the bleeding is from the inferior petrosal sinus. On the other hand, the extraction of the clot may cause the bulb and jugular vein to become free, and the bleeding may come from the jugular vein, while a clot remains in the inferior petrosal sinus. One can only be sure of the presence of a clot in the inferior petrosal sinus, if the jugular bulb itself is opened, as in the Grunert operation. If the bulb is completely freed of the clot, and there is no bleeding from the orifice of the inferior petrosal sinus, we can be sure that there is a clot in the latter. A thrombus in the posterior condyloid vein can be determined in the same way.

In infectious thrombosis of the superior longitudinal sinus the local signs are similar to those occurring in noninfectious thrombosis of this sinus, i. e., edema of the soft tissues in the frontal, parietal, and temporal regions. Focal brain symptoms are not as likely to occur in the infectious cases as in the noninfectious cases, because the thrombotic process is usually not as extensive in the former class of cases.

In thrombosis of the cavernous sinus, the symptoms due to the local inflammation in the sinus are the following:

1. *Pain*.—The pain of cavernous sinus thrombosis may be due to one of two causes, and varies in character according to the cause. When the inflammatory process extends from the cavernous sinus to the adjacent meninges there results a generalized headache. When the inflammatory process involves the first division of the fifth nerve (which passes through the cavernous sinus), there is neuralgic pain in the area of distribution of this nerve, i. e., in the supraorbital and infraorbital regions. In a large number of cases of cavernous sinus thrombosis, there is no pain whatever.

2. *Optic nerve changes*.—One would assume that changes in the optic nerve are quite frequent in cavernous sinus thrombosis, as the central retinal vein empties into the ophthalmic vein, which, in turn, empties into the cavernous sinus. As a matter of fact, optic nerve changes are comparatively infrequent in this condition. The writer has seen an optic neuritis in only one case of cavernous sinus thrombosis, and this was a case in which the cavernous sinus thrombosis was secondary to a thrombosis of the lateral sinus. When changes do occur, they may follow one of two types, an optic neuritis or a choked disc. When there is an optic neuritis, it is probably due to an accompanying meningitis. When there is a choked disc, it is probably due to an extension of the thrombus from the cavernous sinus to the ophthalmic and central retinal veins. The changes in the optic nerve do not usually go on to atrophy, as the patient usually dies before this occurs.

3. *Paralysis of the third, fourth, first division of the fifth and sixth nerves*.—Paralysis of the third nerve is present in almost every case of cavernous sinus thrombosis. It comes on fairly early in the disease, usually within a day or two of the onset

of the exophthalmos. As a result of the third nerve paralysis, there is ptosis, divergent strabismus, inability to move the eye inward beyond the median line, limitation of movement of the eye upward, inability to move the eye downward, and dilatation of the pupil. When there is involvement of the fourth and sixth nerves in addition to the third nerve, there is ptosis, the eye is fixed in the median line, with inability to move in any direction, and there is dilatation of the pupil. When the first division of the fifth nerve is involved, there is neuralgic pain or anesthesia in the area of distribution of this nerve, i. e., in the supraorbital and infraorbital regions.

The obstructive symptoms in thrombosis of the cavernous sinus are the following:

1. *Exophthalmos*.—Exophthalmos occurs in every case of cavernous sinus thrombosis, and is a very early symptom. The exophthalmos is usually very marked, but is usually masked by the ptosis and swelling of the lids, and can only be determined when the lids are forcibly separated. It is due to edema of the orbital cellular tissue and engorgement of the orbital veins. It is differentiated from orbital cellulitis or orbital abscess by the fact that in the latter condition pressure upon the eyeball is very painful, whereas in cavernous sinus thrombosis, pressure upon the eye is painless. Another point of differential diagnosis is the fact that orbital abscess is usually unilateral, whereas cavernous sinus thrombosis almost always becomes bilateral after a few days, the thrombus rapidly extending across from one cavernous sinus through the circular sinus to the opposite cavernous sinus.

2. *Chemosis* or edema of the ocular conjunctiva occurs in every case of cavernous sinus thrombosis, and is due to the same causes as the exophthalmos. It is sometimes so marked that the conjunctiva appears as an irregular gelatinous mass in the palpebral fissure.

3. *Edema of the lids* occurs in every case of cavernous sinus thrombosis and is due to the same causes as the exophthalmos. It is usually very marked, so that the eyeball cannot be seen unless the lids are forcibly separated. It involves both the upper and the lower lids. When edema of the lid is marked, it masks the ptosis which is present. The ptosis can only be determined if the patient is seen before marked edema of the lid appears.

The eye symptoms of cavernous sinus thrombosis are sometimes mistaken for orbital abscess or cellulitis, ethmoiditis, or acute conjunctivitis. Cavernous sinus thrombosis can be differentiated from all of these conditions by the fact that only in the former conditions are there paralysees of the ocular muscles. The symptoms become bilateral in a few days in cavernous sinus thrombosis, whereas in orbital cellulitis, or ethmoiditis, they are usually unilateral. Pressure backward upon the eyeball is painful in orbital cellulitis and ethmoiditis and is painless in cavernous sinus thrombosis. In ethmoiditis pus may be seen in the middle meatus of the nose, and an x ray picture of the head may show disease in the ethmoidal cells. In acute conjunctivitis, the conjunctiva is reddened and there is purulent secretion in the conjunctival sac, whereas, in cavernous



sinus thrombosis, although the ocular conjunctiva is swollen, it is pale, and there is no secretion.

4. *Edematous swelling in the pharynx*.—An edematous swelling in the lateral pharyngeal fossa, about the tonsil and in the soft palate occurs occasionally in cases of cavernous sinus thrombosis, when the thrombus extends from the cavernous sinus into the pterygoid plexus. It does not usually give rise to subjective symptoms, except a feeling of fullness in the throat. Usually it is found only in the course of a routine examination of the throat. It should not be mistaken for a peritonsillar abscess, as in the latter condition there is severe pain and the swelling is very sensitive to pressure.

The general symptoms due to thrombosis of the venous sinuses of the dura mater are the same, irrespective of the location of the thrombus. They are as follows:

1. *Temperature*.—The vast majority of cases of sinus thrombosis have very high temperatures. Temperatures of 105° F. are very common, and in children they sometimes reach 106° F. In many cases, the temperature curve is of the remittent type, the remissions being to nearly normal, or normal. Occasionally the temperature is subnormal. There may be a rise and fall every day, or there may be several rises in one day. The rise of temperature usually occurs when there is a fresh bacterial invasion of the circulation. In a fairly large proportion of cases, there are no remissions. The temperature remains steadily high. In these cases, the temperature curve is of no assistance in making a diagnosis. A temperature curve of this type is especially apt to occur in severe cases, where there is marked toxemia, and no pyemic manifestations. Occasionally a case of sinus thrombosis runs its course with very little or no elevation of temperature. In these cases thrombosis is not suspected before operation. The writer operated on two such cases, in which the clinical course was that of a simple uncomplicated mastoiditis. At operation, a defect was found in the sinus plate, leading to a perisinus abscess. The sinus was covered with granulations, in the midst of which was found a fistula leading into the interior of the sinus. The thrombus was organized at both ends, and broken down in the centre. The abscess thus formed within the sinus had perforated through the outer sinus wall and was draining into the perisinus abscess. In these cases there is no general sepsis.

2. *Chills*.—When the temperature is of the remittent type, a chill may accompany each rise of temperature. There may be a chill only with the first rise of temperature, or the chills may be present only during the latter part of the disease; there may be no chills at any time in the course of the disease; the chill may last anywhere from a few seconds to an hour. The chill generally occurs when there is a fresh invasion of the circulation by bacteria. There may be one chill every day, or two chills every day, or one chill every two or three days. The chills sometimes keep on for many weeks. The chills sometimes continue after the primary focus in the sinus has been eliminated, when there are metastases.

3. *Sweats*.—When a chill occurs, it is usually fol-

lowed by profuse sweating, which may last for several hours. Sweating may occur without chills.

4. *Rapid pulse*.—The pulse is usually rapid, small, and toward the end of the disease, feeble. In the intervals, when the temperature is approximately normal, the pulse is not so rapid.

5. *Gastrointestinal symptoms*.—The tongue is usually heavily coated. There may be fetor ex ore. There is anorexia. There may be constipation or diarrhea. Vomiting occurs in some cases. When the gastrointestinal symptoms are very prominent, the condition may be mistaken for typhoid. Icterus occurs occasionally.

6. *Vertigo* occurs in some cases of sinus thrombosis, but is not very common.

7. *Disturbances of the sensorium* are rare in sinus thrombosis—except shortly before death. When there is delirium or coma, the sinus thrombosis is usually complicated by meningitis.

8. *Metastases*.—In the fulminating cases of sinus thrombosis there are usually no metastases. The patients die before metastases occur. When the course is more prolonged, metastases are more apt to occur. Metastases may occur in any part of the body. They are most common in the lung. They are next most common in the joints. They may occur in the muscles, subcutaneous tissues, meninges, brain, or abdominal organs.

It was believed by Leutert and many other otologists that metastases in the lungs occurred in cases of chronic otitis, and metastases in the joints occurred with acute otitis. They base their belief on the fact that solid particles of thrombotic material are broken off from the clot in the sinus, in cases of chronic otitis, whereas there are free bacteria in the circulation in acute otitis. The thrombotic particles pass from the lateral sinus through the right heart and are caught in the small pulmonary vessels, where they produce metastases. When bacteria are free in the circulation, they pass through the pulmonary capillaries and enter the systemic circulation, where they may be deposited in the joints, muscles and subcutaneous tissues. But as a matter of fact, we know that either thrombotic particles, or free bacteria, may be present in the circulation in sinus thrombosis due to chronic or acute otitis. Consequently the duration of the otitis has no influence on the location of the metastases. Some metastases run a mild course, and some a severe course. The severity depends upon whether the embolus contains few or many bacteria, and upon the virulence of the bacteria. In some cases the infarct does not break down; there is a local inflammatory reaction with hemorrhage into the lung tissue, and finally cicatrization. When the infarct breaks down and forms an abscess, it may perforate through the pleura and form a pyopneumothorax, or it may perforate into a bronchus. The symptoms of metastases in the lungs are sometimes obscured by the general septic symptoms. When an infarct of some size occurs in the lung, there is usually a sudden sharp pain in the chest, which disappears in a few hours and is followed by cough and bloodtinged expectoration. The pain is due to the fact that the infarct usually occurs close to the surface of the lung and involves the overlying

pleura. The expectoration becomes purulent after a time and finally acquires a vile odor. Pieces of necrotic lung tissue may be coughed up. At first the physical signs may be negative; later there are numerous moist râles in the affected area. If the abscess is large enough, physical signs of a cavity may eventually be elicited. An x ray picture of the chest will usually determine the presence of the abscess. According to Ganter, most of the otogenic lung metastases occur in the lower left lobe.

Metastases in the joints may be located either within the joint capsule or in the periarticular tissues. There may be a collection of pus within or about the joint, or there may be merely a swollen tender joint, which subsides after a few days without breaking down. Metastases may involve any joint in the body. Metastases in the muscles or subcutaneous tissues may occur in any part of the body and may, or may not, break down. Metastases in the liver, spleen, or intestines are rare. Metastases may occur in the brain or meninges. In addition to resulting from metastases, meningitis and brain abscess may result from direct extension of the inflammatory process from the visceral sinus wall to the pia and brain, or from extension of the thrombus into the pial veins. Congestion of the meningeal veins due to obstruction to the circulation in sinus thrombosis causes symptoms of serous meningitis and paralyses of the ocular muscles. It may also cause changes in the eye grounds. In these cases, lumbar puncture is apt to show a normal cerebrospinal fluid under increased pressure. Meningeal symptoms in sinus thrombosis can only be considered an expression of a purulent meningitis, when lumbar puncture shows a turbid cerebrospinal fluid which contains bacteria. Cerebellar abscess occurs rather frequently with sinus thrombosis. In most cases the abscess is not metastatic, but is due to extension of the infection through the inner sinus wall. The symptoms of the cerebellar abscess may be masked by those of the sinus thrombosis. Often the cerebellar abscess gives no symptoms whatever. When the abscess becomes manifest, there is slowing of the pulse, vertigo, vomiting, nystagmus, past-pointing, loss of the pointing reaction, and a tendency to fall.

The diagnosis of sinus thrombosis is sometimes very easy and sometimes very difficult. A typical case is one in which there is a discharging ear, with well marked mastoid symptoms, high temperatures with marked remissions every day, chills and sweats and metastatic abscesses in various parts of the body. But in many cases the picture is very atypical. The ear symptoms may be very slight or may be overlooked altogether. The patient may be unaware of a slight discharge from the ear. The temperature, instead of being remittent, may be continuously high, or there may be no rise of temperature. Cases with a continuous high temperature, especially for the first week, are fairly common. These cases are apt to be mistaken for typhoid fever. In many cases the remissions are only moderate (one or two degrees Fahrenheit). There may be a middle ear suppuration complicating typhoid fever or pneumonia with or without mastoid symptoms, in which there are high temperatures, with or

without remissions, chills, and sweats. In such a case, it is very easy to make a mistaken diagnosis of sinus thrombosis. In some cases of erysipelas complicating mastoiditis, there is a very high temperature for five or six days before the rash appears. Such cases may be mistaken for sinus thrombosis.

One of the most valuable diagnostic aids for the determination of the presence of sinus thrombosis is an examination of a blood culture. The blood is drawn from one of the arm veins under the strictest aseptic precautions. In young children, where it is very difficult to enter the arm veins, it may be necessary to use the external jugular. The method described by Libman is as follows: "Ten to twenty-five c. c. of blood are drawn from the vein, and incubated on agar, glucose agar, serum agar, bouillon, and glucose bouillon, with and without the addition of ascitic serum. Preference is given to media containing glucose and serum. Plates and flasks are incubated for five days, subinoculations being made daily from flasks (after shaking), in glucose bouillon and on glucose serum agar." In cases of sinus thrombosis, a growth of bacteria will be found sometimes in eight or ten hours. Occasionally it takes two or three days before a growth appears. If the first culture is negative, another culture should be taken the following day. It is not at all uncommon to get a negative culture the first time, and a positive culture the second, or third time. It is best to draw the blood for the culture during or immediately after the chill or rise of temperature, as the circulation contains the largest quantities of bacteria at that time.

A negative blood culture does not exclude sinus thrombosis. A positive blood culture with suppurative middle ear disease or mastoiditis usually means sinus thrombosis. Meningitis may also give a positive blood culture, but this can be differentiated by an examination of the cerebrospinal fluid. In meningitis, the cerebrospinal fluid contains bacteria. The organism which is usually found in the blood in sinus thrombosis is a streptococcus; either *Streptococcus hæmolyticus* or *Streptococcus mucosus*. Rarely some other organism is found. If an organism other than the streptococcus is found in the blood, a careful review of the case should be made, to determine whether some condition other than sinus thrombosis is present. The presence of staphylococci in the culture should lead one to suspect a faulty technic in the taking of the blood culture, with contamination. However, it is possible for a staphylococcus to occur in sinus thrombosis. The presence of pneumococci in the blood should lead one to look for pneumonia. Pneumococci are rarely found in the blood in sinus thrombosis. The presence of typhoid bacilli in the blood makes the diagnosis of typhoid fever. A bacteriemia is always found in acute bacterial endocarditis. The physical signs in the heart will serve to differentiate this condition. Bacteriemia is also occasionally found in tonsillar infections, accessory sinus inflammation, scarlet fever, and erysipelas. These conditions should always be looked for and excluded in making a diagnosis of sinus thrombosis.

In doubtful cases, where there is a positive blood culture, Leutert suggested taking blood from an



arm vein, and from the lateral sinus, and comparing the number of colonies in the two cultures. If there are more colonies in the sinus culture than in the culture from the arm vein, the diagnosis of sinus thrombosis is very probable. However, the likelihood of contaminating the sinus culture from the outer side of the sinus wall is very great, as was pointed out by Libman. This method might have some value in cases of suspected sinus thrombosis with bilateral mastoiditis, to determine which side to explore. Both sinuses should be exposed and blood aspirated from each sinus, and the cultures compared. The side that has the greater number of colonies is likely to be the side that has the thrombus.

Aspiration of the sinus may give some information as to the contents of the sinus. When there is a completely obliterating thrombus, aspiration is negative. However, if the outer wall of the sinus is very much thickened by granulations, one cannot always be sure that the end of the needle is within the lumen of the sinus. When there is a broken-down thrombus present, aspiration may reveal pus. When there is a mural thrombus present, the aspirating needle will draw blood just as in a normal sinus. If the thrombus is located in some portion of the sinus other than the point aspirated, the needle will draw blood. The dangers from the use of aspiration are very slight. It is possible to carry infection into the interior of the sinus from without by the needle, but this is very rare. If a few bacteria are carried into the sinus, they are rapidly destroyed by the bactericidal action of the blood. If there is an obliterating thrombus in the sinus, the needle may pass through the thrombus and through the inner wall of the sinus into the subdural space, and infect the meninges. Such an accident is only likely to happen if the thrombus is very thin, and the inner and outer walls of the sinus are almost in apposition. If there is a perisinus abscess, and the sinus and surrounding dura are covered by thick granulations, it is not always possible to distinguish between sinus and cerebellar dura, and the needle may be passed through the cerebellar dura instead of the sinus, and thus infect the meninges or the cerebellum. Much more reliable information can be obtained from incision of the sinus than from aspiration. In order to get reliable information from incision of the sinus, the incision must be of sufficient extent to give a good view of the interior of the sinus. It is not sufficient to simply make a small incision in the sinus wall, to see whether any bleeding occurs. One may get free bleeding from a sinus which contains a mural clot of considerable size. Furthermore, an incision made in this way exposes the patient to the danger of air embolism. During inspiration, the negative pressure within the chest produces suction on the column of blood in the internal jugular vein, and this is transmitted to a lesser degree to the blood in the sigmoid sinus. If an incision is made in the sigmoid sinus during inspiration, without any precautions being taken, air may be drawn into the sinus and into the right heart, with possibly fatal results.

The proper method of incising the sinus is as follows: The bony covering is removed from the

sinus to a point well behind the knee and down as close to the jugular bulb as possible. The area of bone removed must be sufficiently broad so that the entire width of the sinus is uncovered. A plug of iodoform gauze is now placed across the upper and lower ends of the sinus, between the outer sinus wall and the overlying edge of bone, in such a way that the lumen of the sinus is completely obliterated. If the portion of bone removed is not as wide as the sinus, it will be impossible to compress the sinus in its entire width, and the bleeding will not be completely controlled. If there has been sufficient bone removal, and the plugs are properly placed, there cannot possibly be any bleeding from the sinus, when it is incised. A longitudinal incision is now made in the outer wall of the sinus, at least three-quarters of an inch long, and the edges of the wound pulled back with forceps, so that the interior of the sinus can be plainly seen. Care must be taken in making the incision not to wound the inner or visceral wall of the sinus. The lower plug prevents air being drawn into the circulation by the aspiratory effect of inspiration.

Another possible danger in incising the sinus for diagnosis is the danger of infecting the sinus. A number of cases of sinus thrombosis have been reported following accidental injury to the sinus during operation, and even after injury to the emissary vein. It is not unlikely, therefore, that infection may follow exploratory incision of the sinus. However, the danger of infection is far less from exploratory incision than from accidental injury. In the latter case, the mastoid cavity is likely to contain purulent material at the time of injury, and infected bone may be left in contact with the sinus. Before an exploratory incision of the sinus is made, all the bone overlying the sinus is removed, and the wound cavity is cleaned out and disinfected as thoroughly as possible. As a matter of fact, sinus thrombosis resulting from exploratory incision is very uncommon. It is difficult to prove that a thrombosis which occurs after an exploratory incision was due to the incision, for a mural thrombus may have been present before operation, and been overlooked.

If no thrombus is seen in the portion of the sinus which is incised, the upper plug is removed. If there is no bleeding, there is a thrombus at the torcular end of the sinus. However, there may be bleeding from the torcular end in spite of the presence of a thrombus in this region. For the thrombus may not be an occluding thrombus. Or, even with an occluding thrombus, the bleeding may come from the superior petrosal sinus. In order to obviate the possibility of a mistake from the latter source, the incision in the sinus wall should be carried up past the knee, so as to bring into view the entrance of the superior petrosal sinus into the lateral sinus.

If there is no bleeding from the sinus on removing the lower plug, there is a clot in the lower part of the sinus, or the jugular bulb. But there may be a clot in the bulb, in spite of bleeding from the lower end of the sinus. The bleeding may come from the inferior petrosal sinus. A much more reliable method of determining the presence of an

obturating thrombus in the bulb is that described above, namely, before incising the sinus, to compress its upper end, and note whether the sinus is emptied during inspiration. If it is, there cannot be an obturating thrombus in the bulb. If the sinus is not emptied during inspiration, and on incising the sinus we get bleeding from its lower end, we can be assured that the bleeding is from the inferior petrosal sinus. When the sinus is incised, in addition to determining the presence of a clot, the visceral wall of the sinus can be examined to determine the possible presence of a fistula leading to a cerebellar abscess. Sinus thrombosis may be mistaken for malaria, typhoid, pneumonia, erysipelas, septic endocarditis, meningitis, gripe, tonsillitis or cervical adenitis.

In malaria, as in sinus thrombosis, there are sharp rises and remissions of temperature, with chills and sweats. But in sinus thrombosis, there is no regularity in the intervals between the rises of temperature. In malaria, except in the estivoautumnal form, the rises occur with regularity every day or every other day. Examination of the blood in malaria will show the plasmodia. In sinus thrombosis, a blood culture is apt to show a bacteriemia. The middle ear suppuration which is the cause of the sinus thrombosis may be so slight as to be overlooked by the doctor as well as by the patient.

In typhoid fever the rise of temperature is usually gradual, and when it reaches 104° or 105° F., remains high. In sinus thrombosis, the rise of temperature is usually sudden, and there are apt to be marked remissions. However, in many cases of sinus thrombosis, the temperature remains persistently high. In typhoid fever there is enlargement of the spleen and there are rose spots on the body. In sinus thrombosis there may also be some enlargement of the spleen. The blood culture gives the most valuable information for differentiating these two conditions. In typhoid fever, typhoid bacilli will be found in the blood, whereas, in sinus thrombosis, streptococci are usually found. A bacteriemia is found in typhoid fever long before a positive Widal reaction can be obtained.

In pneumonia there are physical signs of consolidation in the chest. However, in cases of central pneumonia, the physical signs may be very difficult to elicit. On the other hand, in sinus thrombosis, with metastases in the lung, the physical signs in the chest may resemble those of a pneumonia. In some cases of pneumonia, a blood culture will show the presence of pneumococci in the blood. Pneumococci are rarely found in the blood in uncomplicated sinus thrombosis.

In erysipelas, the temperature curve may resemble that of sinus thrombosis, but the temperature is more apt to be persistently high in the former condition. In cases where the redness appears about the wound, within a short time after the rise of temperature, the diagnosis of erysipelas is very easy to make. But it is not so very uncommon for the temperature to remain high for four, five, or even six days before the redness appears. Such cases are very puzzling, and a number of them have been operated upon for sinus thrombosis. It is very humiliating for the surgeon to operate and find a

normal sinus, and for erysipelas to appear a day or two after operation. Blood culture is a valuable diagnostic aid being usually negative in erysipelas.

In septic endocarditis there may be physical signs over the heart, and petechiæ in the skin and conjunctiva. The organism which is usually found in the blood in septic endocarditis is the *Streptococcus viridans*. The blood culture is not of much value in differentiating between sinus thrombosis and meningitis, for there is often a bacteriemia in the latter condition. However, the rigid neck—Kernig and Babinski signs—and the changes in the cerebrospinal fluid serve to make the diagnosis in meningitis. Sinus thrombosis may be associated with a meningitis. In such cases, the diagnosis of sinus thrombosis is usually made at operation.

In gripe, the temperature is not apt to go as high as in sinus thrombosis, nor is it common to have chills with sharp remissions in the former condition. It may be possible to isolate the bacillus of influenza from the nasal secretions or the expectoration. The blood culture is negative in gripe. Streptococci are occasionally found in the blood in acute follicular tonsillitis. Such cases may be very difficult to differentiate from sinus thrombosis, if there happens to be a concomitant ear infection. But a bacteriemia due to tonsillitis usually disappears in a few days. It is, therefore, advisable, in cases of suspected sinus thrombosis, when a tonsillitis is present, to delay operative intervention until the tonsillitis has subsided, in order to eliminate the possibility of diagnostic error from this source.

The occurrence of cervical adenitis, complicating middle ear suppuration and mastoiditis, is often the source of confusion in diagnosis. Adenitis is an especially common complication in children; it often gives rise to a high temperature, 104° to 106° F., which may last for several days, or even weeks. The temperature may be continuously high, or it may be remittent, and very closely resemble the temperature of a sinus thrombosis. The fact that in sinus thrombosis the glands along the internal jugular vein are often swollen and inflamed, adds to the difficulties in diagnosis. The blood culture is a valuable diagnostic aid. It is negative in adenitis. The glands which are involved in these cases are usually the superficial glands at the angle of the jaw, whereas in the perijugulitis, which sometimes accompanies sinus thrombosis, the deep glands under the anterior border of the sternomastoid are involved. In perijugulitis, the glands do not usually reach the large size that they do in ordinary cervical adenitis in children. Occasionally thrombosis in the internal jugular vein is secondary to cervical adenitis. Such cases are very puzzling.

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**Menstrual Fistula of the Abdomen.**—N. Tagliavacche (*Revista de la Asociacion Medica Argentina*, June, 1918) reports two cases of this extremely rare condition, only one other case being found in the literature, and that also in Argentina. A fistulous opening existed in these cases through the external abdominal wall into the cavity of the uterus, through which the menstrual flow escaped.



## THE CONSTIPATION TREATMENT OF PNEUMONIA.

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During the past six years the writer has used a plan of treatment for pneumonia which might be called, if a label is required, the constipation treatment, from what, in the face of contrary custom, would appear to be its most striking feature, although a negative one, viz., avoidance of artificial evacuations of the bowels except in extraordinary conditions. The writer has already published descriptions of this plan of treatment (1), and his excuse for calling further attention to it is that accumulated experience and the testimony of others have strengthened his belief in its practical value. This plan of treatment is flexible enough for universal application, and does not conflict with the use of true biological specifics, when such are discovered, being exclusive only of therapeutic procedures which belong in the category of meddling medicine.

While regular avoidance of artificial evacuations is perhaps the most striking feature of this plan, it is by no means its only distinctive feature, and the writer wishes to safeguard against any such assumption being made. This plan essentially requires, besides letting the bowels alone, that certain things be done and that certain things be not done; and without the concurrent doing and not doing of these things avoidance of artificial evacuations is not recommended. To treat a patient according to this plan one must not only let the bowels alone, but must *live up to it*; and living up to it involves some finely adjusted procedures.

The rationale of the constipation feature of this plan is suggested by the following facts: 1. If artificial evacuants are withheld and a fluid diet of a character which makes for inhibition of injurious bacterial activity in the alimentary tract is given, the bowels usually show a tendency to remain more or less constipated; and this natural inactivity of the bowels may be looked on as essentially helpful rather than the opposite, since habitual procedures of nature in the presence of disease can regularly be interpreted as constructive rather than destructive. 2. The increased fluidity of the feces regularly produced by artificial evacuants facilitates the multiplication of the intestinal bacteria, which in the colon are largely of the more injurious varieties. 3. Bowel movements, particularly artificially induced ones, have a disturbing effect on the heart, which in pneumonia is rendered more or less unstable by the regular conditions of the disease.

Dogmatic and routine purgation is condemned by the Father of Medicine. In his Second Aphorism Hippocrates says: "Artificial evacuations, if they consist of such matters as should be evacuated, do good and are well borne; but if not, the contrary." The truth of this aphorism is well shown in pneumonia. The memories of most of us, if searched, would probably be found to contain suggestive clinical pictures of cases of pneumonia in which tympanites developed after free purgation, and of cases in which the patient promptly went into cardiac

collapse when a purge or enema was given near the expected time of the crisis.

Special conditions may arise which legitimately call for the use of artificial evacuants, and this plan of treatment provides for their use in such emergencies. If no bowel movement has taken place within twenty-four hours of the time when the patient first comes under observation, and the disease is in its early stage, and the heart is in good condition, a mild laxative or an enema is usually given; and if tympanites of marked degree develops during the course of the disease, which the writer has observed to happen much less frequently since adopting this plan of treatment than before, a simple, or soapsuds or *fel bovis* enema, or possibly a colonic irrigation, is given; and if the patient complains of an unpleasant sense of fullness in the rectum, which does not often happen, a simple, or soapsuds, or olive oil enema is allowed, if he is otherwise in good condition; and two days after deferrescence, if the bowels have not already moved naturally, an enema is regularly given.

Intimately connected with the constipation feature of this plan of treatment is regulation of the diet. It is evident, if the bowels are not to be moved for a week or more, unless they do so spontaneously, which often happens, that the diet must be regulated both as to quantity and quality so as to prevent bad consequences arising from such inactivity; which means, in particular, that the food must be reduced in quantity below the health ration, which the short course of the disease renders a safe procedure, and that it must be made up of articles which bring about a change of the intestinal flora from the more malign to the more benign types. Articles of food which constitute culture media favorable to the development of the swallowed pneumococci and the indigenous saprophytic bacteria, must be excluded from the diet, and those which constitute culture media favorable to the growth of the benign acidophilic bacteria, whose predominance in the alimentary canal makes against putrefaction, must be included. The saline balance in the diet also must be preserved, and especially must the calcium deficiency which is regularly present be provided against; the encroachment on the alkaline reserves of the body, which fevers regularly produce, must be offset by proper rations of alkalies; and the necessary vitamins and water must be supplied. The food, in general, must be of a character which will leave little undigested residue; if it is of such a character, and also of a character to discourage activity of the saprophytic bacteria, whose dead bodies form a large portion of the ordinary stool, large fecal accumulations can not well take place.

The following dietetic prescription, to be taken during the febrile period and for two or three days after, is arranged to meet the indications suggested above:

### DIETETIC PRESCRIPTION FOR PNEUMONIA.

7 a. m.—Give 7.5 ounces of a two to one mixture of milk with barley water, other cereal decoction, or lime water, to which has been added five grains of sodium chloride and five grains of sodium bicarbonate.

8 a. m.—Five ounces of water in which has been dissolved ten grains of calcium chloride.

9 a. m.—The same as at 7 a. m.

10 a. m.—7.5 ounces of a mixture made of the strained juice of one orange, or an equivalent amount of the strained juice of grapefruit or pineapple, three fourths of an ounce of lactose, and water.

11 a. m.—The same as at 7 a. m.

12 m.—The same as at 8 a. m.

1 p. m.—The same as at 7 a. m.

2 p. m.—The same as at 10 a. m.

3 p. m.—The same as at 7 a. m.

4 p. m.—The same as at 8 a. m.

5 p. m.—The same as at 7 a. m.

6 p. m.—The same as at 10 a. m.

7 p. m.—The same as at 7 a. m.

Everything is to be taken through a tube, the patient retaining the horizontal position.

This prescription supplies daily about thirty-eight grams of protein, fuel of a value of about 1,200 calories, thirty-five grains of sodium chloride, thirty-five grains of sodium bicarbonate and thirty grains of calcium chloride, in addition to the salts naturally present in the articles of food given, and ninety ounces of water. It is a maximum diet except as regards water, which may be given freely as desired.

This prescription may be modified to meet special indications by substituting peptonized milk, buttermilk, or lactacidized milk for all the feedings of the milk mixture or for a specified number of them; or by substituting barley water or other cereal decoction, or water alone for the feedings of the milk mixture, or by substituting other specified physiologically equivalent salt solutions for the solution of calcium chloride; or by omitting all food for a time except water.

Another feature of this plan of treatment is stimulation of the heart according to a definite program, which is flexible in prescribed ways to meet special indications. This stimulation is not begun until there is reason to believe that it is necessary, or is likely to become so very soon; and care is taken to avoid overstimulation. The heart stimulant drugs regularly used are strychnine, strophanthus and caffeine. Digitalis is used as a substitute for strophanthus when for any reason, such, for instance, as idiosyncrasy, the latter drug is not well taken. Other drugs for modifying cardiovascular functions are rarely called for, but there is nothing in this plan of treatment to forbid their use if the indications for them are clear. Of the drugs regularly employed, the dose is prescribed as definitely as it is possible to do so in a general statement. Strychnine sulphate, in doses of 1/60 grain every four hours, is the first drug given, and this may be sufficient. If more stimulation is needed, tincture of strophanthus, in doses of one and a half to three minims, every four hours, is added; or, if the tincture is not well borne, or a more positive and powerful effect is required, strophanthin is given by intramuscular injection, in doses of 1/1,000 to 1/500 grain every four hours. If still more stimulation is required, caffeine citrate or caffeine and sodium benzoate, the latter being adapted for hypodermic use, is also given every four hours, and perhaps the dose of the strychnine increased to 1/30 grain. It is not often that the amount of stimulation supplied by these three drugs, in the range of doses mentioned, need be exceeded, but if it should be, then the dose of strophanthin is temporarily increased to 1/250 grain every four hours; and in

sudden and severe cardiac failure 1/100 grain of strophanthin is given intramuscularly or intravenously, but after such a dose no more strophanthin is given for twenty-four hours, although the strychnine and caffeine may be kept up. Alcohol, which is not conceded to be an effective heart stimulant, although it sometimes seems to act like one, is usually given to patients who have been alcoholic addicts, and occasionally to those who are advanced in years.

Another feature of this plan of treatment is a conservative attitude toward the relief of symptoms. The fact is recognized that symptoms do not necessarily call for suppression, being not so much manifestations of disease as evidences of nature's reparative activity; but the fact is also recognized that some symptoms may be so severe, or may persist so long, that they become harmful, and for that reason require modification; and also that some symptoms which are distressing can be relieved, at least to a certain extent, without endangering the patient. This plan of treatment permits, in a definite and prescribed manner, the relief or modification of certain symptoms in certain conditions. Pain, cough, restlessness, and insomnia, occurring in the early stages of the disease and depriving the patient of much needed sleep, are relieved by the application of hot poultices to the chest and, perhaps, by the administration of small doses of morphine or codeine; but opiates are strictly forbidden in the latter stages of the disease and at any time if the respiration is embarrassed. Diarrhea is treated by restriction of the diet to barley water, rice water, or water alone. Vomiting is treated by stopping all food for a time, and perhaps, if it occurs in an early stage of the disease, by small doses of morphine given under the skin. Tympanites, which is not of common occurrence in patients treated according to this plan, is treated by exclusion of milk from the diet and, perhaps, restriction of the diet to barley water or rice water; and if extensive, by the introduction of the rectal tube or the administration of enemas as previously described. Delirium is treated by constant watchfulness and, perhaps, physical restraint; very rarely by sedative drugs.

A negative feature of this plan of treatment, and by no means its least important feature, consists in not doing certain things which are sanctioned by tradition and prevailing fashion, and even by eminent authority. One of these negative things has already been mentioned, viz., avoidance of routine catharsis, and the writer cannot refrain from referring to it again, being strongly convinced of its importance. Particularly to be condemned, in his opinion, is the routine administration of calomel and magnesium sulphate. Magnesium sulphate, in addition to possessing the other disadvantages of a cathartic in this disease, is a cardiac depressant and kidney irritant after absorption, which takes place in direct proportion to the strength of the solution and the length of time it remains in the bowel; and calomel possesses the additional disadvantage of being an irritant to the intestinal mucosa and the hepatic tissues. Other things which are not done are the following: Antipyretics are not given, fever being respected as a constructive or defensive process, except when there is hyperpyrexia, in



which case antipyretic hydrotherapy is allowed. Diuretic and expectorant drugs are not given. Drugs for the purpose of producing intestinal antiseptics are not given, reliance being placed on diet for modifying the intestinal flora. And none of those drugs are given which have been recommended for a specific or quasi specific effect, such as cresote carbonate, salicylic acid, quinine and urotropin.

As an illustration of the practical working of this plan of treatment, two series of cases are cited which occurred in the writer's service in the Norwegian Hospital, Brooklyn. In one the patients were treated without the regular use of artificial evacuants, and in the other with it, the treatment in other respects being not markedly dissimilar, although in the series treated without the regular use of artificial evacuants the diet was more precisely regulated than in the other. These two series are similar in that they were continuous, that is, they included all the cases which came into the writer's service in that hospital during stated periods, which were diagnosed as primary lobar pneumonia and pneumonia of influenza; not only those patients whom the writer saw and treated, but also those who were moribund on admission or died before the writer saw them. These two series also may be assumed to correspond in general character as regards social and intellectual status and material environment, being brought in mostly by an ambulance service which covered a definite section of the city. The two series also extended over considerable and nearly equal periods of time, the first covering six and two third years, from May 1, 1906, to January 1, 1913, and the second, five and a half years, from January 1, 1913, to July 1, 1918. In the first series, in which artificial evacuants were more or less regularly used, in a total of 124 cases, there were thirty-eight deaths, giving a mortality of 30.6 per cent. In the second series, in which artificial evacuants were *not* regularly used, in 218 cases there were forty-one deaths, giving a mortality of 18.8 per cent.

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#### Effect of Physical Labor on Arterial Tension.

—M. Banuelos and S. V. Portella (*Revista de Medicina y Cirugia Practicas*, September 7, 1918) conclude, as a result of extensive experimental work, that moderate exercise diminishes arterial pressure, which is more marked in those who are in poor condition; violent exercise, on the other hand, raises arterial pressure. The mechanism involved in this process is probably nervous, hormonal, and chemical.

## VARIATIONS IN THE CLINICAL PICTURE OF INTERSTITIAL KERATITIS.

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Interstitial keratitis is an important disease of the eye, not only because of its frequency; nor because of the serious changes in the integrity of the ocular tissues; nor because it jeopardizes the visual acuity of the sufferer and often disables him for months, not infrequently for years, but because of the constitutional nature of the disease. It is generally accepted today that interstitial keratitis is a constitutional disease of a specific nature, although the exciting cause may be of a local character.

Interstitial keratitis is a manifestation of a hereditary syphilis in the first, second, or third generation. It is an attenuated form of syphilis. It is usually associated with other clinical manifestations, so well described by Hutchinson, and known to every ophthalmic surgeon but not infrequently it is the only clinical sign that leads to the recognition of a constitutional disease that has been transmitted from parent to offspring. In the great majority of cases the specific nature of the disease can be definitely demonstrated by serologic tests. Brinkerhoff found in 107 cases sixty-six positive Wassermann reactions (1), Leber found a positive reaction in ninety-four per cent., Ingersheimer and Fozit found it in practically 100 per cent. (2). With reference to the etiological nature of interstitial keratitis, I am a Unitarian, firmly believing that they are always the result of hereditary syphilis. Carpenter has seen three cases of interstitial keratitis in acquired syphilis (3). In fact several cases attributed to acquired syphilis have been recorded in foreign literature. It must however be remembered that an individual with congenital taint may have a super-added acquired syphilitic lesion (4). Interstitial keratitis is pathognomonic of hereditary lues. I prefer to look upon it as a metasyphilitic disease caused by the toxic product of the spirochetes circulating in the blood. I am in accord with Fournier who looks upon this disease as a syphilitic dyscrasia (5). It is, however, of considerable interest to note the variations in the clinical picture of the disease that is admittedly caused by one primary constitutional element. One is at a loss to account for these variations. In a general way we must fall back upon the only plausible explanation, namely, the difference in the constitutional makeup of the individual, i. e., his resisting power to the syphilitic hemogenous toxin, and the variance in the virus itself as a result of its passing from one host to another; the change in the culture media influences the development of the spirochetes and their toxic products. The disease occurs in both sexes in childhood and adult life and not infrequently even in middle age. In my own limited experience fifty per cent. of the cases occurred in adults between the ages of seventeen and twenty-six years.

Clinically speaking the following variations are usually seen: 1. Variations in the objective manifestations of the disease; 2, variations in the subjective symptoms; 3, variations in the onset of the disease;

4, variations in the course and complications of the disease; 5, variations in the ultimate outcome of the disease.

#### VARIATIONS IN THE OBJECTIVE SYMPTOMS.

All cases of interstitial keratitis manifest themselves by an infiltration into the lamellar tissues of the cornea, but the extent and the density of the infiltration varies in different cases. In some, the infiltration is slight, the cornea is seen studded with small whitish gray foci which become partly confluent, appearing as a whitish gray patch. In some cases the infiltration begins at the margin, in others at the centre of the cornea. The transparency of the cornea suffers only at the point of infiltration, the rest of the cornea retains its lustre. As the disease progresses the entire cornea becomes infiltrated. The loss of the corneal transparency is in direct proportion to the density of the infiltration, which is usually most marked at the centre. The cornea in some cases is so densely infiltrated that neither iris nor pupil can be seen, and in other cases, as a result of a densely central infiltration, the cornea becomes conical. There is, however, no ulceration, although a fluorescein test will show that the corneal epithelium has suffered some destruction. No vessels are visible to the naked eye in this type of the disease and it is thus spoken of as the nonvascular type.

#### VARIATIONS IN THE VASCULARIZATION OF THE CORNEA

There is a vascular type of this disease where the bloodvessels can be seen with the naked eye, but here too the variations are well marked. In some cases very small vessels enter the corneal stroma from the limbus appearing to the naked eye as delicate red streaks. I look at this vascular phenomena as nature's method of therapeutics, in bringing into the cornea an abundance of blood supply. In fact, clinical observation leads us to the conclusion that all cases of interstitial keratitis are accompanied by this process of bloodvessel formation. In the nonvascular type however, these vessels can only be discerned with the aid of the ophthalmoscope. In some cases the vascularization of the cornea reaches such a high degree that it covers the entire cornea, completely hiding the corneal tissue, and giving it a red velvety appearance. I recall a case of a young man, twenty-one years of age, where the vascularity was so marked that the entire cornea appeared as an aggregation of bloodvessels with a vivid red velvety color. There was no light projection. The patient recovered completely, and retained useful vision. It seems to me that the deep vascularization is also nature's method to protect the cornea during the dangerous period, as these vessels practically disappear after the disease has run its course, and only some fibrous streaks remain which may be observed with the ophthalmoscope. In this connection it is well to mention also the variations in the corneal contour. In some cases it appears normal, in others the cornea is considerably flattened, while not infrequently the cornea bulges forward in the centre, giving the appearance of a conical cornea. The cornea usually returns to its normal condition, although a change in the refractive status is always to be expected. Not infrequently the corneal bulg-

ing is associated with some rise in the intraocular tension, I am inclined to believe however that the bulging of the cornea is not caused by the high tension but by the greater infiltration and vascularization in the central part of the cornea. It is also well to recall that there is a milder type of interstitial keratitis where the infiltration appears to be confined to a triangular area leaving the rest of the cornea unaffected. This runs a milder course and yields more readily to treatment.

#### VARIATIONS IN THE SUBJECTIVE SYMPTOMS.

The subjective symptoms also show a marked degree of variation. While pain is one of the common symptoms of the disease, it is interesting to see how some patients are altogether free from pain; others have pain to a moderate degree, and a considerable number suffer severely and require active measures for relief. Apparently the pain has nothing to do with the degree of infiltration, but is probably caused by an associated iritis or cyclitis. The same variations may be observed with regard to photophobia. Of course, pain and photophobia go together. In some cases there is no photophobia; in others the patient feels some inconvenience and has to keep out of the light. Sometimes this symptom is so severe that the patient has to be kept in a dark room and children bury their faces in the pillow seeking relief. The asthenic type of this disease runs its course without pain and without photophobia.

#### VISUAL DISTURBANCES.

One of the principal symptoms of the disease is a reduction in the acuity of vision. Some patients are totally blind when the acme of the disease has been reached. The variations in the reduction of vision can always be accounted for by the degree of corneal infiltration, the density and extent of the infiltrated area, and the vascularization thereof. The severity of the case has no direct relation to the visual disturbance. I have seen patients who were blind during the acme of the disease, which ran its course practically free from pain. On the other hand in some very severe cases there is some degree of vision even at the height of the disease.

#### VARIATIONS IN THE ONSET OF THE DISEASE.

Interstitial keratitis is often very insidious in its outset, the patient noticing only a slight dimness in vision which gradually increases. There may be no inflammatory symptoms present. Some cases, on the other hand, begin with very severe inflammatory symptoms usually associated with acute keratitis. Quite often these patients come to the office with the complaint that some foreign body has got into the eye, which they wish to have removed. This happens so often that one cannot look upon it as merely accidental. A foreign body in the eye often constitutes the local exciting element in the development of this disease. Trauma, however slight, must be considered a potent factor in the causation of this disease in individuals predisposed. Mohr, out of 670 cases found trauma as the probable cause in all except two (6). This is probably out of proportion with the findings of ophthalmic surgeons. Some cases begin with a marked conjunctivitis. I have recently seen two cases, one in a colored boy,



aged nine years, the other in an Italian girl, aged six years, that I treated for a week as a severe case of conjunctivitis before I could make the diagnosis of interstitial keratitis. The little girl showed signs of trachoma while the little boy had a marked blepharoconjunctivitis which persisted after the keratitis yielded to treatment. Some cases begin with an iritis or hyperemia of the iris. I recall the case of a wife of a physician who consulted me in 1916, in which I diagnosed an iritis. The instillation of atropine corroborated my diagnosis, yet within ten days she had a fully developed interstitial keratitis. The entire cornea became infiltrated but cleared up completely after a year's vigorous treatment, leaving practically no opacities and vision restored to 5/6.

It is worthy of notice that the clearing process always begins at the periphery, while the infiltration process may begin either in the centre or at the margin of the cornea. Occasionally interstitial keratitis follows a herpes zoster and it is difficult in the early stage to differentiate it from a disciform keratitis which also follows a herpes zoster.

#### VARIATIONS IN THE COURSE AND COMPLICATIONS OF THE DISEASE.

Some cases run their course free from any complications. This is especially true of those cases that are free from inflammatory symptoms. Quite often however complications are observed, the most frequent of which is iritis. These cases usually give rise to severe pain and require energetic treatment. In a large majority of cases either part or all of the uveal tract is involved. One of the rarer complications is cataract. I saw one case in 1917, a little girl, aged twelve years, who developed a cataract as I was about ready to discharge her as cured. She was under my care for one year. She had the triangular form of the disease. I have also seen a case of divergent strabismus complicating this disease. I suppose that muscular deviations are not very commonly seen. As to the duration and course of the disease, we can only say that while in the majority of cases the disease is bilateral, in a considerable number of cases the disease runs its course without involving the second eye. Some cases, especially the unilateral cases, run their course in from five to twelve months. The bilateral cases usually require a longer period. Not infrequently the second eye is in the process of healing while the first eye is still in the stage of inflammation. The second eyes in some cases gets well before the first eye, but the result is not necessarily better. Some cases require two or three years of treatment. I have a patient at present under my care who after three years of treatment still has a very marked conjunctival infection, but is free from any pain. I cannot explain the persistence of this redness.

#### VARIATIONS IN THE ULTIMATE OUTCOME OF THE DISEASE.

Prognosis in a general way must be considered good. I have never seen a case of total blindness resulting from this disease. I have seen several cases with a very low visual acuity. We have all seen variations in the ultimate outcome of the disease. In some cases vision is restored to almost

normal, in others it is markedly reduced. The reduction in vision depends upon the extent, site, and density of the corneal opacity. It should be remembered that the healing process in this disease, as in corneal ulcers, is associated with the process of absorption and the process of cicatrization. The cicatrization however is interstitial in character, as the cellular organization takes place within the corneal lamellæ. In the majority of cases useful vision is obtained. We must also note here the marked changes in the refraction status of the healed eye. We find cases that were emmetropic, have become myopic. In myopic cases the myopia increases. High degrees of astigmatism are very commonly observed. In one case recently under my care, the patient who wore a minus 4 Sph. lens had to be given a minus 12 cylinder in the right and a minus 8 cylinder in the left eye, and strange to say, with nearly normal vision, i. e., 5/6. In the beginning he suffered from diplopia but after persevering for a week or two the diplopia disappeared and the patient is perfectly comfortable attending to his occupation—clerical work. These observations I have made in both the unilateral as well as the bilateral cases.

#### TREATMENT.

I cannot share the opinion of Fuchs that, parenchymatous keratitis in many cases even under the most careful treatment, runs a course that is not essentially different from what would have been the case without any treatment (7). He probably meant to emphasize our relative helplessness in shortening the course of the disease. I think treatment of the utmost value in combating the noxious elements of the disease. Atropin is, of course, indispensable as a local agent. In the painful cases hot compresses, and often bandaging the eye, is a very useful procedure. Internally, mercury, iodides, arsenic, iron, and thyroid extract are all very useful remedies. In children codliver oil and hypophosphites are excellent remedies to remember. For the removal of the corneal opacity dionin and adrenalin are to be employed. The best result is to be obtained from the alternate use of dionin and adrenalin. I use adrenalin during the day and dionin at night in the form of an ointment or in solution.

I do not think salvarsan is of great value in this disease; it may however be useful in the very severe cases where the pain is very marked. I have not used salvarsan in my cases. I have used tuberculin in several cases. I am not convinced of its therapeutic value even in those cases that gave a positive tuberculin reaction. Neither am I convinced of the therapeutic value of electricity. In both electricity and tuberculin treatment I think "time" is the principal agent. In conclusion I wish to say that I am not unmindful of the views of Doctor Risley that interstitial keratitis is occasionally caused by metabolic changes. I willingly accept this view, adding, however, that the metabolic changes are secondary to an attenuated syphilitic infection in the second, third, or fourth generation.

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## KNIFELESS TREATMENT OF PILES.

BY SIMON L. KATZOFF, M. D., Ph. G., LL. B.,  
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First and foremost, regard the usual surgical operations for hemorrhoids, as barbarous, unscientific, and unnecessary.

A hemorrhoid is a mass of varicose or dilated and sacculated veins at the anus and lower rectum, the usual situation being almost always the mucocutaneous surface which joins these two structures. Hemorrhoids are internal or external, depending upon whether they are developed within the sphincter ani or outside this muscle. Piles are called open or bleeding as they give rise to hemorrhage, and blind when they do not bleed.

The external pile is a small circumscribed tumor. Commonly there is more than one of these. They may be so numerous as to form a more or less complete circle around the anus. The color varies from dark red to purple; the surface is smooth or lobulated, and the consistence may be soft, hard, or elastic, corresponding to the degree of vascular turgescence.

The predisposing causes are sedentary and indolent habits; luxurious living, especially the use of highly seasoned foods, wines, and spirits; tight lacing, pregnancy, constipated bowels, and diseases of the liver. Overexcitement of the sexual organs may be classified among the predisposing causes. Vaccination may also pave the way for it. The exciting causes include anything which irritate the lower bowel, such as straining at stool, hard riding, and the use of strong purgatives, especially excessive use of aloes and rhubarb.

A sensation of fullness, heat, and perhaps itching, felt about the anus, is generally the first symptom. The swelling increases until small tumors form, which are sore and painful. These may be external and visible, or internal, and are often of a bluish color, and, when inflamed, are very painful.

The diagnosis of hemorrhoids is usually easy. It is very common for the laity, however, to mistake a variety of disease, including simple pruritis, eczema, prolapsus ani, polypus of the rectum, condylomata, and even fistula in ano, for hemorrhoids.

The prognosis is usually favorable, particularly if the treatment is instituted early.

There are many ways of treating piles. The hygienic, dietetic, occupational, and other environments of the patients should be studied and corrected as may be found necessary. The patient should as a rule, avoid coffee, spices, and highly seasoned foods, and the habitual use of beer, wines, and spirits. The less meat eaten, the better. Sedentary habits and much standing on the one hand, and extreme fatigue on the other, are harmful, as is also the use of cushions and feather beds. A laxative diet including bran bread or muffins, buttermilk, prunes, baked or raw apples, should be adopted. A little fasting (twenty-four hours) once in a while, will do no harm.

The pile itself should be carefully reduced and returned within the sphincter, an ointment being used in the manipulation as well as subsequently applied and properly retained by dressing. In cases in which the inflammation is very decided nothing

can be accomplished until cold applications, such as ice water, or ice itself, are made to the part and retained there. Satisfactory results are greatly favored by the patient going to bed. If the inflammation has been reduced and the astringent ointment is insufficient, good results may be frequently obtained by applications of Monsel's solution of persulphate of iron applied with a brush once or twice daily. Applications of collodion to external hemorrhoids will support the pile and stimulate its contraction. It may be dropped on a few fibres of cotton wool, which are spread over the pile each morning after defecation. Gradually increased dilatation of the rectum will sometimes bring about the desired result, and will be helpful in almost every case.

The injection methods consist in shaving the hair around the anus, cleansing the parts thoroughly; then, after having the pile in firm position, injecting with a hypodermic syringe, one or two drops of a mixture of carbolic acid, one part, and glycerin, two parts, in each pile, beginning with the smaller ones. I have personally employed the following formula at least 200 times:

Carbolic acid,	} .....	ãã 5iss;
Salicylic acid,		
Sodium bicarbonate,	.....	3j;
Glycerin (sterilized),	.....	sufficient to make 3i.

One or two drops of this mixture in each pile, will suffice to begin favorable results.

After the injection almost any usual ointment such as tannic acid ointment, belladonna ointment, stramonium ointment, and the like, may be smeared around the parts, and the usual reduction within the sphincter, retention, and dressing may follow.

A few other simple methods employed are: 1. Make a thin paste of raw linseed oil and pure white lead that shall be as thin as cream in consistency; anoint the parts, when protruding, twice daily. 2. Equal parts by weight of tannin and glycerin. Anoint once, and in severe cases twice daily. 3. The simple remedy, common table salt, is one that is unsurpassed for bleeding piles. 4. Heat a tablespoonful of lard to the consistency of ordinary cream, and to this add about half a teaspoonful of calomel; mix thoroughly and apply twice daily.

#### The Pathological Uterus at the Menopause.—

Charles R. Robins (*Medical Press and Circular*, May 29, 1918) considers a pathological uterus a potentially malignant one, and that even if cancer is not present it may develop later. In the effort to make an exact diagnosis there is liability to lose the advantage of early operation in an effort to secure tissue for examination, so disseminating cells and stimulating vicious growth. The procedure should be total extirpation of the pelvic organs, and the pathological investigation made after the organs have been removed. In his own cases, cancer was found in two out of twenty-six. Moreover, the organs have fulfilled their usefulness and it is only anticipating nature in removing them. His experience was that the aftereffects generally meant improved health and a cheerful existence instead of one of semiinvalidism. The hysterectomy technic should be clean and devoid of trauma, and the parts supported by attachment of ligaments.



# Medicine and Surgery in the Army and Navy

## MEDICAL NOTES FROM THE FRONT.\*

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### *PATHOGENICITY OF CIMEX LECTULARIUS.*

The present happy results obtained for immunity against the development of infectious diseases among troops has been in a great measure due to the research work done in the domain of parasitology. The mosquito, the domestic fly, and the body louse have been thoroughly studied from this viewpoint but not much has been said about the bedbug—*Cimex lectularius*—and although this insect does not appear to be as dangerous to man as the others, nevertheless, it has not been proven that it is entirely free from danger. For this reason I shall attempt to sum up the question as it stands today.

*Cimex lectularius* and other types of the same family feed exclusively on the blood that they draw from the skin of their victim. Since they only attack living animals it is quite likely that they may play an important part in the propagation of parasitic diseases whose infectious agents are either present in the blood or skin. But the results obtained so far leave us in uncertainty as to the pathogenic activity of the *Cimex lectularius*.

André, wishing to discover the fate of bacilli and trypanosoma in the body of this insect fed bedbugs on microbic cultures or allowed them to bite animals afflicted with experimental diseases, after which he ascertained what became of the ingested microbes. The following conclusions have been arrived at: The streptococcus promptly disappears from the insect's intestine, while the anthrax bacillus, although present in great quantities, loses its staining properties within three to four days. The organism is then pale, appears as if tumefied, and has lost its spore producing faculties. It disappears from the intestine on the fifth or sixth day. The Trypanosoma lewisi of the mouse stains normally during the first three to four days, after which time it stains less distinctly and disappears from the intestine on the fifth day. The bacteria taken in the blood by the bedbug die more or less quickly in the insect's intestine; then they progressively disintegrate as the blood undergoes digestion. This would seem to show that the bedbug is a poor agent of propagation, at least for the organisms experimented with, and therefore explains the negative results of André's inoculation experiments. Bedbugs having sucked blood loaded with streptococci, pneumococci, or anthrax bacilli, were quite incapable of inoculating healthy animals with these bacteria, when bitten by the insects on the third and eighth day after they had ingested the injected blood. The same result was obtained in the case of the Trypanosoma lewisi.

In normal circumstances the cimex swallows the various parasites circulating in the blood, but it

progressively digests them because a certain number of days are required to digest and assimilate all the blood with which they are gorged. When hunger presses them again, the destruction of the bacteria previously ingested has had ample time to take place. For that matter, it seems likely that the digestive tube of the cimex is normally endowed with bactericidal and paracidal properties, and in point of fact André has been able to demonstrate, by serial sections made before experiments were done, that the digestive tube of the insects was perfectly free from all microbes. Therefore, it may be taken as a fact that the digestive tube of the cimex is normally aseptic and that it accomplishes its digestive function without the help of bacteria, as is likewise the case with caterpillars studied by Portier. But I would point out that this is not sufficient reason for refusing to credit the cimex with any part in the transmission of disease. If insufficiently gorged at one feeding the insect will soon start out on the search for a second repast, and therefore it seems logical to suppose that it can then inoculate the bacteria still in a virulent state. It is thus possible, I might even say probable, that the insect, for this reason, plays a part in the transmission of disease.

The bacillus of the plague is inoculated by rat fleas as we know, but is this the only agent of transmission? Nuttall and Wierzbitzky fed the cimex on pestiferous patients and found the specific bacillus in the digestive tube of the insect. Others repeated this experiment and obtained identical results. Jordansky and Klodnitzky succeeded in inoculating mice by having them bitten by infected bedbugs. The cimex was in no way disturbed by the *Bacillus pestis*, in spite of the fact that in normal circumstances their digestive tubes are amicrobic, as I have already pointed out. In another series of experiments the same writers caused thirteen bedbugs to bite a pestiferous mouse three hours before its death. On the nineteenth, and again on the thirty-first day following, two bedbugs were still alive and they were allowed to bite guinea-pigs. Five days later one bedbug was killed and a large number of plague bacilli were found in its digestive tube. On the evening of the fifth day the second bedbug died and its digestive tube contained only a few bacilli.

In India, Walker attributes an important rôle to the bedbug in the transmission of the plague, and the insects collected from the huts of the natives afflicted with the disease were found infected to the extent of twenty-two per cent. He was able to transmit the disease to a rat by a bedbug that had bitten a pestiferous subject. It would seem, therefore, that the bedbug plays an undoubted part, although perhaps very limited, in the transmission of the plague.

As to the transmission of tuberculosis by the *Cimex lectularius* nothing definite has been established, but the same cannot be said of leprosy. Professor Blanchard, of Paris, has shown conclusively, I think, that leprosy is not hereditary or

\*This article was written in September, 1913.

congenital, but that it can be inoculated. And what is more, he has shown convincingly that the disease can only be inoculated by the bite of a nocturnal insect, and he consequently concludes that the insect is the mosquito. However, it is not my purpose to discuss the part played by the mosquito, and I shall confine myself to the question of transmission of leprosy by the bedbug as revealed in a number of observations.

The commission sent to the West Indies, in 1909, by the Danish government, under the direction of Professor Ehlers, found the *Bacillus lepræ* only in small numbers in the digestive tube of the bedbug or in other insects which were examined shortly after having gorged themselves on the blood of leprosy patients. This can be readily understood because the specific organism of the disease is always rare in the blood. It would, therefore, seem that inoculation of leprosy by insects and the bedbug in particular must be very uncommon, even under the best conditions.

At the leper hospital at Robben Island, South Africa, Lindsay Sanders undertook these researches with various insects. He placed them in test tubes for several days, so as to starve them, and afterwards put them, with all due precaution, on indurated lepromata and allowed them to gorge themselves with blood. Results were negative in the case of the domestic fly, mosquito, and flea, but quite otherwise with the bedbug. Out of a total of seventy-five bedbugs, twenty contained an acid resistant bacillus, in all respects similar to the *Bacillus lepræ*. These bacilli were found in large numbers, while they were completely absent in bedbugs that had not bitten leper patients. They were found in the proboscis up to the fifth day, and in the digestive tube up to the sixteenth day, and were eliminated in the insects' dejections. They retained their acid resistant power and offered all the characteristics of living bacilli. It may be supposed, therefore, that the bedbug may inoculate leprosy by its bite, and this opinion has been confirmed by Long at Basutoland. Goodhue has also seen the bacillus in the digestive tube of bedbugs after they had bitten leprosy subjects.

It is a popular belief in Russia that recurrent fever or European spirochetosis is transmitted by the bite of the bedbug, and Flügge was of this opinion. Tictin, of Odessa, has likewise accepted this theory and submitted it to an experimental test. During an epidemic in that city he collected bedbugs from the bedclothes of patients and after having crushed the insects he was able to detect the spirochetes microscopically. The contents of eight bedbugs that had just bitten a patient were inoculated into a monkey who soon developed the disease. An inoculation, performed forty-eight hours after the bedbug had bitten the patient, remained negative.

During the epidemic of 1902, Karlinski found living spirochetes in the digestive tube of the cimex and Schaudinn made a similar observation. In England, Nuttall has successfully transmitted the disease from mouse to mouse by the intermediary of the cimex and Sikul, of Odessa, has obtained an identical result. It is, therefore, not impossible

that this spirochetosis can be inoculated by the bedbug, on the condition that the insect bites a healthy subject within a few hours after having bitten a patient afflicted with the disease.

As far back as 1898, Gimaud stated that the bedbug was capable of inoculating leishmanioses. The oriental boil, caused by *Leishmania furunculosa*, has been the object of experimental work by Patton. He observed that the parasite multiplied in the intestine of the *Cimex hemipterus* in the flagellated form and even in the postflagellated form, but he was unable to inoculate the disease from the insect's bite. Patton, in the case of kala azar, caused by *Leishmania donovani*, experimented with the same insect and was able to detect the flagellated forms in the intestine of the insect, but he could not get beyond this phase. Quite recently, Mackie has taken up the question and his experiments are well worth summarizing. He first experimented in order to determine if bedbugs caught in the bed linen of persons afflicted with kala azar contained microscopically recognizable bacilli in their digestive tube. A total of 1,513 bedbugs were dissected and examined in a fresh state and also after staining as follows: 398, in Bengal, from June to October; 469, at Nowgong, from February to August; 646, at Salona, from June to August. Mackie next carried out experiments to determine if the contents of these bedbugs could produce the disease in the monkey, when introduced subcutaneously. In Bengal, from June to October, 131 young bedbugs were fed on subjects suffering from the disease once or several times and were dissected at varying intervals and examined microscopically. At Nowgong, from February to August, 191 bedbugs were treated in the same way. He then experimented to determine if the young bedbugs nourished in these conditions could produce the disease when injected into monkeys. At Nowgong, from February to August, 191 bedbugs were injected into a monkey, while a second monkey received 397 young bedbugs subcutaneously. In these experiments only a negative result was obtained. In the third, the leishmania was found in only two bedbugs, still recognizable at the end of twenty-four hours. To sum up, it can be said that it is hardly probable that the cimex can inoculate the leishmanioses. The recent experiments of Gachet, in Persia, show serious evidence in favor of their transmission by diptera in conformity with the generally accepted belief.

Sangiorgi observed that living trypanosoma in the digestive tube of the bedbug retained their entire virulence at the end of three to four days. Brumpt, experimenting with the *Trypanosoma cruzi*, observed that this parasite underwent its evolution easily in the digestive tube of the *Cimex lectularius* and *Leptocimex boueti*. These insects became infected in the proportion of one hundred per cent. The evolution of the parasites takes place much more rapidly than in the conorhinus, which in America are the normal hosts and the ordinary agents of inoculation in man. The evolution of the parasite takes place especially in the terminal portion of the intestine and nearly in the state of a pure culture.

The dejections of bedbugs of all ages, kept fast-



ing in an oven at a temperature of 25° C., contain the trypanosoma for at least ten to fifteen days. Injected into young rats the organism produces experimental infection.

Opilation, or Chagas's disease, which is caused by *Trypanosoma cruzi*, subsequently may be inoculated by the cimex as agent.

Typhus fever and the bedbug no longer are related, because since the important researches of Nicolle and his associates at the Pasteur Institute at Tunis this disease has been proven to result from the bites of the *Pediculus vestimenti*.

It will, therefore, be seen that for the time being, at least, the Cimex lectularius does not occupy any place in the spread of infectious disease and consequently this detestable insect need not be considered as a pathogenic agent.

#### HANDLING THE WOUNDED IN BATTLE.

Captain R. J. Manion, of the Canadian Army Medical Corps, is a Canadian physician who has put into type his experiences during more than two years of service as a physician on the fighting line. The book (*A Surgeon in Arms*, by Captain R. J. Manion, M. D., M. C.: D. Appleton & Co.) is one of human interest, not a scientific work. It tells just what happens to the surgeon in arms, what he sees, hears, feels. Only in a general way does it tell what he does. The manner in which the wounded are handled in battle is told, however, clearly and succinctly as follows:

Suppose a soldier is hit by a piece of shell or sniper's bullet while he is in a trench which his battalion is holding. He is first attended by the stretcher bearer nearest to him at the time, who should use the man's own aseptic dressing which each soldier is compelled to carry in the lining of his coat or tunic. The injured man is then taken to the dugout of the medical officer, if necessary on a stretcher, where the medical officer rearranges the dressing, gives a dose of morphine if pain is severe, and after seeing that all hemorrhage is stopped and the man is comfortable, he hands the case over to the field ambulance stretcher bearers who always serve him and live in an adjoining dugout. This squad carries the case back—through the trenches if there is no hurry, but overland if haste is important—to the advanced dressing station of the field hospital. If this should be a particularly hard trip it may be done in relays, for these relay post dugouts are established with other bearer squads.

The advanced dressing station is usually situated a mile or so in the rear of the trenches, preferably in a large cellar, but at any rate in a fairly well sheltered area where cots are ready to receive fifty or more patients. At the advanced dressing station one or two of the medical officers of the field hospital are stationed with a large staff of men. The patient is here made comfortable; given coffee or cocoa; name, number and battalion recorded; and finally he is inoculated with antitetanic serum. This has practically wiped out tetanus, or lockjaw, which was very prevalent at the beginning of the war. He is kept here till a convenient time, which may be after dark, when he and any others who may have

come in are put into ambulances and taken to the main dressing station of the field hospital, another two or three miles behind.

The main dressing station may be in some old château, or in a group of huts, or, if the weather is mild, in tents. Here a light case, or slightly wounded man, may be kept for a few days and then sent back to the line or to a rest station to recover his stamina and quiet his nerves. But if the case should be a serious one, such as a shattered leg or arm or a large flesh wound that will take a considerable time to heal, he is again transferred by ambulance to the casualty clearing station (in the American Army evacuation hospital) another two to four miles back.

The casualty clearing station, usually in huts or tents, is the first real hospital behind the firing zone. It may have accommodation for a couple of hundred patients; is supplied with x ray equipment, a well arranged operating room with expert surgical assistance, and is the nearest place to the line that trained nurses are sent. Here for the first time since he left the line the patient gets all those little motherly attentions that only a woman can give. The injured man may be kept here days, weeks, or even months if he happens to be a case that would be endangered by moving. All immediately necessary operations are at once performed, and often a seriously wounded man from the firing line may be lying anesthetized on the operating table of a casualty clearing station, being operated upon by expert surgeons within two or three hours of receiving his injury—practically as good attention as this type of injury would receive in civil life.

This is particularly the case where a man has been wounded in the abdomen, from which wound he may quickly develop peritonitis and reach the valley of the shadow of death in a few hours if prompt attention is not given. It is also done in cases of head or lung injuries, or in any wound causing uncontrollable hemorrhage. In any of these emergencies, after the medical officer in the line has given all immediately necessary attention, the patient is ticketed "serious" by him, and he is rushed with all speed to the advanced dressing station, perhaps at great personal risk to the stretcher bearers. Here he is quickly transferred to an ambulance which may have to rush him over heavily shelled roads, missing the main dressing station altogether, and taking him direct to the casualty clearing station for his life saving operation.

After varying periods in the casualty clearing stations the patients are sent by ambulance trains, which run almost to their doors, to base hospitals at the rear. From here they are retransferred to hospital centres in England and Scotland.

So much for the methods used in caring for the wounded in the lines during stationary periods. The same principles and methods are employed during big advances, but of course on a larger and more thorough scale. All the arrangements are made during the weeks preceding a push; extra stretcher bearers are trained; the field ambulances increase their staffs, particularly just behind the firing lines, in order that the field may be cleared of wounded at the first lull in the fighting. The whole

intricate system is so complete and so well arranged that hundreds of cases may be rushed through in a few hours, some of them being comfortably in bed in English hospitals the evening of the day on which they received their "Blighty."

It must be remembered that in actions of a severe nature, such as great advances, the first object of the advancing troops is to obtain their objective and to hold it. Therefore care of the wounded may not be possible till the action is over. But during these hours the wounded are by no means without attention. It is here that the battalion stretcher bearers do their finest and most self-sacrificing work. They go "over the top" with the fighting troops, and as the men are hit it is their duty to give them first aid, while the fight still goes on, with machine gun bullets whistling by their ears and shells bursting all about them. Their duty it is, and nobly they perform it, to dress the wounded, stop bleeding if possible, and temporarily set fractures. Then they place the wounded men in the most protected side of a shell hole, or in any other sheltered spot, and pass on to the next needy one, after placing any bit of available rag on a stick or old bayonet to attract the attention of the field clearing parties who come over that area. In the meantime the wounded who can walk—walking cases—make their way to the point at which the medical officer is caring for the injured. After getting the required attention, they walk on back to the advanced dressing station of the field hospital.

At the first lull in the fighting it is the duty of the medical officer to see to the clearing of the field of those wounded who cannot walk. Any men going to the rear for supplies, and any German prisoners, are commandeered by the medical officer as stretcher parties. In big actions his own trained stretcher bearers are employed only as dressers. In the battle of Vimy Ridge which began at 5:30 a. m., it was twelve hours later ere all the wounded on our front were evacuated to the field hospitals. That was quick work when one considers that some battalions, including my own, had thirty-five per cent. of their men hit. One hundred German prisoners were sent up under escort to act as stretcher bearers, and gradually the field was cleared.

**Location of Chief Surgeons at Close of War.**—When the armistice was signed the United States had in France the First and Second Army, the First, Second, Third, Fourth, Fifth, and Sixth Army Corps and forty-two complete divisions.

To each army corps and to each division was assigned a surgeon general, following the classification of the British Army. The following is a complete list of these surgeon generals:

First Army, chief surgeon, Colonel Alexander N. Stark; Second Army, chief surgeon, Colonel C. R. Reynolds; Third Army Corps, surgeon general, Colonel James L. Bevans; Fourth Army Corps, surgeon general, Colonel George H. Gosman; Fifth Army Corps, surgeon general, Colonel William R. Eastman, and Sixth Army Corps, surgeon general, Colonel Bailey K. Ashford.

Following is a list of the names of the division surgeons of the respective divisions:

First division, Lt. Col. Herbert B. Shaw; second, Col. John W. Hanner; third, Lt. Col. William H. Eastman; fourth, Lt. Col. Robert L. Carswell; fifth, Lt. Col. Robert H. Pierson; sixth, Lt. Col. Paul L. Freeman; seventh, Lt. Col. Allie W. Williams; eighth, Lt. Col. Lloyd L. Smith; twenty-sixth, Lt. Col. Ralph C. Porter; twenty-seventh, Lt. Col. Edward R. Malony; twenty-eighth, William J. Brookston; twenty-ninth, Lt. Col. John B. Huggins; thirtieth, Lt. Col. Arthur W. Whaley; thirty-first, Lt. Col. Charles W. Decker; thirty-second, Lt. Col. Gilbert E. Seaman; thirty-third, Col. L. M. Hathaway; thirty-four, Col. Jacob M. Coffin; thirty-fifth, Lt. Col. W. T. Davidson; thirty-sixth, Lt. Col. A. T. Metcalf; thirty-seventh, Lt. Col. Joseph A. Hall; thirty-eighth, Lt. Col. Robert M. Blanchard; thirty-ninth, Lt. Col. Larus D. Carter; fortieth, Lt. Col. Alexander Murray; forty-first, Lt. Col. Orville G. Brown; forty-second, Lt. Col. D. S. Fairchild; seventy-sixth, Lt. Col. William A. Powell; seventy-seventh, Lt. Col. Chas. R. Reynolds; seventy-eighth, Col. George M. Ekwurzel; seventy-ninth, Lt. Col. P. W. Huntington; eightieth, Col. Thomas L. Rhodes; eighty-first, Col. Kent Nelson; eighty-second, Col. Conrad E. Koerper; eighty-third, Col. Wallace De Witt; eighty-fourth, Col. John H. Allen; eighty-fifth, Lt. Col. Cosam J. Bartlett; eighty-sixth, Lt. Col. Jos. W. Phalen; eighty-seventh, Col. Robert M. Thornbury; eighty-eighth, Col. Ray R. Shook; eighty-ninth, Lt. Col. John L. Shepherd; ninetieth, Lt. Col. Paul S. Halloran; ninety-first, Col. Peter C. Field; ninety-second, Lt. Col. Perry L. Boyer.

**The Civilian War Ration.**—Dr. Paul Roth, of Battle Creek, Mich., read a paper at the June meeting of the American Medical Association in Chicago in which he presented a very exhaustive study of the effects of a reduced daily food allowance made on twenty-five students of the Y. M. C. A. College at Springfield, Mass. The research was conducted under the auspices of the Carnegie Institution of Washington, under the supervision of Dr. F. G. Benedict, director of the Nutrition Laboratory of Boston and the collaboration of Dr. Walter R. Miles and Dr. H. Monmouth Smith, of Boston, and Doctor Roth. Prior to the reduction of the food allowance, the normal demand of the subjects ranged from 3,200 to 3,600 calories a day; by a radical reduction in the food allowance a ten to twelve per cent. fall of body weight was obtained in from three to ten weeks. At this lowered metabolic level, the subject required, on the average, 2,300 calories a day to maintain the lowered body weight at a constant level. This represents a reduction of over thirty per cent. in food requirement. Diverse observations on the energy expenditures of the subjects likewise show a decided alteration, indicating clearly that they were able to maintain their usual physical and mental activities with an economy of both the food requirements and of the corresponding expenditure of energy of approximately twenty to thirty-three per cent. Twelve subjects maintained their usual activities for a period of three weeks on an allowance of only 1,400 calories a day. These results should have a practical bearing on the present economic situation.



# Editorial Notes and Comments

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## MEDIUMS AND HYSTERIA.

War always brings with it a wave of renewed interest in spiritualism, that is, communications, real or supposed, with the spirits of the departed. We are in the midst of such a wave at the present time, and it is well to recall that in the past a good many of the exposures of so called mediums have been made by physicians. It would seem to be a distinct professional duty not to permit poor, suffering people to be imposed upon, whose profound sense of loss and deep mourning for their departed so often make them the easy victims of designing persons.

There may be a modicum of something inexplicable in spiritualism, but it has surely a very slight degree of seriousness. Sir Oliver Lodge's recent book is a pathetic demonstration of how little it takes to convince a man who wants to believe certain mysterious things. Sir Arthur Conan Doyle's book is, without doubt, amusing; what he accepts as the New Revelation and the evidence for it is a proof of his credulity, but not at all of the propositions which he advances. Ver-

ily, trifles light as air become proofs as strong as gospel for those who want to believe in them.

The recent death of Madame Palladino brings to mind the number of times she had been exposed. In spite of these exposures, scientific men still continued to believe—because they could not explain some of the things that happened in seances with her—that they were inexplicable on any but supernatural grounds. What is needed to catch a tricky medium, however, is not a scientist, whose expectant attitude of mind is the wrong one for these experiments, but a conjuror who knows how easily people may be misled, and with what simple means it can be done, if only the conditions are favorable.

We would not stamp all mediums as conscious and deliberate tricksters, however. There is undoubtedly another extremely important element which often enters into these cases and which makes them of particular interest to the physician. Many so called mediums present distinct stigmata of hysteria, and not a few of them can be readily recognized as presenting that characteristic emotional makeup from which hysterical manifestations so often proceed. This is the element the physician can best understand. Better than any one else does he realize how far hysterical patients will go in order to secure for themselves the publicity usually accorded the successful medium. There is quite literally no limit to which persons of this character will not venture, if thereby they can secure the reputation of having supernatural powers. To have it announced that they are channels of communication with the other world gives them a sense of satisfaction for which no amount of trouble would be too great to compensate. To be the very focus of attention and the subject of an investigation on the part of men of science would appeal so strongly to their morbid inclinations as to push them to the fullest extent of their ingenuity, in order to maintain it. This element in mediumship has never been properly exploited. Now that the war is making neuroses of many kinds so much more interesting—one third of all the discharges from the British army, apart from wounds, have been for shell shock, and a considerably larger proportion of officers than of men in the ranks have been taken by it—the study of this phase of the subject of spiritualism well deserves the attention of scientists.

Medical history is full of examples of hysterical patients who have deceived their relatives,

friends, neighbors, and even their physicians. The older medical literature abounds in circumstantial details, for instance, of the vomiting of live mice and of other interesting zoological specimens, usually not counted in the fauna of the digestive tract. Indeed, the number of living things that were supposed, for a time, at least, to have had their habitat somewhere on the inside of hysterical women is rather large. As for skin lesions, physicians have described the most bizarre conditions as occurring in hysterical cases, until it seemed as though the mind could produce almost any kind of pathological effect on the skin. After a time it was of course discovered that, in these cases, ammonia, or some mineral acid or other strong escharotic, was the active agent at work. Just imagine for a moment some one, with hysterical tendencies similar to those of these patients, being selected as a medium. What a riot of selfsatisfaction would she not have in producing all sorts of manifestations! How she would gloat over the notoriety thus given her! How she would plan and scheme to produce other and more startling effects, and yet all the while she would be doing something for which, according to our present view of these cases, she would be not quite responsible. While so ingeniously and deliberately deceiving others, she would in a certain sense be deceiving herself also; besides there would be no special fear of discovery nor any nervousness on her part which would facilitate detection, for she would have no scruples about the matter at all.

Here is a phase of spiritualism that in the present renewal of interest in it should have a special appeal to the physician. A good many of the mediums are proper subjects for treatment rather than for such admiration and attentive investigation as will pander to their morbid tendencies and make them exercise their ingenuity until they become more and more adept in deception. The tendency to pseudologia hysterica, or *confabulatio phantastica* is well known in the recent development of our knowledge of hysteria, but it is under dramatic circumstances particularly that these patients like to play an important rôle. The reports of young girls found gagged and tied in their homes every year are so frequent that, through a little investigation, it is made clear that they are the victims of their own romancing imagination only.

One of the difficulties with regard to the rejection of a great deal of evidence for spiritualism has been that it could only be done by assuming that many mediums were conscious trick-

sters. The physician who knows how many hysterical people there are in the world will have little difficulty in understanding this. They are not all merely sordid counterfeits who are taken up entirely with the money that there may be in it for them; a great many of them are neurotic persons, seeking an outlet for their dramatic hysterical instincts. They would not play their part so well nor carry off their deception so successfully if conscious trickery was the only element in it. Many after a time come to believe in themselves and their manifestations. It is, above all, the person who deludes himself or herself, as the case may be, and thoroughly believes in himself, who most successfully deludes others.

#### SOME NOTES ON RUPTURED SPLEEN.

We shall not take up space here reviewing our knowledge of the anatomy, physiology, and pathology of the spleen; what little is known of these subjects is sufficiently well known. But a recent contribution to the literature tells us something about a condition, rare in peace times—rupture of the spleen. In the *British Medical Journal* for September 14th, Captain R. Jamison, of the Royal Army Medical Corps, reports six such cases. In all these cases considerable trauma had occurred; indeed, in half of them the injury had been caused by the kick of a mule, than which, according to cavalry tradition, there is nothing more powerful.

The condition of these patients becomes quite serious immediately following the accident; there is severe pain and collapse. About an hour later there is a temporary improvement, followed by an increase in pain and the symptoms of internal hemorrhage. The diagnosis may ordinarily be made by the history of the injury, the location of the bruise, and the site of the pain. It cannot always be told whether it is the spleen or omentum which is affected, but an operation is indicated in either case, so that it is not a matter of great moment.

The operation is conducted through a vertical three inch incision about one inch to the left of the middle line, its lower end being at the level of the umbilicus, and if the spleen is found ruptured this incision is extended upward. The spleen is delivered through this opening. After tearing the ileorenal ligament this pedicle is ligated and the whole organ removed. Nearly all of these ruptured spleens were found to be larger than normal.

The effects on the patient of complete removal of this organ, as recorded, were particularly interesting. As far as information could be obtained no bad results were noted. A very high leucocytosis



occurred rapidly, the count varying from 12,000 to 45,000. Late hemorrhage may occur, in one case of the series profuse bleeding developed ten days after the operation. This was easily checked by ordinary methods.

While rupture of the spleen is not likely to happen under peace conditions, except in malarial subjects, all the information bearing on the function of this organ we can obtain is welcome, and it is hoped that the six soldiers who offered up their spleens on the altar of democracy will report from time to time for examination into their general health.

#### VACCINE AND SERUM THERAPY.

Vaccine and serum therapy have reached the stage of reaction from that enthusiasm with which new remedies and new methods are always welcomed. Human nature has not changed materially since Paul upbraided the Romans for their love of novelty. Every new remedy is welcomed with an enthusiasm which stimulates expectation beyond the bounds of possibility. The passage of time and cooler observation prove the fallacy of the extravagant hopes raised and in the reaction there is danger that some really valuable method or substance may be discarded; not because it is valueless but because it does not accomplish all that its too sanguine proponents had expected of it. Really valuable remedies are apt to outlive this period of reaction and eventually win a just valuation.

Captain A. Geoffrey Shera, of the Royal Army Medical Corps, comes forward [*Vaccines and Sera—Oxford War Primers*] with a plea for the just appreciation of the real value of vaccines and sera as therapeutic agents as well as for prophylaxis. The definite results achieved with diphtheria antitoxine both in prophylaxis and therapeutically and by antityphoid vaccination in prophylaxis gives hope that equally favorable results may be produced by vaccine and serum therapy in other fields. But many practitioners have been so badly disappointed that they have foresworn all other vaccines and sera.

Captain Shera is convinced that the failures noted are due to lack of appreciation of the high degree of specificity of bacterial infection. He urges the advantages of autogenous vaccines and of the use of mixed rather than of pure strains of such vaccines. That is, he condemns the practice of isolating the strains of infecting bacteria found and the use of such isolated strains. He acknowledges the need for resorting to stock vaccines in certain circumstances but even then advises that local stock vaccines be used. For instance when boils become epidemic in a hospital prophylactic inoculations

against them are helpful. But the stock vaccines used should be prepared from the strains of bacteria found in that particular hospital at that particular time.

The choice of the agent to be used, whether vaccine or serum, requires a very clear understanding of the nature of the infecting agent and of its reactions. In some circumstances a serum, which contains antibodies, should be used; in others a vaccine which contains toxins but no antibodies is preferable. In any case nature must not be hurried. The organism must be given ample time between each injection to elaborate defensive antibodies. All this means that the administration of vaccines and sera offers hope in many conditions which are otherwise hopeless, but they must be prepared and used with a wide and accurate knowledge of pathology and bacteriology and they cannot be relied on for mere rule of thumb administration.

#### TREATMENT OF CHRONIC RHEUMATISM BY INTRAVENOUS INJECTIONS OF COLLOIDAL SULPHUR.

Drugs and therapeutic measures in use at present for the cure of chronic rheumatism offer unquestionable relief, but improvement is merely temporary and the progressive march of the disease continues. A substance that has for a long time been studied by Robin and Maillard, and most deserving of attention in chronic rheumatism, is sulphur, a substance found in considerable quantities in the body elements in company with other substances.

Although the respective proportion of each of these substances in the organism is very unequal, as to its mass, the progress made in physiological chemistry demands recognition of the essential nature of all, because those which appear in lesser amount are not always the least inactive or least important for the ensemble of the reactions constituting life. Sulphur is contained in the human body in greater amount than iodine and is much more generally diffused throughout the tissues. The trophic importance of this metalloid lies in the fact that it forms an integral and necessary part of all albuminoid matter of the human organism. There is not a cell or a protein molecule which can exist without sulphur, and the majority of proteins contain from one per cent. to two per cent. of the metalloid.

Sulphur is present in the acids which participate in the structure of the most active glands as well as in the most delicate structures of the nervous system. The metalloid is found in the cartilaginous tissue in the form of sulphuric

chondroitin, while its presence gives to the connective tissue special properties which characterize the cartilage and explain the important part played by sulphur in maintaining the normal condition of the joints. Beside the minute quantity of sulphocyanate contained in the saliva, it should be recalled that there is a large amount of sulphur in the hepatic secretion. The bile contains this metalloid in the form of divers taurins, resulting from the oxidation of cystein, and these circulate in the liver and intestine combined in the state of sodium taurocholate. Its part as an antitoxic agent of the body is of the utmost importance because it arrests, in the liver, a series of toxic products coming from the intestine, such, for example, as aromatic substances, with which it forms sulphuric ethers eliminated by the kidney. Urochrome, the normal yellow substance of the urine which belongs to the group of oxiproteic acids, is also rich in sulphur.

Given these data and knowing that chronic rheumatism is a disease of the nutrition with a more or less marked organic decay, it may be logical to assume that sulphur is wanting in the protein substances composing the tissues and parenchymata. It is probably for this reason that the treatment of this affection at sulphur baths has been fairly successful for ages past. Of late, thanks to the progress made in chemical science, sulphur has been exhibited in the form of colloidal sulphur. The preparation may be given by mouth or subcutaneously, but both these have given indefinite results, and it is for this reason that the intravenous route has been resorted to by Maillard and others, with excellent results.

The solution of colloidal sulphur employed is an opaque whitish fluid, and when allowed to rest offers a slight deposit which disappears on shaking. The solution contains 33/100 of a milligram of active principle per cubic centimetre. The injections are given daily in the dose of one c. c. on the first day, on the second one and a half c. c., on the third two c. c., and this dose is continued until the tenth injection is reached. An interval of ten days is allowed and then a second series of injections is given. Colloidal sulphur eliminates the pain, but does not appear to have any action on existing deformities of the joints. It causes a temporary leucocytosis and raises the arterial tension, and it acts rapidly in cases where other medication has failed. Colloidal sulphur is advised by Maillard and others because the metalloid is more assimilable in this form, and it is given intravenously because the medicament is more completely and rapidly absorbed and its action more rapid.

It should be pointed out that a more or less intense chill will occur about fifteen minutes after the injection, but without any elevation of the temperature. The patient should not take any food for two hours before the injection, otherwise vomiting is likely to occur.

#### THE UNCONSCIOUS PATIENT.

In the presence of two kinds of patients the physician does well to be cautious of his speech, namely, the supposedly moribund and the presumably anesthetized. Because the patient seems unconscious it is by no means certain that he is not aware of much that is taking place about him and that he does not know what is being said in his presence.

We think most physicians of experience are, sooner or later, surprised by the keenness of hearing of the patient who is being anesthetized, when to all appearance he has become quite unconscious. This sharpness of sense seems akin to that of the partially deaf whose organs of hearing seem dull enough to the sounds we would have him hear, but are, somehow, exceedingly acute for impressions which we do not anticipate will reach his seat of consciousness. A victim of cerebral disturbance, though incapable of speech or of motion, will sometimes understand everything that is said in his presence. A patient of our acquaintance, apparently unconscious in a seeming fatal attack of cardiac asthma, recovered to reproach the two physicians in attendance with some remarks which they would gladly have unsaid. The tongue is an unruly member and until a patient is actually dead the tongues of those about him would better be kept under

#### HEROES ON PARADE.

While the sincerity of the gratitude of the citizens of the United States for the sacrifices made by our soldiers is unquestioned, the restrictions placed upon the troops returning from abroad make the expression of that gratitude somewhat difficult. We had pictured, and letters from the soldiers overseas evidently indicated that they too had pictured, Fifth Avenue alive with banners and resonant with cheers when the boys came marching home. Instead of this we find that the returning heroes are cut off from communication with their friends and relatives, hurried out to Camp Merritt, Camp Mills, or Camp Dix for demobilization, and there given their discharges, and allowed to drift homeward unhonored and unsung. We fail to see any good sanitary reason why these men should not be given the privilege of marching up Fifth Avenue before being disbanded. It is true, of course, many of them come over in small detachments and that any parade that might be arranged for without too great loss of time



would consist of a number of isolated detachments not previously trained together. While such a parade might be less impressive from a military point of view than would a parade of a complete division or complete regiments, it would be even more interesting to the public and would be much appreciated by the citizens of New York, who are anxious to see and do honor to the men who have served their country so gallantly. It is not yet too late for the military authorities to adopt some such plan and thus give the men who have marched so bravely through Flanders fields and Argonne forests amid a storm of bullets, the gratification of marching up Fifth Avenue amid the plaudits of their grateful and admiring countrymen.

#### APPROBATION FROM SIR HUBERT.

In a summary of the operations of the United States forces in France, made public by the Secretary of War in his annual report, General Pershing takes occasion to praise the work of the Medical Corps of the Army in the following terms: "Our Medical Corps is especially entitled to praise for the general effectiveness of its work, both in hospitals and at the front. Embracing men of high professional attainments, and splendid women devoted to their calling and untiring in their efforts, this department has made a new record for medical and sanitary proficiency." It is impossible of course to give at this early date accurate statistics regarding the incidence of disease throughout the war, but the statistics so far available show that the proportion of recoveries after wounds is much higher than ever before in the history of the world. Of the wounded who reach the first aid stations, ninety per cent. recover, and of those who reach the base hospital ninety-five per cent. recover. During the Napoleonic wars fully sixty per cent. of the wounded died, and during the Civil War from twenty to forty per cent. of the wounded died. The incidence of disease has been lowered to such an extent that life in the army is safer than among civilians, so far as disease itself is concerned; and even including deaths from wounds, the death rate in the army is lower than the general death rate among civilians sixty years ago. In view of these facts, General Pershing's praise of the work of the Medical Corps is well deserved.

### News Items.

**Section in Obstetrics and Gynecology Postpones Meeting.**—There will be no meeting of this section in December, but the January meeting will be held as usual on the fourth Tuesday of the month.

**A Directory of Health Authorities.**—The United States Public Health Service has published a directory of State and insular health authorities giving the names and addresses of the principal officials and the sums which are annually appropriated for the expenditure of each particular board or organization. Copies may be obtained by applying to the superintendent of public documents at Washington, D. C.

**Change of Address.**—Dr. Matthias Lanckton Foster, of New Rochelle, N. Y., has returned from active service with the Medical Corps of the United States Army and has resumed practice at a new address, 48 Centre Avenue.

**Health Cartoons.**—The Illinois State Department of Health is issuing a series of public health cartoons, a loan exhibit of which will be sent throughout the State. Electrotypes of a size suitable for the use of periodicals will be supplied without charge to newspapers, medical journals, and similar publications, by the assistant director of the department, whose offices are in Springfield.

**Forty-one Years After.**—On October 1, 1918, Colonel Louis M. Maus, Medical Corps, United States Army, retired, was awarded the Distinguished Service Cross for specially meritorious service rendered on the Belle Fourche River, N. D., on November 5, 1877. While a first lieutenant and assistant surgeon, serving with a detachment suddenly surrounded by an overwhelming force of hostile Sioux Indians, he succeeded in extricating the party from a most perilous position.

**Distinguished Service Cross.**—The Distinguished Service Cross has been awarded to three pharmacists' mates in the navy. These are Chief Pharmacists' Mate Robert S. Cochrane, of Highbury, S. C.; Pharmacists' Mate, Third Class, George Douglas Witt, of Harrington, Wash.; and Pharmacists' Mate, Third Class, Frank R. Yates, of Alturas, Cal. All three of these men were attached to the Sixth Machine Gun Battalion, United States Marine Corps.

**Regional Secretaries for the Tuberculosis Association.**—The National Tuberculosis Association has announced that it will put into the field regional secretaries to open branch offices in different sections. As soon as possible secretaries will be appointed for the Central or Mississippi Valley States, with headquarters at Chicago; for the Northwestern States, with headquarters at Spokane, Wash.; for the Southern States, with headquarters at Birmingham or Atlanta, and for the New England or North Atlantic States, with headquarters at New York. The primary function of these secretaries will be to bring the antituberculosis agencies in the various districts into closer harmony with each other.

**More State Hospitals Needed.**—The State Charities Aid Association has published a report directing attention to the serious overcrowding of the State hospitals for mental diseases. The thirteen hospitals have a normal capacity of 28,997 patients, but at the end of the fiscal year, had 35,462 patients, or 22.3 per cent. more than the normal capacity. There have been approximately 6,000 more than the normal accommodations provided, for a number of years. Building operations have been held up on account of shortage of labor and materials due to the war. Hospitals at the following points have already been provided for, but their construction is awaiting the resumption of normal conditions: Creedmoor; Marcy, near Utica; an institution in the metropolitan district to take the place of the Mohansic institution, and a psychopathic hospital in New York.

**Women Bacteriologists.**—It is said that there are thirty-nine women bacteriological hospital aids in various public health institutions throughout the United States. Many of these women are working in military hospitals.

**Medical Society of the County of New York.**—Dr. Charles H. Peck was elected president of this society at the annual meeting held on Monday evening, November 25th, and other officers were elected as follows: Dr. Charles H. Chetwood, first vice-president; Dr. George Gray Ward, Jr., second vice-president; Dr. Samuel S. Dougherty, secretary; Dr. J. Milton Mabbott, assistant secretary; Dr. James Peterson, treasurer.

**Medical Problems in Aviation.**—At a stated meeting of the New York Academy of Medicine, held Thursday, December 19th, the evening was devoted to a discussion of some of the medical problems involved in aviation. Lieutenant Colonel E. G. Siebert delivered an address on the Field of the Medical Research Laboratory at Mineola, Major Lewis Fisher spoke on the Practical Value of Ear Studies and Captain H. W. Lyman spoke on the Ear and the Aviator. Moving pictures illustrated all three addresses.

**New Army Hospitals Planned.**—Assistant Surgeon General Stimson, of the United States Public Health Service, has requested appropriations amounting to \$26,000,000 for hospitals providing 13,000 beds for discharged sick and disabled soldiers. Preliminary appropriations amounting to \$10,000,000 providing for 5,000 beds have been requested of the present Congress. It has been decided to establish one of these hospitals at Norfolk, Va., and one at Seattle, Wash. Others have been planned for Massachusetts and North Carolina. Additions also are to be provided for at the marine hospitals at Boston, Chicago, Cleveland, Detroit, Evansville, Louisville, New Orleans, San Francisco, St. Louis, and Wilmington, N. C., and at the Fort Stanton, New Mexico, Sanatorium. Their construction would cost \$10,000,000 and provide 5,000 beds.

**The Annual Report of the Surgeon General.**—The annual report of the surgeon general for 1918, has just been issued. It contains a comparative study of the health of the army, 1820-1917; an account of the health of the mobilization camps and of the army by countries; a consideration of the principal epidemics in the camps; and a discussion of fractures and operations. Nearly 200 pages are devoted to the special activities of the medical department; with the American Expeditionary Forces, and in the divisions of sanitation, hospitals, supplies, laboratories and infectious diseases, internal medicine, general surgery, orthopedics, head surgery, neurology and psychiatry, psychology, food and the Dental and Veterinary Corps. In addition to the usual tables of illness, discharge for disability and death, there are given tables of battle wounds and operations; of complications of various diseases and of case mortality. The text is illustrated by seventy-three charts. Altogether the report is a study of health and morbidity in an army of over 1,500,000 men, for the most part yet in the period of training. It should be of interest to epidemiologists, vital statisticians and army medical men.

**New Officers of the Academy of Medicine.**—At the annual meeting of the New York Academy of Medicine, held Thursday evening, December 5th, Dr. George David Stewart was elected president, to succeed Dr. Walter B. James, who was made a trustee. Dr. Reginald H. Sayre and Dr. Charles H. Peck were elected vice-presidents; Dr. Royal S. Haynes, recording secretary.

**Medical Society of the District of Columbia.**—At the annual meeting of this society, held in Washington on December 4th, the following officers were elected to serve for the year 1919: President, Dr. William Gerry Morgan; first vice-president, Dr. Ada R. Thomas; second vice-president, Dr. A. R. Shands; recording secretary, Dr. H. C. Macatee; corresponding secretary, Dr. J. Russell Verbyck, Jr.; treasurer, Dr. C. W. Franzoni. Dr. A. W. Boswell, Dr. Philip S. Roy, and Dr. Charles S. White were elected members of the executive committee for a term of three years.

**Medical Society Meetings to Be Held in New York.**—Meetings of medical societies will be held in New York during the coming week as follows: Tuesday, December 24th, New York Academy of Medicine (Section in Obstetrics and Gynecology), New York Dermatological Society, New York Medical Union, Metropolitan Medical Society of New York (annual), New York Psychoanalytic Society, Riverside Practitioners' Society, Therapeutic Club Valentine Mott Society, Washington Heights Medical Society, and the Woman's Hospital Society; Thursday, December 26th, Hospital Graduates' Club, New York, New York Physicians' Association (annual), Extern Society of Methodist Episcopal Hospital, Brooklyn; Friday, December 27th, Academy of Pathological Society (annual); Audubon Medical Society, New York Clinical Society, Brooklyn Society of Internal Medicine (annual), Hospital Graduates' Club, Brooklyn; Saturday, December 28th, Harvard Medical Society, Lenox Medical and Surgical Society, New York Medical and Surgical Society, and the West End Medical Society (annual).

**A Diagnosis Hospital in New York.**—The New York Diagnostic Society, organized over a year ago, announces that plans have been completed for the erection at 125 West Seventy-second Street, of a hospital for diagnosis, the first of its kind to be established in New York. It will be known as the West Side Branch of the Diagnostic Clinics of the Academy of Diagnosis. The site and building represent an investment of \$250,000. The building will consist of six stories and a basement, and will be provided with the most modern equipment required for diagnostic investigations and tests, and no pains will be spared to make it a model for hospitals of this character. The institution will be self-supporting and as the work progresses the society hopes to erect similar institutions not only in other parts of the city but in other cities throughout the country. The society was organized largely through the efforts of Dr. M. Joseph Mandelbaum, who is its president. Other officers are Dr. Monroe Bradford Kunstler, vice-president; Dr. Lesser B. Goreschel, secretary; Dr. J. Maxwell Van Dyk, treasurer. The offices of the society are at 330 West 145th Street.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### POLYVALENT SERUM THERAPY IN CEREBROSPINAL MENINGITIS.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 1049.)

Among the most striking clinical observations that have directed attention to the advisability of employing polyvalent serum in the treatment of cerebrospinal meningitis are those of Netter, 1918, bearing on 347 cases, and some of the details of which have already been mentioned.

In trying out, in the course of several years, Flexner's serum, Dopfer's serum, and mixtures of antimeningococcic and antiparameningococcic serums, Netter secured increasingly favorable results, and controverted, through proper care in adapting the serums used to the types of meningococcus pathogenically responsible, the assertions of certain other clinicians whose results from serum treatment in cerebrospinal meningitis had been disappointing. In the year 1916, during which a mixture of monovalent serums—each antagonizing a certain type of meningococcic organisms—was employed in a series of forty-two cases, the total mortality was at the rate of 30.9 per cent. but the corrected mortality, after exclusion of cases where death had occurred within twenty-four hours or from causes unconnected with the meningococcic infection, was reduced to 9.4 per cent. This represented a considerable improvement over the results from 1909 to 1914, in which period the corrected mortality had ranged from 11.1 to 28.5 per cent. Again, in 1917, thirty-one cases were treated with a mixture of serums prepared from Nicolle's Types A and B of meningococcus. Immediate identification of the type of organism present in each case was undertaken, and upon receipt of the results of the laboratory tests the treatment was limited to the serum particularly corresponding to the type of organism identified. In this series of cases there were eight deaths. Eliminating three deaths which occurred on the day of the first serum injection, as well as two deaths due to superadded infection, the mortality was reduced to two cases, or eight per cent., practically the same percentage as in the 1916 series already referred to. A striking feature of the 1917 series was that, among the eighteen cases in which the precise type of meningococcus present could be identified, only four showed an organism of Nicolle's Type A, i. e., constituting the true meningococcus, while fourteen belonged to Type B, corresponding to Dopfer's parameningococcus. In eleven additional cases the meningococci present could not be identified in spite of actual laboratory investigation, while in the remaining two no cultures could be made. The relatively high ratio of unidentifiable organisms is emphasized by Netter as in itself showing the necessity of treating every new case with a polyvalent serum, since definite knowledge of the

kind of meningococcus responsible may be difficult to obtain.

On the basis of favorable results with mixed serums, such as those recorded by Netter, the anti-meningitis serum now prepared at the Institut Pasteur of Paris for the current use of the French medical profession consists of a mixture in equal parts of an anti-A and anti-B serums. Serums for certain forms of parameningococci, constituting Nicolle's Types C and D, are also available, but cases due to these organisms have been very exceptional in Nicolle's experience, and none are comprised in Netter's recent series of patients.

The most recent improvement in the preparation of antimeningococcic serum, applied by Nicolle and tested clinically by Netter, consists in the injection of different types of organisms into the same horse. A single serum antagonistic to several forms of meningococci is thus obtained, and the employment of such a serum in place of a mixture of serums from different animals minimized against the various meningococcic organisms individually is advantageous in that the amount of serum injected therapeutically can be reduced, with a corresponding lessening of the likelihood of serum sickness or anaphylactic manifestations. Amoss and Flexner had already succeeded in obtaining, by alternate injection of meningococci and parameningococci into individual horses, a serum exhibiting marked agglutinating power toward both types of organisms. Nicolle prepared for Netter's use a serum made by simultaneous immunization of horses against the A and B types of organisms.

(To be continued.)

**Agglutinating Properties of Sera in Vaccinated Subjects.**—Thomas T. O'Farrell (*Lancet*, November 9, 1918) draws his conclusions from the careful analysis of sera from 496 soldiers. In so far as agglutinins can be taken as a measure of immunity to infection, immunity is high during the first three months after inoculation, is moderate between the fourth and fifteenth months, and is poor or wanting after the fifteenth month. Reinoculation should, therefore, be practised after the expiration of fifteen months. Multiple inoculation has the effect of yielding a smaller proportion of men who do not develop immunity, of causing a lesser degree of immunity than single inoculation, and of rendering the immunity more prolonged. Reinoculation with mixed T. A. B. vaccine causes a greater rise in typhoid agglutinins than follows reinoculation with simple typhoid vaccine, the difference being due to the presence of the other organisms. Agglutinins to the paratyphoid A and B organisms are lower than to typhoid, but follow about the same types of curves of rise and fall. This being the case, it is suggested that the mixed vaccine should be made to contain one part of typhoid, one of paratyphoid A and two of paratyphoid B.

**Antiseptic and Cytophylactic Properties of Iodized Mineral Waters.**—G. Billard (*Presse médicale*, October 7, 1918) points out that iodine is not only germicidal, but through its oxidizing power is capable of attenuating or destroying the toxicity of toxalbumins such as snake venom and the toxins of diphtheria and tetanus. As an antiseptic for mucous membranes he strongly recommends a solution made by adding one teaspoonful of the official French tincture of iodine to one litre of Vichy water. This alkaline water takes up twice as much iodine as pure water or normal saline solution. Chemical reactions take place as a result of which there occur in the solution not only sodium chloride and undestroyed sodium bicarbonate, but also iodates, alcohol, iodoform, sodium iodide, free iodine, and dissolved carbon dioxide. Upon wounds a wet dressing of the solution exerts a marked sedative and analgesic action; from the antiseptic standpoint the solution seems to give, in most instances, results equal to those obtained with any other agent. In four or five days healthy granulations appear, and after this the iodine should not be further used. Broussegouttes, using the solution in balanoposthitis with phimosis and with or without chancre, observed immediate cessation of pain and practical cessation of discharge in four or five days; in sluggish, open buboes, it also proved valuable. Billard employed the solution with marked success in the prophylaxis and treatment of contagious diseases, especially diphtheria. The throat is first painted with iodized glycerin, then irrigated freely with the iodized solution. This is repeated four or more times a day. In about one third of all cases the false membrane disappears in two or three days under this treatment, without the use of diphtheria antitoxin. In fact, if the disease is taken at the start and the solution reaches all tissues covered with membrane, recovery will occur nearly always without the antitoxin; but the latter should be regularly used nevertheless. The solution is also recommended for ordinary throat inflammations and the sore throats of scarlet fever, measles, grippé, and even typhoid; in the last named disease the solution may be taken internally. A silver spoon should not be used to measure the iodine. The solution should preferably be used fresh; if not, the bottle containing it should be tightly stoppered.

**The Pharmacology of Alcohol.**—Robert B. Wild (*Lancet*, November 9, 1918) says that the external actions of this drug depend upon its volatility, its affinity for water, its power of coagulating albumin and its antiseptic properties. It is useful, therefore, for cooling applications, as a counterirritant when confined or rubbed into the skin, as a mild antiseptic in dilutions of forty to seventy per cent., and to harden the skin. By its irritant action it exerts reflex effects when applied to the mucous membranes, stimulating the respiration and heart and arousing consciousness in fainting, etc. These effects are very transitory and the drug is therefore of temporary value only in respect of these actions. It influences digestion in several ways, depending upon its amount and concentration. In dilute solution, up to five per cent. it acts as a mild irritant in the mouth and stomach, promoting the flow of

saliva and the gastric juice and increasing the vascularity of the gastric mucosa. Part of the effects of such dilute solutions in the stomach come from the volatilization of the alcohol. In concentrations above five per cent. alcohol delays and interferes with digestion by disturbing the action of the ferments, hardening the proteins and causing catarrhal inflammation of the stomach. After absorption alcohol acts chiefly on the central nervous system and its action is predominantly one of depression. The apparent stimulation is due to the depression of the inhibitory function, the depressant action of alcohol being manifest in inverse order to the development of the nervous functions. In very large doses all nervous structures are depressed or paralyzed. Its depressant action may be of some value in therapeutics to allay excitation and give a sense of wellbeing and for this purpose the drug should be given in the form of fifty per cent. grain alcohol, disguised by the addition of various bitter substances and should be prescribed as a medicine. Systemically, alcohol has no stimulant action on the heart or bloodvessels, but it tends to dilate the peripheral vessels and cause a sensation of warmth, increased loss of heat, and some reduction of blood pressure. There is some evidence that it may act as a direct food for the exhausted heart, and its comparatively ready combustion in the body in amounts up to 100 grams per day makes it available as a substitute for fats and carbohydrates. As a food it is of some value in a very limited number of cases, especially those in which the digestive functions are largely in abeyance.

**Ocular Lesions Produced by Dichlorethylsulphide (Mustard Gas).**—Alfred S. Warthin, C. V. Weller and G. R. Herrmann (*Journal of Laboratory and Clinical Medicine*, October, 1918) have made an extensive study of the experimental dichlorethylsulphide lesions of the eye in rabbits and dogs. Thirteen clinical cases are included in their report. The action of mustard gas is essentially the same on the cornea and conjunctiva as on the skin, but the conjunctiva is less susceptible or better protected, as the necrosis here is not so marked as in the cornea or epidermis. The practical clinical value of the fluorescein test for the determination of corneal ulceration is apparent. A two per cent. alkaline watery solution is used to demonstrate necrosis of the corneal epithelium, which can be shown within ten to fifteen minutes after exposure to gassing. The degree of degeneration of the corneal and conjunctival epithelium is in proportion to the strength of the vapor, the stronger concentrations producing a more or less complete necrosis of the corneal vertex, extending throughout the entire depth of the cornea. Some of the changes noted are purulent exudation into the anterior chamber; congestion and edema only in the posterior chamber or optic nerve in the noninfected cases; iridocyclitis and iritis without secondary infection; necrosis of the conjunctival epithelium; marked edema of the subconjunctival tissues, with congestion, multiple hemorrhages, leucocytic infiltration, and often secondary liquefaction necrosis. The process of healing in the more severe cases results in vascularization and cicatrization of the cornea. There is



serious disturbance of eyesight, even in the milder forms, with refractive errors and reduction of vision, so that the patient should be referred to a competent specialist for the correction of these disturbances. Attempts to verify the statement of Victor Meyer that subcutaneous injections of dichlorethylsulphide determine the occurrence of a conjunctivitis met with no success. Metastatic lesions of the eye could not be produced by applications of mustard gas to other regions of the body, or by subcutaneous or intraperitoneal injections. As the methods of treatment reported in the literature seemed unsatisfactory to the authors, they carried out an experimental investigation in the hope of finding an improved method which could be applied to human cases. They advise against the use of any method of treatment which brings pressure on the lids and eyeball, such as tight bandaging, or heavy compresses; likewise cocaine and the colloidal silver preparations are not considered desirable. It is essential to prevent the gluing together of the eyelids by accumulation of the exudate. In the severe cases the use of the chlorocane of dichloramine-T in a strength of 0.5 to one per cent. is advocated. It is also advised that this solution be used in all cases of exposure to mustard gas as an immediate irrigant for its prophylactic effects. In the milder forms, irrigation with the saturated boric acid, the application of light weight boric acid presses, hot vapor baths, and protection of the eyes from light are recommended.

**Ether as a Surgical Dressing.**—P. Descomps and A. Richard (*Paris médical*, September 21, 1918) note that sulphuric ether now holds an important place in surgery independent of its use as an anesthetic, having proven, during the war, a choice agent in the antiseptic dressing of wounds. The drug greatly assists in the removal of organic debris, has proven more reliable as antiseptic *in vitro* than any other agent, is of great service through its power to dissolve off fats and many alkaloids, and by causing hemolysis of red corpuscles enables the polynuclear leucocytes in a wound to devote their phagocytic capacity exclusively to the germs present. It unquestionably favors wound sterilization. In closed inflammatory conditions, such as lymphangitis, adenitis, boils, glandular inflammations of the parotid or breast, etc., application of a few dressings of ether often results in rapid disappearance of the lesions. In the more severe instances, they limit the extent of the inflammatory area and induce collection of pus, which may be then evacuated through a small incision or even a puncture, thus shortening the period of repair. The authors first apply two or three gauze compresses over the inflamed region, then pour on ether till the gauze is soaked, apply a covering of some impermeable tissue and cotton, and complete the dressing with a bandage, only moderately tight in the centre but more closely fitting at the margins in order to prevent evaporation of the ether. Ether is reapplied three times a day through a tube slipped between the gauze layers. In dressing open wounds, the authors first carefully removed foreign material and devitalized tissue and aseptically the skin surface surrounding the wound to prevent reinfection. In both primary and secondary closure

of wounds ether constitutes the dressing of choice, irrigation with it before closure having always appeared superior to alcohol, magnesium chloride solution, or formaldehyde. Rubber drains are passed in between the gauze compresses and ether introduced every three hours in amounts varying from ten to forty mils. That the compresses have been well moistened with ether is shown by a sensation of cold experienced by the patient at the moment of introduction. In the intervals the drains are kept closed with screw clamps.

**Treatment of Lobar Pneumonia with an Antipneumococcus Serum.**—P. Kyes (*Journal of Medical Research*, July, 1918) reports 115 cases of acute lobar pneumonia treated with an antipneumococcus serum, and compares the mortality of these cases with the mortality among 538 similar cases occurring in the same institution, and within the same period of time, but not receiving serum treatment. The series of cases is sufficiently large to make such a comparison interesting. The death rate in the 538 untreated cases was 45.3 per cent., and in the 115 treated cases it was 20.8 per cent., so that in the cases treated with serum it was less than one half the untreated cases. The antipneumococcus serum was produced by injecting massive doses of virulent pneumococci into domestic fowls.

**Etiology and Treatment of Pruritus Ani.**—Dwight H. Murray (*Journal A. M. A.*, November 2, 1918) presents evidence that true pruritus ani is due to infection of the skin with the *Streptococcus fecalis*, and that in cases of pruritus, this organism cannot only be cultivated as the preponderant one from the affected region, but also the patient's blood shows a marked reduction in its content of opsonins toward the organism. The same etiology holds for pruritus vulvæ and scroti, as well as for the anal variety. Further support of this conception of the etiology of the pruritus is found in the fact that there is no relationship between the occurrence of pruritus and the various rectal pathological conditions. The discovery of the etiological factor gives a logical basis for the treatment of the condition. Since the infection is not merely a surface one, but is one which involves the deeper portions of the skin, it is not possible to attack it by external local applications. As is to be expected, the various surgical methods advocated have usually failed in the cure of pruritus, at best giving but temporary relief. Further, the cure of associated rectal affections does not relieve pruritus. The most satisfactory treatment, and one which is quite rational, is by the administration of an autogenous vaccine, made from the *Streptococcus fecalis*. This vaccine contains 2,000,000,000 organisms per mil, killed by one half per cent. phenol or one third per cent. tricesol. The initial dose is about 0.2 mil subcutaneously. The doses are rapidly increased in size until a good reaction is produced, the number given varying with the individual case. Along with this treatment prophylactic measures to prevent reinfection should be taken, such as bathing the anal skin after each defecation. The treatment will not cure every case, but it is far more successful than any other so far employed by the author.

**Ambulatory Treatment of Gastric and Duodenal Ulcer.**—E. B. Freeman (*Virginia Medical Monthly*, October, 1918) believes ambulatory treatment justified in a large number of cases, especially in those where, for pecuniary reasons the patients are unable to submit to a systematic rest cure in a hospital. His study embraces 169 cases, comprising ninety-six of gastric and seventy-three of duodenal ulcer. No cases with marked gastric deformity or callous ulcer with pyloric obstruction were included. The treatment applied consists, in the first place, of removing all focal infections, especially those about the teeth and sinuses. Alcoholic stimulants, tobacco, tea, and coffee are forbidden. A mixed diet of carbohydrate, protein, and fat is administered, but preference is given to carbohydrate food, which leaves the stomach more quickly than protein or fats. When possible, the following diet is prescribed for the first two weeks: Six ounces of milk at 7 a. m. and 5 and 9 p. m.; egg albumen at 9 a. m. and 3 and 7 p. m.; a cup of bouillon with one egg at 11 a. m., and rice cooked in milk at 1 p. m. Most patients, however, being unable to take food every two hours, they are at first put on soft food three times a day, with a glass of milk or other liquid food between meals and at bedtime. After two months, light meats such as chicken and lamb, and fish, are allowed once a day, and the diet then gradually increased to include thoroughly cooked vegetables. All patients employ hot moist applications to the abdomen for forty-five minutes before retiring. Medicinally, tincture of belladonna is given before and an alkali after meals, the former in doses of three drops, increased one drop per dose per day to tolerance—up to twenty-five drops or more. Bismuth subcarbonate, twenty to thirty grains, and calcined magnesia are given half an hour after meals. Good results are obtained only with those who can tolerate belladonna in very large doses.

**Treatment of Pleural Adhesions in the Course of Intrathoracic Operations.**—Le Fort (*Presse médicale*, June 27, 1918) maintains that pleural adhesions surrounding a septic area, which encloses a foreign body are, essentially, useful protective structures which should not, as a routine, be destroyed. On the other hand, adhesions of the lung to the pericardium should be broken up, as they are highly burdensome to the heart. Adhesions should also be broken up where additional working space for operative treatment is required; likewise, costodiaphragmatic adhesions which hinder free play of the diaphragm and bands, spontaneous elongation and softening of which appears improbable. Broad, surface adhesions may be loosened where there exists in the pleura no septic focus capable of inoculating the resulting raw surfaces. Pulmonary adhesions limited to the extreme inferior border of the lung should be allowed to remain, as they prevent a diseased lung from retracting to its hilum and facilitate its respiratory expansion. In total pleural symphysis complete liberation of the lung is a deplorable procedure; the lung is, under these conditions, generally in such a state of collapse that as soon as it is detached from the parietes it shrivels to such an extent that it could be inclosed in one hand, and that attempts to expand it with the glottis closed are fruit-

less. If, in such a case, it is necessary to reach from the anterior aspect a foreign body situated behind the hilum and the greater part of the lung surface has to be freed, at least there should be spared a band of adhesions which will maintain the vertical dimensions of the organ and prevent it from collapsing. Pleural adhesions are not always responsible for the untoward manifestations ascribed to them; some constitute a means of defense on the part of the organism.

**Treatment of Uremia in Major Wounds.**—I. M. Reynès (*Bulletin de l'Académie de médecine*, October 8, 1918) presents a report based on thirty wound cases and 210 separate uranalyses. In all major wounds, even in the absence of infection, the urea output at once rises to forty or even seventy grams a day, and the urinary urea concentration to from thirty to forty-five grams a litre. Beyond this the kidneys fail and uremia results. Serial uranalyses permit of forestalling uremia by appropriate treatment, viz., hot, sweetened drinks; glucose enemas and injections of glucose solution; theobromine and lactose; abstention from nitrogenous foods, including milk; ingestion of cooked fruits and purées; repeated saline purgation; friction; cotton wrappings, and external heat. In developed uremia: Venesection; lumbar puncture; glucose solution intravenously, and appropriate local treatment of the wound. Subsidence of the uremic tendency is marked by an outburst of polyuria lasting several days.

**Intravenous Injections of Quinine Collobiase in the Treatment of Malaria.**—F. Roux (*Presse médicale*, June 27, 1918) writes that quinine administered by mouth causes vomiting, subcutaneous injections cause pain and other complications, and intramuscular injections cause persistent nodules and sometimes the formation of abscesses. In long standing cases with enlarged spleens, moreover, quinine is not only ineffectual as a rule, but often causes untoward manifestations, including even hemoglobinuria. Intravenous use of quinine collobiase is free from these objections. The preparation is without effect when administered by any other route. The amount of pure quinine introduced with each injection is from two and a half to five milligrams. The best time for the injection is within the few hours preceding a paroxysm; but practically, it may be made at any desired time—preferably with the stomach empty. The injections are given on succeeding or alternate days, according to the case. The author never gives more than four injections. The injection is generally followed by a reaction, manifested in varying symptoms such as a chill, fever, vomiting, headache, and deep sleep. No serious effect was ever observed. The therapeutic effect was found to vary with the degree of reaction. Tried out for three years in the French colonies, the treatment gave excellent results in the very cases in which quinine as ordinarily administered proves useless and dangerous. The frequency of failures did not exceed three per cent., and even in the few cases where recovery did not occur marked improvement always resulted. The appetite and ability to sleep returned almost at once and the spleen underwent a rapid reduction in size. The amount of quinine used was so small that it caused no unpleasant effect.



# Miscellany from Home and Foreign Journals

**The Normal Heart in the Navy.**—G. F. Freeman (*Boston Medical and Surgical Journal*, October 10, 1918), in answering the question as to what constitutes a normal heart as far as the standards of the navy are concerned, says that the normal heart in the navy corresponds, as far as physical examination is concerned, to the usual descriptions as to size, sounds, rhythm, etc. He states that: 1. The apex beat, which is the most important guide in determining the size of the heart, should always be defined. In a series of 200 cases it was found in the fifth space in eighty-nine per cent., in the sixth space in eight per cent., and in the fourth space in three per cent. The apex beat can be felt in all but four per cent. of cases before exercise, and in all but one half per cent. after exercise. In examining recruits and persons in the service, the size of the heart can be defined much better than in the usual clinic, because the subjects are all muscular young men, not obese, and have a vigorous heart action. 2. The apex is, on the average, 9.165 cm. from the midsternal line, and the nipple is 10.28 cm. from the midsternal line. On account of the class of case examined—muscular men—the nipple is a landmark of much greater importance than it is in a mixed city clinic. The apex averages one cm. inside the nipple line, but there is a normal variation to outside the nipple line. 3. In 67.5 per cent. of cases the apex is inside the nipple line. In 10.5 per cent. the apex is in the nipple line. In twelve per cent. the apex is outside the nipple line. 4. In recording the location of the heart's apex, owing to the different shape of chests, it is best to give the distance, in centimetres from the midsternal line. These measurements are best obtained by marking on the chest and then measuring between the lines marked by the usual measuring tape laid on the chest, and not by trying to estimate the distance between the fingers holding the tape, between the points determined. In like manner a measuring rule may be used, but the first method has been more satisfactory, as the tape is always at hand in the examining room. 5. The right border of the heart is best determined by light percussion. In the cases taken the measurement was from the midsternal line at the lower border of the second right interspace, measuring from markings on the chest, the point mentioned being very easily determined. It averaged 2.6 cm., or practically one inch from the midsternal line. With a sternum of average width, the right border will be found about 0.7 cm. (or about one third inch) from the right border of the sternum, and as this distance is rather too small to estimate by the usual percussion on a finger, it is best to assume that the right border of the heart extends at this point to just outside the sternal margin. The location of the right side of the heart may vary slightly with different observers, as its estimation depends somewhat on individual equation, as does the general outline of the heart if determined by percussion. On the other hand, when the muscular type of a man to be dealt with is considered. Freeman cannot agree that the attempt to locate the

right side by percussion is of no value, and that the only sure way is the x ray. He feels certain that in these cases the left border can be accurately percussed because there we have a check on our percussion, viz., the location of the apex beat. Then if the left side can be accurately located, why cannot the right side also be located by the same methods? The method used was to percuss with the eyes shut and have an assistant mark the point found. 6. The rate of the pulse on the physical examination of the Navy personnel is accelerated by the excitement which seems to affect the men on reenlistment as well as recruits. The pulse is also increased by exercise (ten sweeps from the erect position and sweeping down to or near the floor), about ten beats per minute in recruits, and seven beats in the reenlistments. A minute's rest is allowed after the exercise, before the pulse is recorded. The average rate of pulse in recruits was eighty-four sitting, ninety standing, and ninety-three after examination. This high pulse rate is due to the excitement of being in the examining room. Men who had been in the service from four to twenty years also had a high pulse rate, the average being eighty-seven standing, eighty-seven sitting, and ninety-four after the exercise. 7. Most of the murmurs heard meant neither an abnormal heart nor heart disease. What could be called a murmur was found in forty-two per cent. of the recruits who, after passing the recruiting office, were examined for final acceptance. In the reenlistments of recruits, nineteen per cent. were found with heart murmurs.

In the verification for final acceptance, four per cent. were found to be not physically qualified on account of some heart condition, and this condition was verified by a board of three medical officers, and thus it was not the opinion of the single examiner. These men were not allowed to continue in the service. In the men rejected, out of 100 recruits who previously had been accepted, the following conditions were found: 1, mitral regurgitation; poor physique; 2, mitral regurgitation in a recruit for fireman. As the firemen have to be of a very high physical standard, any doubtful symptom would stand in the way of acceptance; 3, tachycardia, constant rate 124, poor physique, bronchitis; 4, probable mitral stenosis, regurgitation. In the reenlistments there were one half per cent. rejections on account of heart condition. The most common murmur found was a systolic one at the second or third left interspace or the apex, and fairly common at the right of the sternum. The systolic murmur at the apex, also accompanied by some heart enlargement and an accentuated pulmonic second, is often found in chance examinations in men in the naval service and cannot, therefore, necessarily mean heart disease, as these men never had and do not, under observation, have any symptoms. It is well to record all these murmurs on the health record simply as murmurs, and not to apply to them the name of a heart lesion. The mitral systolic murmur cannot be diagnosed as mitral regurgitation unless there are real symptoms.

**Pulmonary Fat Embolism in Relation to Traumatic Shock.**—George E. Sutton (*British Medical Journal*, October 5, 1918) says that he was impressed by the similarity between many of the cases classed as shock at the base hospitals and cases of pulmonary fat embolism seen in civil life. These cases are characterized by cyanosis of moderate to deep grade; small, easily compressible pulse of increased frequency; increased rate of respiration and sometimes labored breathing; cold extremities; and a varying degree of delirium. In such cases there is no appreciable or sustained response to measures of resuscitation and the patient dies usually within a few hours. Investigation of a number of such cases post mortem shows the presence of gross pulmonary fat embolism almost invariably, or, if this is not grossly evident, it can be demonstrated microscopically in specimens stained to bring out the fat. From the post mortem examination of a series of cases of shock seen at a base hospital the figures reveal that about ten per cent. are cases of pulmonary fat embolism, as shown by gross examination, and the proportion would probably be higher if microscopical examinations were made. The cases in which fat emboli are most frequently found are: Fractures of the long bones, skull, and ribs; wounds involving fatty tissues, including the abdomen, trunk, and buttocks; and penetrating wounds of the abdomen involving the liver. Acidosis is now much discussed in relation to shock, and in fat embolism all of the factors productive of acidosis are present. The main field of treatment lies in prophylaxis by immediate fixation of fractures and ligation of the proximal ends of veins as well as their bleeding distal ends.

**Residuals of Cerebrospinal Meningitis.**—Aaron J. Rosanoff (*Journal A. M. A.*, November 2, 1918) from the study of twenty-six cases showing the residual effects of epidemic cerebrospinal meningitis occurring among soldiers from various cantonments, reports as follows: The cases presented a striking uniformity in the syndrome of manifestations, including limitation of flexion of the spine; undue fatigability; pains in back, legs and head; dizziness and faintness; muscular weakness; blurring of vision and photophobia; and impairment of appetite and sleep, associated with undernutrition. The limitation in flexion of the spine was shown by inability to stoop over normally and by inability to touch the sternum with the point of the chin. The undue fatigability varied in degree in different patients, but was present in all. Pains in the back, legs, and head were present in all the cases, varying in intensity and sometimes only observed when some movement was made. In order of their frequency they were found in the small of the back, back of the head and neck, behind the knees, and between the shoulderblades. There was tenderness to deep pressure in some cases. The tendency to dizziness and faintness was sometimes so great that slight exertions would cause the patient to become faint, lose consciousness, and fall. These symptoms were most frequently aggravated or brought on by stooping or getting up rapidly from bed, and when the patient was exposed to unshaded sunlight. Muscular weakness was shown especially by the

feebleness of the grip. The blurring of vision usually became manifest when the patients read a little or indulged in close application, and where the blurring tendency was most pronounced there was also some photophobia. The patients showed considerable variations in severity of the several symptoms and in the degree of their disablement, and the quantitative variations seemed to depend partly upon the severity of the original infection and partly on the length of convalescence. Apparently the condition would tend to remain stationary under rest, while graded hikes and exercises seemed to bring about some improvement.

**Pandemic Influenza and Pneumonia in a Large Civil Hospital.**—John W. Nuzum, Isadore Pilot, F. H. Stangl, and B. E. Bonar (*Journal A. M. A.*, November 9, 1918) studied the epidemic from various angles and investigated its bacteriology in a large proportion of cases. They report that the predominating organism in the washed bronchial sputum was the pneumococcus, occurring in seventy per cent. of the samples examined. The *Streptococcus hemolyticus* was found in that secretion in twenty per cent. of the cases. Lung punctures were made in thirty-six cases and twenty-one of them were sterile. The eleven which showed infection yielded the pneumococcus in pure culture in nearly seventy-three per cent. of the cases and hemolytic streptococci in about twenty per cent. Cultures taken from the lungs at necropsy again gave the pneumococcus as the predominant organism, seventy-five per cent. of the lungs yielding it, types II and IV being the most frequent. Hemolytic streptococci were isolated from the lungs in forty-three per cent. of the cases. The latter appeared to be late secondary invaders. In the majority of the cases the pneumococci were of unusual virulence. The influenza bacillus was isolated in only 8.7 per cent. of all the cases studied.

**Thyroid Hormone and Its Relation to Other Ductless Glands.**—E. C. Kendall (*Endocrinology*, April-June, 1918) describes how the active substance of the thyroid has been isolated and analyzed, its empirical and structural formulæ determined, its synthesis completed, and its physiological action studied in a large number of patients at the Mayo Clinic. In considering the rôle of the other ductless glands of the body, Kendall states that they assume positions secondary in importance to the thyroid, and that their part may be preparing the various metabolites for their final action with thyroxin (the active constituent of the thyroid), with the production of energy. In addition to this duty the task of taking care of byproducts and elaborating other substances must be accomplished by some agent in the body, possibly the parathyroids and others of the ductless glands. A detailed description of the structural formula of thyroxin is given. It contains an indol group with the iodines attached to the benzene ring, and on the carbon atom adjacent to the amino group of the indol ring there is an oxygen atom. The physiological activity of the substance is produced by the CO.NH groups. In explaining the action of iodine in the compound the theory is presented that it renders the active groups more reactive.



**Experimental Parotiditis.**—Martha Wollstein (*Journal of Experimental Medicine*, October, 1918) continued the work done two years ago, injecting filtered sterile salivary secretions from soldiers suffering from acute parotiditis for one to twelve days, into the parotid glands and testes of healthy cats. The "virus" was detected most readily in the saliva during the first few days; the period of infectivity is apparently short, covering about a week, and corresponding with the swelling of the parotid. The saliva from inoculated cats was used for further injection and produced swelling not only of the parotid glands, but of the submaxillary, sublingual, and adjacent lymph nodes, while the lymph nodes on the uninoculated side were sometimes swollen and moist. Probably the involvement resulted from salivary and lymphatic infection. Defibrinated blood taken from the arm vein of patients suffering from parotiditis, especially those with severe constitutional symptoms was infective for cats. Confirmatory evidence of the filterable nature of the etiological agent of mumps is obtained in this work. The virus was detected in a case of recurrent parotiditis at the periods of enlargement of the glands, but not two weeks after the swelling had subsided. It was not detected in the cerebrospinal fluid.

**The Influenza Epidemic of 1918.**—A. Netter (*Bulletin de l'Académie de médecine*, October 1, 1918) asserts that no one observing the sudden onset of the epidemic disease of 1918, the general pains and high temperature, the at first relatively slight involvement of the respiratory and digestive tracts, the sudden termination after two or three days, and the distinctly epidemic and even contagious nature of the disease, can fail to identify this affection with the influenza epidemic of 1889 and 1890. As the epidemic ran its course there appeared numerous instances of tracheobronchitis, acute bronchitis, suffocative catarrh, bronchopneumonia with multiple foci, lobar or rather pseudo-lobar pneumonia, and pleurisy with bloody or seropurulent effusions. There were also gastrointestinal cases with diarrhea, and mucoid, blood stained stools, sometimes presenting all the characteristics of typical dysentery. A few of the author's patients showed marked meningeal symptoms. In all former great epidemics, influenza exhibited the same protean nature, the same sudden beginning with purely nervous and febrile forms, and later the same visceral involvements, especially of the respiratory tract. The contagious nature of the 1918 epidemic was exhibited also in 1889. Returning in that year from Egypt, to which influenza had not yet penetrated, the author contracted the disease in a railway compartment in which an influenza patient had sat for half an hour; the incubation period was eighteen hours. From bacteriological studies Netter is a firm believer in the Pfeiffer coccobacillus as playing the essential pathogenic rôle in the 1918 epidemic. Inability to find the organism in a certain proportion of instances by no means proves their absence. From most patients, sputum for examination is obtained but once; but in two of the author's cases a positive result was secured only in the second specimen, and in one instance only in the third.

**An Improvement in Stereoscopic Radiography.**—Henri Beclère (*Presse médicale*, October 7, 1918) notes that the chief aim sought in stereoscopic radiography is to secure a record of the various planes of the structures radiographed, in order that as much relief as possible may be imparted. The marked difficulty of properly understanding the stereoscopic negatives results from the fact that cutaneous landmarks indicating the precise situation of the various portions of the skeleton are lacking. Metallic rings have already been proposed as indicators of the skin surface, but the following procedure is much better and simpler: The part to be taken, lightly covered with petrolatum or wool fat, is rubbed with a sait opaque to the x rays, such as bismuth subnitrate or subcarbonate. The powder penetrates into the smallest depressions in the skin, and on the x ray negative all these depressions appear in detail. In stereoscopy the effect is striking. The skin, now rendered clearly visible, exhibits its form and all its folds. The bony framework appears in precisely its actual relations to the skin surface. The skin gives the impression of a fine, filmy envelope which in no way impairs the distinctness of the details of the bony skeleton. Application of the procedure to the study of proper padding of amputation stumps, with a view to the use of appropriate apparatus, has given excellent results. Bone fragments embedded in the tissues can be easily located, thus affording surgical indications of value in the prevention of untoward complications.

**Interesting Reaction to Louse Bites.**—William Moore (*Journal A. M. A.*, November 2, 1918) says that he is not aware of any published evidence that the clothes louse may produce an illness due to a toxin or toxins introduced by its bite. After one of his associates had been feeding successive generations of lice on her arm for a number of months, with no disturbance other than slight local irritation, which was easily controlled by the prompt application of alcohol followed by equal parts of glycerin and ammonia, the more intensive feeding of the insects—twice daily instead of only once—was soon followed by a feeling of being generally tired and a nearly continuous dull headache at the base of the skull. Later, chills and fever with symptoms very like grippé developed, the fever lasting for three days. At this time a rash like that of German measles appeared and many small blisters came out on the arm where the lice were fed. Moore then began to feed from 700 to 800 lice on his own arms twice daily, and almost immediately developed symptoms quite similar to those described as having been suffered by his associate. After recovery from this attack the feeding of large numbers of the lice was twice repeated by Moore with the same train of symptoms developing each time. The feeding of small numbers on several persons had previously not given rise to any symptoms. The observations suggested that when the clothes louse was present in large numbers it might produce an illness due to toxins introduced by its bite. Symptoms encountered in cases of trench fever were so like those described here that it seemed possible they might have been due to louse poison rather than to the trench fever.

# Proceedings of National and Local Societies

## AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Fortieth Annual Meeting Held in Atlantic City,  
N. J., May 27-29, 1918.*

The President, Dr. THOMAS H. HALSTED, of Syracuse,  
in the Chair.

*(Continued from page 1059.)*

**Serious Damage to Nose and Accessory Sinuses Operated upon Externally.**—Dr. JOHN R. WINSLOW, of Baltimore, reported a number of cases of operative cure after serious injury to the face:

1. Extensive traumatism of the nose, face, and frontal sinuses due to a fall from a height; operative cure with exceptional result.

2. Frontal empyema with extensive bone necrosis and external fistula, operated upon externally in several sittings; cure of condition with excellent cosmetic result. Several interesting points were presented by this case: a. Lack of intranasal pathological conditions. A virulent infection (erysipelas?) seemed to have attacked the frontal sinus and uppermost portion of the bony framework of the nose without involvement of other nasal sinuses. b. The posterior (cerebral) sinus wall was denuded, but was hard and seemed devitalized rather than necrotic. It took a long time for it to regenerate (twenty-six months), but his own judgment and the advice of colleagues was that it was better to delay than to assume the risk of removal. c. Marked anesthesia of the operative field, the packing being for a long time painless, doubtless due to the devitalized bone. d. Excellent cosmetic results.

3. Fracture of the external bony framework of the nose and the nasal septum by the kick of a mule, causing depression of the tip of the nose and great disfiguration. Restoration of appearance and function by operation.

4. Fracture of the right nasal bone and nasal process and a portion of the orbital process, by an iron rod; formation of sequestra and abscess, with secondary infection of the right antrum. Operation and cure, with good cosmetic result. Photographs showing their excellent results were presented.

Doctor WINSLOW said he would like to hear from Doctor Coakley or some of the other experts, as to the proper plan of treatment under such conditions as he had described, where there was necrosis of the cerebral wall of the frontal sinus. He wanted to hear their opinions as to how long one was justified in waiting for nature and wondered whether he had waited too long.

Dr. CORNELIUS COAKLEY, of New York, said that when he had operated on the frontal sinus he had never found actual necrosis of the wall unless there had been syphilis. He had found that in patients who had been operated upon previously, there had been a temporary cessation of the discharge with fistula formation. On opening up the frontal sinus he had frequently found areas of very marked softening in the bone, such as one finds in a mastoid operation at the borders, in back of the large cells, and on approaching the cells just between these and the cancel-

lous bone. He thought the bone should be regarded as infected bone, as in the mastoid region, and felt that neglect to clean out this diseased bone and get down to healthy bone, whether in the anterior wall or anywhere else, was not good surgery. One should get to good bone, even if one had to expose the dura in the frontal region. In one instance he found such a degree of softening of the posterior wall that he felt sure that he should find exposure of the dura and epidural abscess. Fortunately, however, that was not the case. He had gone through an area of three eighths of an inch of vascular soft bone before coming to what must have been a very thin area of good bone at the posterior wall of the frontal sinus. The soft bone was all cleared out. A drain was placed in the wound for a short time, leading to the nose. The wound was sewed up, as in the ordinary Killian operation, and the patient made—temporarily at least—a good recovery. The operation had been performed three months ago, and up to the present time there had been no recurrence, although there had been two or three before that. Soft or diseased bone should be treated as are the same kind of bone in the mastoid or any other region.

Dr. LEWIS A. COFFIN, of New York, said he was less afraid of a curette than of leaving diseased bone in a patient. He doubted that the posterior wall, necrotic and perforated, was an invariable sign of syphilis. He had seen this condition in comparatively few cases. One case was in a child of six years who had healthy parents; in another patient, previously seen, the anterior wall was so soft that Doctor Coffin had removed it with a spoon curette and did not see why the posterior wall should not be affected by the same pathological process as the anterior wall. A similar case was that of a young woman who was riding in an automobile when the shaft of a wagon to which a horse was attached entered the antrum through the middle of her cheek, fracturing the floor of the orbit and the anterosal wall. She had been under treatment for some time when seen by Doctor Coffin. Removing a pad of gauze from her face a stream of pus poured from the open wound in her cheek. An incision was made over the eyebrow down over the ridge of the nose and the centre of the skin covering the columar cartilage and dividing the upper lip in the median line. Turning the flap well back gave a good exposure of all the diseased parts, which were thoroughly cleared out. In this case there was practically no scarring except where the shaft of the wagon pierced the cheek.

Dr. GEORGE L. RICHARDS, of Fall River, Mass., expressed the opinion that the ability of the face to heal was remarkable. Some years ago a patient was riding a bicycle down a hillside when the chain broke, and he was pitched suddenly forward in such a way that he tore off the front of the face from the nose to the chin, and in addition got the dirt of the street into his wounds. A number of operations were necessary, but in the end a fairly good looking face resulted.



Dr. T. PASSMORE BERENS, of New York, thought this was the same condition that was found in the mastoid of bone that is not syphilitic, but is simply an unusually firm hard bone. A number of years ago he had mentioned the mild pressure that was needed in these cases, such as would come from a pince nez with long horns pressing the nasal bones together. It seemed to Doctor Berens that if a slight constant pressure, such as one gets from a pince nez, had been exerted, that broadening of the nose would have been overcome. This was mentioned to accentuate the benefit of constant mild pressure.

Dr. BRYSON DELAVAN, of New York, said that in suppurative conditions of the nasal sinuses if any question of the existence of syphilis arose, operative work should be undertaken with caution, since under antisyphilitic treatment many cases had been cured or had satisfactorily improved without operative interference. Many cases could be quoted to prove this. It was his opinion that where there was a positive Wassermann reaction it was best to wait, if possible, until a course of specific treatment had either cured the sinus disease or made the necessity for operation clear.

Dr. JOHN R. WINSLOW, in closing the discussion, said that he had evidently been misunderstood, and did not want to leave any one under the impression that he had left soft bone and closed it in the wound. It was not soft, but hard as steel, and he had curetted it three times as much as he thought was safe. He had acted not only on his own best judgment, but also on the advice of several friends.

#### **Carpet Tack in the Right Bronchial Tube for Two Years with No Pathological Symptoms.—**

Dr. DUNBAR ROY, of Atlanta, described the case of a young woman, aged twenty-eight years. X ray showed the tack in the right bronchus between the seventh and eighth ribs. Its removal was at once attempted by upper bronchoscopy and failed. Tracheotomy was performed the next day; the bronchoscope passed, but he was unable to grasp and dislodge the tack, and the tracheotomy wound was allowed to heal. Five months later a bronchoscope was easily introduced by upper bronchoscopy by Dr. R. C. Lynch. The tube was too short and the foreign body could not be removed. The patient had been entirely well since then, now two years, increasing in weight. X ray photographs showed the tack still in situ.

Dr. T. H. HALSTED reported, in connection with Doctor Roy's case the recent removal of a foreign body from the right bronchus, in a girl of ten years. This child, while playing, inhaled a metal clip, shaped somewhat like a fish hook. There was an immediate attack of dyspnea. A physician saw her within ten minutes, at which time all symptoms had disappeared, beyond the pricking sensation. He assured her that she must either have expectorated or swallowed it. She had no trouble that night, but the next morning, the sticking sensation referred to the neck continuing, she consulted another physician, Doctor Swift, who had an x ray made which disclosed a foreign body in the right bronchus. Patient was referred to Doctor Halsted for operation. Under general anesthesia he soon located the

metallic object by upper bronchoscopy and made repeated but unsuccessful efforts at removal. The x ray failed to tell whether the sharp point was directed up or down, and it could not be determined by direct inspection. The next morning stereoscopic plates were made, and showed the foreign body to be in the right bronchus, the sharp point upward. Under ether, the trachea was opened, and under lower bronchoscopy the foreign body was, after two hours' work, removed. It was in the second division of the bronchus, firmly wedged, but by manipulation it was finally removed by a long alligator forceps with but little damage to the bronchioles. The foreign body was a flexible steel clip used in clothing stores for holding cardboard price marks, shaped like a sharply bent fish hook, the shaft being three fourths of an inch long and the pin portion half an inch. The tracheal wound was at once closed; the child made an uneventful recovery, leaving the hospital in eight days. Doctor Halsted considered it the most difficult case of its kind he had met with.

**Atrophic Rhinitis and Ozena: With Report of Case Referred to Last Year.—**Dr. LEWIS A. COFFIN, of New York, said he believed that he had been the first to suggest that the foul odor which so frequently accompanied atrophic rhinitis and constituted the disease known as ozena had its origin and was caused by a chronically diseased and poorly drained antrum. Since making this statement others had reported to him that they had treated several cases in this manner with the same excellent results. In one of his cases there had been no improvement whatever, although operations had been performed on both antra. He was unable to account for the failure in this instance.

Dr. CORNELIUS G. COAKLEY thought that all the odor should not be attributed to disease of the maxillary sinus. If the patient had pansinitis he did not see why it should have been cured by washing out the maxillary and leaving the same pathological process in the ethmoid and frontal. Of course there would not be much odor from them, but it was his opinion that they should be cleared up as well as the maxillary, and he suggested that as the cause of the continuation of the odor.

Dr. GEORGE L. RICHARDS, of Fall River, said that he had derived excellent results from the use of chlorinated oil in the type of case that Doctor Coffin had been speaking of. It had been purely empirical. He had used it thinking that it would do some good to place it on the surface and hold it there. It was done with the swab or spray, and not after opening the antrum. Doctor Richards had not been converted to the belief that all or even the majority of cases of atrophic rhinitis were due to antrum disease.

Doctor HALSTED said that after seeing Doctor Coffin's cases last year, he had treated a case with the foulest odor he had ever encountered. He performed a double antrum (simple Mikulicz) operation on the patient. The odor was simply unbearable and unendurable. Nothing further was done. The saline douche that she was using was kept up. He did not see her after she went home, for a

year, at which time the odor had entirely disappeared. There was no odor from the nose whatever, and no other treatment had been carried out during this time, with the exception of the washing out. In three of five other cases there was complete cessation of all odor. It was one of the most satisfactory operations of any that he had done. In the other two of these five operations the odor was greatly lessened. There was a marked diminution in the amount of crusting in the nose. Doctor Halsted thought the odor came more from the gas from the antral secretion than from the nasal scabs, though doubtless some came also from the other sinuses, the frontal, ethmoid, and sphenoid, when they were involved, and their treatment by ventilation through operation would be required in such cases.

Dr. GREENFIELD SLUDER, of St. Louis, called attention to the fact that if Doctor Coffin had established the opening of the antrum for the cure of ozena and the stench of an atrophic rhinitis, it seemed to him that it was one of the greatest advances presented in a long time. He wanted to repeat the following question, which he asked last year, but which was not answered, "What happens in a case of atrophic rhinitis when the olfactory fissure is crusted all around?" Although the antrum was open, the atrophic process was as active and destructive there as elsewhere.

Dr. HANAU W. LOEB, of St. Louis, said that it was obvious that if there was any process of this nature in the antrum, by securing good drainage there would naturally be improvement in the odor, just as he had found that by clearing out the ethmoids a particular odor that may accompany the process will improve or disappear. He felt that Doctor Coffin's contribution in this respect constituted simply calling attention to the fact that the antrum, being the largest cavity connected with the nose and most intimately associated with its function, the greatest opportunity for the development of these crusts was offered by it whenever it was subjected to the action of the putrefactive bacteria. He did not see why it should be affected in all the cases, or even in more than a fair number of the cases, because, according to his information and observation, the antrum was not more often affected than other sinuses.

Dr. HENRY L. SWAIN, of New Haven, expressed the opinion that if people would take pains to cleanse the nose properly most of them would remain offensive to their immediate environment. That would not be the case if the odor depended entirely on the condition of the interior of the antrum. Although particularly friendly to Doctor Coffin's suggestion, he was sure that all cases were not going to be cured by opening the antrum, because all cases were not due to that condition. In one antrum into which he could look pretty well through a large natural opening between the antrum and the nose, where there was an atrophic process in the nose it could be seen in the antrum that the mucous membrane lining had the same process going on in it as in the nose, that is, there were masses of atrophic material lining the entire cavity of the antrum. If that could exist once, it

could many times, and would explain why in some of these cases in which, as Doctor Halsted had discovered, there was no darkness under transillumination, the same process would be going on as in the nose, which could be relieved by opening the sinus, and only by doing so.

Dr. T. HALSTED thought the improvement as evidenced by his five cases was remarkable. He felt that, in a general way, there was a diminution in the amount of crusting, and did not believe that all the odor came from the crusting, but that it would be proved that it came from the maxillary sinus as well as the ethmoid and frontal.

Doctor COFFIN, in closing this discussion, said that Doctor Sluder had given a proper definition of ozena as the odor accompanying atrophic rhinitis, but he referred to seeing scabs about the olfactory fissure, and did not state that there was any odor or ozena from these particular scabs. The subject under discussion was not scabs but an odor known as ozena. He said that the antrum was practically the only sinus he had ever opened from which a foul odor was emitted. This occurred frequently and was due to the anatomic structure of the antrum. Drainage was at the top, while in most other sinuses drainage was from the bottom. He recalled the case of a young lady who had extreme atrophy, no inferior or middle turbinates in sight, nose much bescabbed; who, when she first came, emitted a foul and offensive odor. Her antra having been opened and cleansed, the odor (ozena) had entirely disappeared, while undoubted disease of many of the other sinuses persisted, as does scabbing, although not to the same degree as before the treatment of the antra. She was one of the patients seen by Doctor Halsted. Another case was that of a young boy about twelve years of age. Apparently he had not only marked disease of the antrum of one side, but marked ethmoiditis as well—nose full of crusts and ozena. Doctor Coffin had opened and treated the antrum, purposely leaving the ethmoids untouched. The odor disappeared.

As to the value of the x ray in diagnosis, it was a help, by no means infallible. Personally, he cared little for another's reading of the negative. The points which he wished to especially bring out were the following: First, that the odor of ozena frequently was due to disease of the antrum, and was relieved by the treatment of the antrum. Second, he had today reported a case not so relieved.

He hoped that the treatment would be tried by others, as Doctor Halsted had tried it, and that it would be borne in mind that 100 per cent. cures were not to be expected.

**Three Unusual Nasal (Sphenopalatine) Ganglion Cases.**—Dr. GREENFIELD SLUDER described the usual neuralgic picture in the following way: Pain in and about the eyes and the upper jaw, the teeth, extending backward about the temple under the zygoma into the ear, causing earache; and then backward into the mastoid, and severest usually at a point two inches back of the mastoid, extending into the occiput, the neck, the shoulder into the shoulder blade, and sometimes the axilla and breast, and frequently down into the arm, forearm, hand, and even to the finger tips. Added to this symp-



tom complex, a sneezing and watery secretion was frequently found, more marked probably in the morning, frequently extending through the day; a red external nose, with tearing eyes, photophobia, and a sense of discomfort in the eyes difficult for the patient to describe. Occasionally, however, unusual features were added to this clinical complex, for which he could find no explanation.

The first case was relieved of the dizziness and the headache after cocaineization of the ganglion, the headaches returning in six hours. The patient passed from further observation. In the second case headache ceased, but as an effect of cocaineization the right eyelid drooped very perceptibly to obscure probably half of the blepharospasm, and the pupil contracted to one half of its fellow of the opposite side. The third case was one of a right sided blepharospasm of great severity, and was a post-ethmoid sphenoid suppuration with polyps on the right side. Cocaineization of the right nasal ganglion relieved the blepharospasm for a period of three hours, and injection of the same ganglion was followed by relief of the spasm for three to six hours. Operating on the ethmoids and sphenoids did not relieve the spasm. The left side was then operated upon without relieving the spasm, although the right eyelid opened after injection of the left ganglion.

Dr. EMIL MAYER of New York, thought that we were greatly indebted to Doctor Sluder for calling attention to these nasal ganglion cases and what might be done for them. He recalled the case of a young woman whom he had successfully treated for dysmenorrhea by intranasal treatment. When seen later, she was suffering with headache, and Doctor Mayer cocaineized the nasal ganglion on the side of the headache. An hour afterward her headache had ceased. This patient remained well for some months and then had a recurrence, at which time an application was made to the ganglion on that side, and it has remained well ever since. Though it was difficult at present to explain why such wonderful results in dysmenorrhea cases could be obtained by a treatment which must perforce be called empiric, it was hoped that some explanation would soon be found.

Doctor SWAIN said that he had tried to cocaineize in the ganglion neuralgic cases, and wanted to confirm what Doctor Sluder had observed on the question of dizziness, which he also had been unable to explain. One of the patients whom he had cocaineized for headache also suffered from vertigo, and it was relieved entirely during the period of her cessation from pain, which was only two or three weeks. He made another application of adrenalin and cocaine in combination, which relieved her for so long that she did not think it necessary to have any further treatment of that kind; that was a year ago. Doctor Swain had not seen her since, and did not know whether she was still well or not.

Regarding the question of pain in these sinus cases, Doctor Swain said that he had a number of cases of severe pain with disease in which he had an x ray picture taken to learn the exact state of things. In five instances the neuralgia had ceased immediately after taking the picture, so that there must have been something in the exposure to the x ray

that broke up the nerve complex in some way and caused the pain to stop. Previously he had been treating the cases without seeming relief. This occurred in several instances in persons whom he saw every day, the pain ceasing thereafter entirely. He wondered whether this fact could be of some therapeutic value. Should patients with this type of neuralgia be exposed to the x ray? He did not think that the occurrence was accidental in all five cases in which there was no sinus disease but neuralgia, and in which, following the x ray exposure, the pain disappeared entirely.

Doctor SLUDER thought that the case Doctor Mayer had described was one of those in which the ganglion lay particularly close to the surface. That sometimes happened, and such a case might be exploded into the most violent lower half headache by an ordinary coryza. Cocaineization, in that case, was curative, not merely palliative.

**Cyst of the Thyroglossal Duct. A Report of Two Cases.**—Dr. OTTO T. FREER, of Chicago, described the anatomic origin of these cysts and reported the following cases:

CASE I.—The patient, male, began to have difficulty in swallowing, and at the same time noticed a swelling in the region of the thyrohyoid space. When first seen, on April 19, 1915, the swelling had increased and there was great difficulty in swallowing. Examination showed a normal nose, pharynx, larynx, and esophagus. In the thyrohyoid space a cyst was felt seemingly lying underneath the sternohyoid muscles. It was of walnut size and could be felt to interfere with the ascent of the thyroid cartilage to the hyoid bone when the patient swallowed—that is, the cyst became pinched between the two structures. Operation on June 17, 1915. After dissecting off the superficial fascia and platysma muscle from a vertical median incision, a strong, tendinous layer of fascia was exposed that was attached to the lower border of the hyoid bone above and to the border of the thyroid notch below, so firmly binding down the cyst between itself in front, the median thyrohyoid ligament behind, and the thyrohyoid membrane laterally, that the cyst was unable to escape from the compartment in which it was confined when pinched during swallowing. When exposed by removing the fascia described, the wall of the semitransparent cyst was found to be so frail that it could not be seized lest it tear. This made the dissection tedious, as only the tissue surrounding the cyst could be held with tissue forceps, the cyst being held aside with dull retractors. The cyst was removed unhurt from its bed and was found to end above in a fibrous pedicle that lay against the posterior surface of the body of the hyoid bone and could be followed as high up as its superior border at the level of the hyoepiglottic ligament. Removal of the cyst exposed the median thyrohyoid ligament to view, this ligament forming the posterior wall of the compartment in which the cyst had been confined. Microscopic section of a part of the cyst wall showed it to be composed of fibrous tissue lined with a layer of leucocytes intermingled with numerous, evenly distributed giant cells. There was no epithelium. The

cyst contained a clear fluid. The removal of the cyst enabled the patient to swallow normally.

CASE II.—The second patient was a woman of thirty-two years, first seen on November 8, 1916. She had a swelling over the larynx since her tenth year. Iodine was injected into this swelling during the summer, and since this was done the swelling had gradually increased in size. Examination showed a spindle shaped cystic tumor of the size of a walnut in the prelaryngeal region. The upper pole of the cyst could be felt to dive under the centre of the body of the hyoid bone; its lower pole dwindled to a cord that could be felt to reach the region of the thyroid isthmus. Operation under cocaine on November 17, 1916. It took two hours to dissect out the cyst, as only the most delicate handling could prevent its rupture, and inflammatory changes caused by the iodine injection had made the cyst wall grow to its surroundings, so that the thyrohyoid and sternohyoid muscles were firmly joined to it in front. The upper end of the cyst ended in a cord that extended upward under the body of the hyoid bone to its upper border, where it was lost in the hyoepiglottic ligament. Below, the cyst ended in a similar cord that joined the isthmus of the thyroid gland. When freed from its bed just before removal, the cyst ruptured and thick pus escaped, a cold abscess probably having been caused by the iodine injection. After the cyst was removed, the thyroid and cricoid cartilages, upon which it had lain, were bared to view.

In the first case the possibility of the cyst being derived from a subhyoid bursa might come into question. However, the pedicle which formed a cord passing up under the body of the hyoid bone in the location of the thyroglossal duct showed the thyroid origin of the cyst. In the second case the entire thyroglossal duct, expanded to a cyst in its middle, was present to prove the correctness of the diagnosis.

*(To be continued.)*

## PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Joint Meeting with the Babies' Welfare Association.*

*Wednesday, November 13, 1918.*

The President, Dr. JOHN W. WEST, in the Chair.

WHAT THE AMERICAN RED CROSS IS DOING FOR THE FRENCH CHILDREN.

Dr. J. H. MASON KNOX, of Baltimore, assistant director, Children's Bureau, American Red Cross in France, said that the situation in France was critical. While the death rate was not enormously high, in one or two provinces being under ten per cent., the birth rate averaged something less than fifteen per thousand. The birth rate had fallen slowly before the war, and with the withdrawal of so many of the men for military service, and the women for munition work the rapidly falling birth rate was a natural result. The problem in France, therefore, was twofold, increase of the birth rate and decrease of infant mortality. The low birth rate of France was probably due to the inborn de-

sire of the French people to live comfortably. The laws of France requiring equal inheritance among children might be a factor; for example, the farm might be large enough for but one. Since families were small, it was very important to save a French baby. The work of the Children's Bureau in France was divided into two departments; 1, that made up of remedial agencies for meeting present distressing circumstances; 2, that dealing with constructive work. In the first department were the things done for the babies of the soldiers, the city population, and the children of the refugee families. In a small village near the German front a large number of children had been subjected to gas attacks. These, of course, were too small to wear masks. They were placed in large military barracks and Doctor Lucas, of San Francisco, was asked to take the medical care of them. For these 500 or more children a hospital was provided, at first of thirty beds and afterwards of fifty and 100 beds. There had been developed also a chain of rural dispensaries illustrating to the poor people of the small villages the method of caring for children. Small hospitals were established, and automobile dispensaries with the personnel of a doctor, a nurse or one or two nurses' aids made two visits a week in each town. In case of need the nurse or nurses' aid would be left in a village. A clinic was held twice a week. Two or four automobiles covered the whole area of country of thirty or forty miles in the vicinity of Toul and Nancy. A number of tuberculosis camps were also established.

Doctor Park, of the Johns' Hopkins Hospital, opened a clinic for children in Belgium. These children with their splendid spirit gave one much encouragement for the future of Belgium. The Refugee Bureau cooperated with the French officials in finding homes for the people and supplying them with furniture and other needed articles. Every child under twelve years of age coming through with the convoys of refugees was examined to detect infectious disease, or other condition which might be a menace. Forty per cent. of the convoys were children. Twenty miles from Lyons is a large chateau with 200 acres of ground where convalescent patients were sent by the Children's Bureau, where they were kept until they were able to go on to their destination. The German consulate was taken over by the Children's Bureau and made into a hospital. Two other buildings in the vicinity of Lyons were converted into hospitals for the children.

Paris is the centre of things. Here the Children's Bureau opened twenty dispensaries, but always after the most careful examination to see that they did not conflict with French organizations, and always with the support and encouragement of the French physicians. The nose and throat work was exceedingly important in France. The complete removal of tonsils was not done as often as some thought it ought to have been done. A small private hospital was secured for nose and throat work and here perhaps a hundred cases were treated each week. It was found that many of the children needed food and not drugs, that the principal meal of the day was given at the school and that this meal



had to be largely curtailed. The members of the Children's Bureau supplemented the food so that the children might have the same as before the war. In one section sweetened bread and chocolate were given on behalf of the children of America to the children of France, and they were told that the children of America were sharing their bread with the children of France. The Children's Bureau also took care of the orphans supported by the American soldiers; the bureau supplied the orphans and the care, while the soldiers supplied the money.

There was a great opportunity for constructive work in France. One form of educational propaganda was carried out by the use of automobiles equipped to demonstrate infant welfare and tuberculosis work. Under the Rockefeller Foundation a large amount of work was being done in the matter of tuberculosis. As a result of bringing together various agencies there was always a personnel ready for follow up work after interest was aroused. Crowds of people attended the exhibits. Trained nurses were greatly needed, and the bureau believed that the training of French nurses was one of the most important phases of its constructive work. Intensive work designed to reach every baby had been organized under the French officials. Infant welfare work is the same the world over. It should be taught in our schools, but until that time it must be taught in the homes, and the nurse is the instrumentality by which this shall be done.

## Book Reviews.

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

*Mammalian Dentition* By T. WINGATE TODD, M. D., Ch. B., F. R. C. S., Eng., Captain, Canadian Army Medical Corps. Illustrated, St. Louis: C. V. Mosby Company, 1918. Pp. 280. (Price, \$3.)

This volume presents a most complete and satisfactory study of mammalian dentition. More than 100 pages are devoted to a consideration of the environment, evolution, and dentition of the lower vertebrates; the ancestry of the mammalia; the relation between life habits and dentition; and a chapter each on the insectivora and the primates. There are also several chapters given to the study in evolution of herbivorous types, one devoted to the edentata showing retrogression in evolution, and one chapter on the carnivora, illustrating evolutionary divergence. The chapters dealing with human dentition including the deciduous, with their anomalies, are of great interest, dealing with the subject from a paleontological viewpoint. In studying other families of the primates, the author traces the line of evolution progressively from some early or primitive form. In the case of man this has been found to be impossible since no human or pre-human type has been discovered which can, with certainty, be assigned to a period more remote than the early glacial epoch. The earliest authentic example of the human race, known as the Heidelberg man, is known only from the mandible. A detailed

description is given of this and other early examples of dentition. In the chapter on anomalies of human dentition the author deprecates the fact that dentists have not made a more careful investigation into the causes of variations in number, position, and form of the human teeth, as too often the valuable data to be obtained only by him are lost or destroyed in consequence of the tendency to consider these anomalies merely as freaks. The statement is made that variation in position of normal teeth are always of pathological origin. Unfortunately nothing is said in support of this statement, which, if true, is of great practical significance and especially so to the orthodontist. Chapter XX is devoted to a study of the roots of teeth, which are said to be less subject to environmental changes than are the crowns, though even here changes are noted, the bicuspid in the anthropoid having three roots, instead of one, as in man. The relative shortness of the roots in human teeth is also the exact opposite of that found in the orangoutang. The volume closes with an interesting chapter on the evolution of types, in which the author concludes that modifications in dentition are in part the expression of hereditary constitutional factors, concerning which nothing is at present known.

The volume contains 100 illustrations and a complete and very satisfactory index. For the student of mammalian dentition the book can be highly recommended; for the busy practitioner it could have been made more valuable by a brief summary at the end of each chapter.

## Births, Marriages, and Deaths.

### Died.

ADAMS.—In Rochester, N. Y., on Monday, December 9th, Dr. Reuben A. Adams; aged seventy-seven years.

BEYER.—In Washington, D. C., on Sunday, December 6th, Dr. Henry G. Beyer, Medical Director, U. S. N., retired, aged sixty-eight years.

BOWEN.—In Springfield, Mass., on Thursday, December 5th, Dr. David D. Bowen, aged eighty years.

BRUMM.—In Kansas City, Mo., on Tuesday, December 3d, Dr. William Brumm, aged fifty-three years.

CARR.—In New York, N. Y., on Saturday, December 7th, Dr. David Cole Carr, aged seventy-four years.

CASE.—In Hamilton, Canada, on Thursday, December 5th, Dr. Alfred John Case, aged eighty-seven years.

FITCH.—In Crawfordsville, Ind., on Friday, December 6th, Dr. Alexander P. Fitch, aged seventy years.

FITZGIBBON.—In Racine, Wis., on Wednesday, December 4th, Dr. James Fitzgibbon, aged fifty-four years.

FORD.—In Loomis, N. Y., on Sunday, December 1st, Dr. James S. Ford, aged thirty-three years.

HIMES.—In Baltimore, Md., on Friday, December 6th, Dr. Charles Francis Himes, of Carlisle, Pa., aged eighty-one years.

KELLY.—In Manayunk, Pa., on Friday, December 6th, Dr. Joseph Vincent Kelly, aged seventy-four years.

MILLER.—In Denver, Colo., on Saturday, November 30th, Dr. William A. Miller, aged seventy-one years.

NOLAN.—In France, in November, 1918, Dr. Martin Francis Nolan, Lieutenant, Medical Corps, U. S. A., of North Tonawanda, N. Y., aged thirty-four years.

PERKINS.—In Cliftondale, Mass., on Friday, December 6th, Dr. Thomas T. Perkins, aged forty-four years.

WALLACE.—In New York, N. Y., on Monday, December 9th, Dr. Guy Halifax Wallace, aged thirty-two years.

WEYANT.—In Pleasantville, N. Y., on Thursday, December 12th, Dr. Charles C. Weyant.

# New York Medical Journal

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## Original Communications

### PREVENTIVE MEDICINE AND THE RE-CONSTRUCTION OF THE RACE.\*

BY FREDERICK PETERSON, M. D.,  
New York.

I take particular pleasure in coming before this distinguished body of medical men in Buffalo, having once lived and practised here. In looking over the list of your presidents I note that most of them were old and dear friends of mine. I used to read medical papers, such as they were, to the patient, long suffering profession in Buffalo some years before this academy was founded. Indeed, it is thirty-five years since I left you, and I feel it is a duty to make some report to you, to say something of interest, even if it is only a record of more or less failure and a somewhat misspent life. There is no harm in being personal among my oldest friends. If one cannot be a shining example, one can at least be a glaring one.

You see I have spent most of these thirty-five years in repairs, relief, and consolation. Repairs, relief, and consolation are very good in their way, very good if well done, but I have awakened to the fact that these things are not enough. The awakening should have come long ago—before the war which has shaken up the general conscience and made a test of our efficiency in all fields of human enterprise and conduct.

In the old days we had a good many abstract ideas in regard to preventive medicine, we had some very particular ones in relation to communicable diseases, to be sure, but outside of these our ideas were abstract, divorced from actual practice where they concerned neurotic and inferior children, the feeble-minded, the epileptic, the insane, and such questions as heredity, ill assorted marriage, alcoholism, venereal diseases, pauperism, and crime. Well, war came and in the first selective draft of young men between twenty-one and thirty-one years of age, of over 2,500,000 examined, thirty-eight per cent. were rejected for physical and mental defects. Nearly a million men rejected in the best and healthiest period of their lives!

Such figures as these have led many to inquire what the matter is with the young men who have just come from the schools in this condition. They were the school children of yesterday. Is there anything wrong with the training in the schools? The

answer is found on investigation of the physical condition of the school children of the present time. Very careful studies have been made for some years past, and the best authorities declare that seventy-five per cent. of our present 22,000,000 school children show physical defects, most of them preventable and remediable, such as heart and lung diseases, disorders of sight and hearing, diseased adenoids and tonsils, flat feet, weak spines, imperfect teeth and malnutrition, and among them one per cent. of mental defect. The children in the country schools are worse off than in city schools. There is little or no adequate supervision of the bodies of children in the schools and no education in health worthy of mention.

Now if we are to have a strong healthy race it is necessary to begin with the children at once. Doctor Holmes once said the education of a child should begin a hundred years before it was born. We should begin now the education physical and mental of the race that is to be. Children are our greatest national asset! They are the nation that is to be. It is twenty-four centuries since a great philosopher (Mencius) said, "The root of the empire is in the State. The root of the State is in the family. The root of the family is in the individual. As for the people—encourage them; lead them on; rectify them; straighten them; help them; give them wings!"

We have been unconsciously led to look upon these human assets as negligible, compared with property. When human beings were slaves they were property and as such as carefully fostered as other live stock. You may be sure there were plenty of good veterinarians to look after them. But as freemen they are no longer property. As far as the law can fix a value it has been standardized at between one and two thousand dollars apiece in various States. Many domestic animals have commanded a larger figure as property. Most of our laws are made by lawyers. Their interests lie wholly in property and their profession leads them out of touch with humanity except in the matter of quarrels, crimes, and divorces. They become our statesmen and lawgivers, but too often without the broad vision that statesmen should have. A true statesman, one like Doctor Clemenceau, for instance, knows that children are the State's best property, outranking lands, produce, mines, water power, live stock, forests, railways. Billions of dollars are spent upon these purely sec-

\*Address delivered before the Buffalo Academy of Medicine, October 9, 1918.



ondary interests, but it is a hard road in our legislature to do away with the ruin of children in factories and mines. It is almost impossible to get two or three cent lunches established in schools to be paid for by the children themselves. It is very difficult to secure the smallest health measure demanded for the children's welfare.

It is not easy to get official figures as to expenditures by the federal government and the various States in the relation to matters which would be of special interest here, but the Public Education Association of Buffalo has kindly furnished me the following statistics which in themselves speak volumes:

**TOTAL EXPENDITURES BY THE FEDERAL GOVERNMENT  
FOR THE FOUR YEARS, 1914-1917.**

Plant industry (experiments).....	\$8,301,903.27
Animal industry (experiments).....	7,169,604.40
Foot and mouth disease.....	4,436,640.86
Hog cholera and durine (investigation).....	522,273.07
Children's bureau.....	496,413.05

We might add here one more item out of dozens:  
Improving rivers .....\$81,331,454.94

This last item is usually part of what is called the annual "pork barrel," immense sums spent foolishly each year on post offices in small towns and unnavigable creeks, etc., as sops to our lawgivers' constituents.

**PREPOTENCE OF INFERIORITY.**

We are sending the best we have to the battlefields of France and Flanders; we are retaining the thirty-eight per cent. of imperfect citizens to leaven the race of tomorrow. We are doing as far as I know nothing remedial for these thirty-eight per cent. of rejected boys already grown and nothing for the 16,500,000 defective school children. There is such a thing as the prepotence of inferiority. Perhaps this prepotence of inferiority has been going on for centuries in many of the world states. Among autocracies we have a record of insane and imbecile kings and emperors. It has been possible in a democracy like ours for a moron to be elected as mayor of a city and an imbecile as governor of a great State; and it may easily be imagined that the smaller offices in our legislatures, county boards, and city councils, overflow with the inferior and the unfit. Thus we get perhaps what we deserve in the way of government, laws, and customs.

Let us come back for a moment to the grown up people. You have heard of the Life Extension Institute. They examined a large number of business men of the average age of thirty years, connected with banks and commercial houses, a group characterized as orderly, temperate, and well nourished. A preferred class as regards health insurance. The results were as follows: Three in 100 were normal, eight in 100 were seriously impaired, thirty-eight in 100 had minor remediable ailments, fifty-one in 100 had semiserious ailments in the curable stage. Over ninety per cent. of those ill with minor and semiserious disorders did not know they were ill.

Thinking of all these things has led me to feel that I have not done my whole duty in keeping busy all these years at repairs, relief, and consolation. If one may be allowed the paradox, the prac-

itioner should treat his patients before they come to him as patients. There is something to be said in favor of the reputed Chinese method of practising medicine, the family paying the doctor as long as they are well. If any one gets sick the doctor pays him. If the patient dies a lantern is hung before the doctor's door. This system has its merits in view of the facts. Now the question arises how are we to get over the matter of health to every man, woman, and child in the country? It seems to me a very long road to try to accomplish this by occasional health lectures and by occasional health exhibits at fairs and conferences. The matter is too pressing, too imminent for sporadic health meetings and our usual methods of propaganda. The people are awake now to reform and progress, ready to change their wornout old ideas for new and better ones. The time is ripe for this revolution and I think it can be brought about through the doctors and through the children in the schools.

Suppose every doctor should confess to himself that he had left preventive medicine too much to the health department of his community and been too well satisfied with his work in, let us say, the fire department. He has rushed in helpfully to put out the fires of fever when they were well started. But the fires should never have been allowed to start and gain headway. Let him say to all his friends and to the relatives of his patients: Every adult citizen of the State, man or woman, has three patriotic duties in his country's service in the matter of health. These are: 1, To take care of his own health by periodical examinations; 2, to insist on proper health conditions in his own home, in the schools which his children attend and in the places where he works; 3, to safeguard and cultivate the health of his children. The doctor should explain the rudiments of personal hygiene, how the delicate machinery of the body should have at least as much attention as a man's watch, sewing machine, typewriter, or automobile; then the rudiments of public health in the matter of the contagious diseases, which mean little more than the destruction of germs that come from the mouth and intestines of the sick and get into the air, food, milk, and water supply; and thirdly, the health of the children. He could intimate too that damages might be collected from a community whose water supply had been the cause of typhoid fever in a family! Recently in one of the largest Middle West cities there were 4,000 cases of smallpox due to the fact that there was no compulsory vaccination because the wife of the mayor was a Christian scientist! Four thousand suits for damages against the city might well succeed in a case like this where the city government is responsible for the outbreak and where we have a disease whose absolute prevention is the chief triumph of medicine in the history of communicable diseases. The filing of four thousand suits for damages would rouse the community.

**CHILD HEALTH PROGRAM.**

Now we come to the child health program. We can regenerate the nation through the children in the schools, and by ten minutes daily of proper

health education introduced into the curriculum of the schools, we can carry over the whole idea of good health as patriotic service not only to the children in the schools, but through them to the parents, and to the younger children of preschool age. You may be interested, possibly amused or troubled, by a conversation that I had the other day in Washington with—well, I will not mention his name, but one of the supreme federal public health officers. I said: "The country seems alive to betterment in health and it is a wonderful opportunity to launch a national health program." He was enthusiastic and said, "It certainly is and we are going to do a big concrete thing. See what we have done for our armies in the way of typhoid prevention. Why should we not do that for the whole civic population?" I asked what he meant by that, and he answered, "We are going to get an appropriation to inoculate 25,000,000 citizens with antityphoid serum." I was aghast, and said: "Do you mean that in New York, for instance, where we have annually eight deaths in 100,000 from typhoid that you would inoculate the entire 5,000,000 population of the city with typhoid serum? This typhoid is brought mainly from infected water supplies in towns and villages remote from New York, and inoculation would be preventive only for a limited time. Would not the expense be unduly large for what would be accomplished? Perhaps a part of the huge sums spent on improving rivers could be used for getting rid of typhoid germs at their source in the waters of the country, instead of inoculating our 100,000,000 population."

He saw no force in this argument, but kept insisting that what the congressmen want is something concrete and distinctly visible. He said the child health program which I explained to him, and will now explain to you, was too abstract, vague, and distant. I confess I was paralyzed by the bureaucratic outlook, and did not call attention to the monies spent by various government bureaus on the following more or less abstract, vague, and distant objectives:

FEDERAL EXPENDITURES FOR THE FOUR YEARS 1914-1917.	
Improving harbors .....	\$73,608,473.80
Improving rivers .....	81,331,454.94
Special funds for rivers and harbors.....	4,663,438.94
Acquisition of lands for protection of watersheds, navigable streams.....	5,449,099.22
Experiments in animal industry.....	7,169,044.40
Experiments in plant industry.....	8,301,993.27
Foot and mouth disease.....	4,436,640.86
Seeds .....	1,025,738.80
Meat inspection .....	13,033,180.34
Reclamation fund .....	30,684,923.60
Forest service .....	13,591,024.46
Public buildings, sites, construction, equipment .....	48,074,768.60
Public buildings, maintenance.....	21,347,436.27

The child health program is a scheme of organized care of children from before birth to their vocational graduation at twenty or twenty-one. One would like to see coordinated to this end all the organizations now at work for the conservation of our citizens—the maternity classes, the baby saving societies, the mothers' committees, the kindergartens, the child welfare leagues, the physical training bodies, the seaside, countryside, and sunshine associations, all that have to do with preschool wel-

fare, then the public schools, the child labor committee, the mental hygiene association, vocational training bureaus, the boards of education and the boards of health. I have told you of the physical defects in the seventy-five per cent. of the 22,000,000 school children of the country. It is probably the truth that the greater part of this physical disorder is malnutrition, depending to some extent upon insufficient food, to a very large extent upon improper food, and also in a measure upon certain remediable defects and unhygienic habits. Now the child is a growing animal and we have established normal averages in his rate of growth and in the relation of his weight to height. Improper food or insufficient food affects these normal averages. Physical disorders also affect the rate of growth and the ratio of weight to height. Hence in children we have a standard scale of ration of weight to height and relative monthly growth from year to year which can be tested by parent, teacher, or physician. If a child is under weight and does not show the normal monthly gain for his age, the amount and quality of his food can be regulated by parent or teacher. If it is simply malnutrition this remedies it. If no gain follows there is some physical cause or unhygienic habit at work needing investigation by a physician. Thus a very practical step can be taken at once by the introduction of the scale and measuring rod into every school and following that, the introduction of the school lunch system everywhere, so that the children may buy at wholesale prices the 900 to 1,200 calories they require for a noon day meal, instead of squandering their pennies and health on pickles and hoky-poky ice cream.

Some of you may have heard of the demonstration we had in New York last winter. Public School 40 has several thousand pupils. Twenty-five undernourished boys between nine and twelve years volunteered to eat a luncheon that was given to them for three months, in order to show other boys that it is a patriotic duty of every child to grow strong and healthy for his country's sake. They were called food scouts. Their diet at home consisted mainly of tea, coffee, bread, macaroni and a soup with little food value. The luncheon given was intended to supply the 900 to 1,200 calories required and to teach to the children and their mothers the superior value of milk, cereals, fruits, and vegetables, and of pea and bean purees in the place of thin meat soups. Fifteen of the boys gained from one to four pounds more than the average gain of normal children in the three months. Seven gained, but less than the average (of these four failed to gain because of colds, sore throats, and other minor illnesses). Three did not make any gain. The chief value of this experiment lay in the facts, that in addition to a gain in weight by most of them, on one improved meal a day, they learned to cooperate as a group for a patriotic purpose, they learned to eat new and unaccustomed foods, their mothers came to the school to find out what these new foods were on which their children became stronger and healthier, and the children learned about food values and food habits. It was not only an experiment in malnutrition, it was one in Americanization.



The large program we have is to break into the curriculum of the schools and establish education in health, especially in food knowledge and food habits as a vital and essential part of teaching. From the schools the health instruction will be carried home to the parents and younger children, and soon the whole movement of reconstruction will permeate the State.

This is a summary of the program: 1. That the teachers themselves be given better conditions for their own health and fuller instruction in all that has to do with the laws of health.

2. That every city and country school be made sanitary and kept so and the school and its grounds should be as beautiful as possible, not only for the benefit of the teachers and the pupils but as an example to all other citizens who are beginning to use the school more and more as a community centre.

3. Every child should be regularly weighed, measured and examined and a health record kept, which should accompany him throughout his school life. It should be the duty of the authorities to see that the defects of our young citizens are corrected, disorders of growth and nutrition remedied. As malnutrition is one of the most serious conditions, a hot luncheon should be made available for every child and every teacher. The health examination should include dental inspection and treatment.

4. Each school should have adequate provision for physical training, gymnasiums, athletic fields, playgrounds, gardens, and shops together with especially qualified instructors in physical training and vocational fields.

5. Finally, with the foundations outlined above, a thorough system of instruction in all matters pertaining to health with special emphasis upon health problems rather than upon disease, in physical and mental habits, in personal hygiene, in public health and sanitation, in methods to avoid communicable diseases, in the responsibilities of parenthood, and in all that relates to nutrition and growth, including foods and food values and food habits.

#### PLACE OF THE FEDERAL GOVERNMENT.

This scheme is one that should be undertaken by the federal government, much as has been done with plant and animal culture and protection. It is too important to be left to uncertain initiative of the various States. We ought in truth to have a children's administrator with power to coordinate and direct all the various child welfare agencies and to compel the introduction in the schools of a sound and complete health program, a Herbert Hoover for the children of the United States.

With all this in view and after months of careful planning the National Child Health Organization has been formed whose literature is now being distributed. Do the first practical thing for a beginning. The teachers can place scales and a measuring rod at once in every school and with the height and weight and age charts that will be sent on request the campaign can be immediately started against one of the chief evils, namely malnutrition. The Child Health Organization has some of the best teachers and organizers in the country as members, and counts on its board the foremost medical specialists on children and public health. Its publi-

cations will be supplied on request to all who desire them. The office of the Child Health Organization is at 156 Fifth Avenue, New York; Dr. L. Emmett Holt is chairman. Some of the other medical members are: Dr. S. McC. Hamill, Dr. G. R. Pisek, Dr. Victor G. Heiser, Dr. Thomas D. Wood, Dr. Bernard Sachs, Dr. Hermann M. Biggs, Dr. H. D. Chapin, Dr. Simon Flexner, and Dr. William H. Welch. Among the educators are Charles W. Eliot, Cambridge, Mass.; President Thomas Bryn Mawr, Pa.; Albert Shiels, Los Angeles; William Wirt, Gary, Ind.; and Dr. John H. Finley, Albany, N. Y.

20 WEST FIFTIETH STREET.

#### RESULTS OF TREATMENT IN SIX HUNDRED CASES OF APPENDICITIS.

*Standardization of the Surgeon.*

BY G. PAUL LA ROQUE, M. D., F. A. C. S.,  
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The efficiency on the part of individual surgeons in the management of appendicitis can be standardized, provided the results of all the patients operated upon by each surgeon are truthfully reported. The standard of efficiency will be set up by the one whose products show the lowest mortality, the fewest complications, the smoothest and speediest convalescence, the greatest number of complete cures, and the fewest sequelæ. By these standards the results of others may be measured.

The treatment of various types of the disease, the stage at which it is best to perform the operation, the best technic to be employed, whether to drain or not to drain the particular case, whether to remove or not to remove the appendix in certain cases of abscess, the treatment after operation, the length of time patients should remain in bed after the operation; these and other questions of judgment can with more convincing reasons be standardized upon the basis of an intelligent study of the results shown by published reports of actual cases treated by different methods, than by discussions of theories, preformed opinions, or even the assertion of some textbook or journal authority unless substantiated by demonstrable results, in the crucible of experience.

Standardized beliefs as to the pathology of appendicitis, based upon observation of the structure in the belly, suggests classification into at least two types: 1, Pure appendicitis; 2, appendicitis with local peritonitis. When the progress of the disease is unchecked, the inflammation spreads to the peritoneum beyond the appendix, to the region about the cecum and small bowel or omentum in the iliac fossa, constituting another type; 3, appendicitis with regional peritonitis with or without walled off abscess. In yet later or more vicious cases, peritonitis beyond the iliac fossa in more remote areas constitutes still another type: 4, appendicitis with diffuse or spreading peritonitis. These four types of appendicitis and its peritoneal complications are recognized daily by surgeons the world over, and should be quite acceptable as a standard classification of the disease yielding the highest percentage

of correct estimations of the pathology present and the fewest errors of judgment upon which treatment may be based.

There are other classifications in common usage. Some of them have yielded and will continue to yield, even to the most expert clinicians, many errors of diagnosis and of judgment. If we classify patients we may say they are sick, acutely or chronically, severely or slightly, temporarily or permanently, with appendicitis; or that the symptoms are fulminating, advancing, subsiding, recurring and so on, in terms limited only by one's vocabulary, descriptive of symptoms and clinical course, but not acceptable by the scientific minds of trained pathologists as standard nomenclature for pathology. Such terms are altogether relative and so apparently dependent upon the point of view that the element of personal equation may cause us to be misled into embarrassing surprise when we discover a rotten, ruptured appendix with spreading peritonitis in a stoical person with a bold smile, no fever, and slight leucocytosis, who has often had "similar attacks" before; or into disgusting chagrin when we remove a slightly thickened, perhaps strictured, almost normal appendix at midnight from a young fellow who says he is writhing in agony, tossing with the belly ache, cannot stand being touched, and in whose blood an inexperienced blood examiner finds "polys" and leucocytes galore. Such mistaken diagnoses are quite as often of the patient as of the disease. The definition of the terms acute and chronic are altogether inexact. To say a patient is slightly or severely sick means little to the fellow who is not suffering. The margin of possible error in interpreting pathology upon the basis of terms referring to the clinical course and severity of symptoms is too great to rival for purposes of standardization a classification based upon the pathology of the appendix and its peritoneal extensions. For the disease, therefore, let us abandon its classification into acute and chronic though we may continue to use these terms in thinking of the severity and duration of the patient's illness and symptoms, provided we guard very cautiously against any effort to judge the pathological findings in a given case by the duration of the disease as estimated by the clock or calendar, or the severity of symptoms as estimated by the toleration or intolerance on the part of the patient to pain or by the number of leucocytes and "polys" found by an amateur hematologist at a single hastily made examination of a speck of blood.

In the present series of 600 cases, thirty per cent. (180 cases) were pure appendicitis; forty-two per cent. (253 cases) appendicitis with local peritonitis; twenty-four per cent. (142 cases) appendicitis with regional peritonitis; and four per cent. (twenty-five cases) appendicitis with diffuse spreading peritonitis. There were 101 cases of abscess—over sixteen per cent. of all cases of appendicitis and over seventy per cent. of those of regional peritonitis.

Considering the incidence of the disease with reference to sex and age, sixty per cent. of the present series were in females and forty per cent. in males; seven per cent. (forty-two cases) were in children, and two per cent. (twelve cases) in people beyond

fifty years old. While the disease is therefore slightly more common in females than in males, and much more common in the ages between puberty and the fifth decade, the type of the disease is much more apt to be complicated by peritonitis in men and in children, and by gallbladder and stomach disease in old people. Thus of the 147 cases of regional and diffuse peritonitis over two thirds were in males; and of the 142 cases in children, approximately three fourths of them required drainage for peritonitis. While these observations, with reference to age and sex incidence of suppurative peritonitis are recorded as interesting and of practical importance let us not be too hasty in attributing the cause of suppuration to age and sex. There remain one third of the cases of appendix peritonitis in children and in females; and in one fourth of the cases of appendicitis in children pus formation beyond the appendix had not occurred at the time of operation. Daily observations of almost indisputable proof have caused the writer to believe that even in children the most potent factor in the production of pus is peristalsis produced by purgatives.

In the men of this series ninety per cent. were operated upon solely for appendicitis and its peritoneal complications. In approximately 150 women in the present series of 600 cases of appendicitis (fifty per cent. of those between puberty and fifty years old) pelvic disease was present; and in ninety per cent. of these the pelvic disease was operated upon at the time the appendectomy was performed. In the more recent cases we have succeeded in ninety-nine per cent. of cases of coincident appendix and pelvic disease in women in curing all the pathology at one operation. At this point it is interesting to note that in nearly 300 women in this series of appendicitis, sixteen cases, or approximately five per cent., had been operated upon previously by other surgeons for pelvic disease and their appendices allowed to remain, and they subsequently had to be operated upon by the writer for pelvic disease. Conversely, of 500 women operated upon for pelvic disease, twenty-five (five per cent.) had been operated upon previously by other surgeons for appendicitis and their pelvic disease allowed to remain for a second operation. This gives a ten per cent. error of judgment (resulting in a second operation) on the part of those surgeons who, on the one hand, are rather timid about taking out normal appendices when operating primarily for pelvic disease and, on the other hand, rather quick in performing emergency operations upon women for appendicitis. A standard practice should be to cure all pathology at one sitting. This statement does not imply that there are not exceptions to this practice, but upon the surgeon who makes the exception should be placed the burden of defense of his position.

Of approximately 250 women between the ages of puberty and the menopause, six (2.5 per cent.) were operated upon for appendicitis while pregnant. All were clean cases, all performed through muscle splitting incisions, and all went through normal pregnancy labor and puerperium without complication.



Four per cent. of the 600 cases were also operated upon for hernia and two per cent. for gallbladder and stomach disease. More diligent search, better surgical judgment, and less haste in emerging upon patients would add to our efficiency in being able to cure, at one operation, a greater number of patients with hernias and gallbladder disease existing coincidentally with appendicitis.

Concerning the duration of symptoms before operation, they varied from a few hours to several years. We have frequently seen a ruptured appendix and regional peritonitis within twelve hours after the initial pain and have equally as often seen a very slightly diseased appendix in patients who had been sick for several days or weeks. I am therefore convinced that the pathology is not guided by the hands of the clock, and have long ago determined that the urgency for operation is less dependent upon the duration of the illness than upon the clinical picture presented. Careful observation of several thousands of cases has aroused in me a strong suspicion that the most dangerous operation a patient can have for abdominal pain is the "operation of the bowels" from the administration of cathartics. It is no longer open to doubt that the severity of appendicitis is much more intensified by the administration of cathartics than by the passing of time. Applying this principle to the treatment of the disease, many surgeons have become converted to the belief that when peristalsis is perfectly pacified by the withdrawal of all food and the administration of ample doses of morphine, it is frequently proper and sometimes wise to postpone operation until the patient can be placed in a proper hospital under the care of an experienced surgeon. The results obtained by this method of procedure are so greatly superior to results obtained by occasional operators doing emergency operations upon patients in their homes or improperly equipped hospitals as to justify the belief that emergency operations by unskilled surgeons upon patients in their homes or improperly equipped hospitals is mischievous in its effect upon mortality and morbidity. As a matter of fact, in the patients in this series of 600 cases the clinical history and the appearance of pathology presented strong evidence that at least fifty per cent., and probably seventy-five per cent., of the patients operated upon had had the disease for from three days to several weeks before operation and some had had many recurrences of acute symptoms during months and years.

Between forty and fifty per cent. of patients operated upon came to Richmond from other parts of the state and from neighboring states, and many came from remote country areas, traveling in trains, automobiles, and horse drawn vehicles. In no case has travel seemed to influence the severity of the disease and in most patients the avoidance of purgation, withholding of food, and the administration of morphine during the period necessary to wait, has seemed to produce genuine benefit.

#### COMPLICATIONS AND RESULTS.

A few cases of malaria characterized by a single paroxysm of chill, fever, and sweat occurring five to ten days after operation, in patients coming from

malarial districts, have been promptly relieved by quinine. One patient had typhoid fever.

Postoperative bronchitis of mild grade has been recognized in approximately two per cent. of the total series and in perhaps ten per cent. of the cases of Types 3 and 4. Between fifty and seventy-five per cent. of the abscess cases had bronchitis previous to the operation, and in two cases of subdiaphragmatic extension of appendiceal abscess right basic pneumonia and pleurisy were recognized before operation and promptly subsided after loosening of the lung and bronchial disease by the best expectorant, ether, and removing the cause of the respiratory disease by drainage of the appendiceal abscess. There have doubtless been many cases of localized pneumonia overlooked, but we have had no serious trouble from this source, and regard bronchial and pulmonary infections when secondary to appendicitis as urgently calling for operation.

In the entire series of 600 cases there have been two cases of postoperative acidosis recognizable by stupor and unmistakable urinary findings. They were both in large abscess cases of many days' duration before operation in children.

One case of postoperative acute chorea developed in a child seven days after operation. This case was exceedingly interesting. Three days before appendicitis she had tonsillitis, appendectomy was performed promptly before suppuration occurred; seven days after operation she showed violent chorea; two weeks later, malignant endocarditis; a week later, cerebral embolism.

There have been two cases of femoral phlebitis in the 600 cases, both of the right thigh, both in men, and both following operation in abscess cases—practically two per cent. of abscess cases.

Excessive vomiting is largely dependent upon the point of view and definition of excessive. Vomiting has been rare after twelve hours. Bilious vomiting has uniformly been relieved in the dozen cases of this series by a single washing of the stomach, by drinking warm water, or through the tube. There have been four or five cases of sufficient epigastric distention to be designated dilated stomach, all but two promptly relieved by tube lavage. There was one case of severe stomatitis, two cases of fecal impaction, two cases of hematuria due to hexamethylenamin.

In approximately three per cent. of cases there was retention of urine after operation, necessitating catheterization from one to three times. Most of the "necessity" for catheterization is not necessary. There is a trick about emptying the bladder which patients have to learn, and if sixty to two grains of hexamethylenamin are in the first quart of water they drink after operation, the bladder irritation of this drug usually teaches them the trick. By constantly teaching nurses and house doctors that the catheter should not be used according to the clock but according to the bladder, it is exceedingly rare for a patient to have to be catheterized.

Wound infections and hematomas in clean cases occurred in about one per cent. In no case has this ever been serious, though it has caused the patient to have to stay in bed from two to five days longer. Careful study of wound infection has convinced me that fully ninety-nine per cent. of them are not in-

fections *per se*, but are the result of the breaking down of small collections of blood beneath the skin. There have been no wound infections which in my opinion could be attributed to lack of asepsis in the technic. For some curious reason one almost never sees wound infection in drainage cases.

Three of the 600 cases developed fecal fistula after operation. All three were large abscess cases, two in patients with obvious tuberculosis of the bowel and advanced disease of the lungs, one in a boy with large abscess of two weeks' duration complicated by gangrene of the cecum. The latter case healed in three weeks. The two in tuberculous bowel cases never healed, both patients dying of tuberculosis six months and eighteen months respectively after operation.

One large abscess case was followed by annoying sinuses of the abdominal wall which I attribute to infection of a blood clot beneath the aponeurosis of the external oblique muscle.

Of the total 600 patients operated upon, there were four deaths—a mortality of three fourths of one per cent. One was the case of a woman seven days following operation for a case of appendicitis and peritonitis of erysipeloid appearance; one, a man with appendicitis with gangrene and large hole rupture of the appendix and diffuse cathartic peritonitis seven days following operation; and two boys almost moribund with diffuse cathartic peritonitis, one dying in three hours and the other in thirty-six hours following operation. For these deaths I offer no excuse, save that I was not sufficiently skillful to save them.

Ninety-eight cases of abscess, including twenty-two cases of diffuse peritonitis, were saved. In these prompt drainage, and in ninety-four of the ninety-eight cases appendectomy at the same operation resulted in saving life and eliminating the dangers, the anxiety, and time required to carry out the morphine saline stomach tube and cold storage treatment before operation and the prevention of long draining sinus, the recurrent symptoms and dangers of recurrent illness and second operation due to appendicitis of the stump after simple drainage of an abscess. There have been no postoperative obstructions, no hemorrhage, no peritonitis or secondary abscess, no anesthetic disasters, no cardiac or pulmonary embolism, no catastrophes.

The duration of the patient's stay in bed following operation depends upon the incision employed and whether or not drainage is employed. After the muscle splitting incision closes completely, patients are out of bed in from three to seven days, fifty per cent. in five days. Median and groin incisions necessitate confinement to bed for from ten to sixteen days; ninety per cent. of these are out of bed in twelve days. Cases requiring drainage are in bed from twelve to sixteen days.

In all cases of uncomplicated appendicitis, in which only appendectomy is called for by the needs of the patient, operation is performed through a muscle splitting incision, following which the patient is out of bed in from three to seven days.

After making careful observations of several hundreds of cases of healthy patients who sat up on the third to the fifth day following an easy ap-

pendectomy through a small muscle splitting incision in the extreme southeast corner of the abdomen, my surgical judgment convinces me that long confinement to bed is not necessary for wound healing. I seriously challenge the belief that any case of postoperative hernia has ever occurred as a result of a patient sitting up that would not have occurred as a result of vomiting, coughing, or sneezing while in bed. Our own experience is that no hernia has developed and no ill effects have occurred after early rising.

Concerning postoperative hernia, I consider every case which has to be drained as having a rupture of the abdominal wall as soon as the operation is performed. I have always instructed every patient to report if a hernia should occur, but since only one has so reported, I am satisfied that patients are a little timid about reporting unpleasant sequelæ. The opportunity to reexamine, at the end of three to six months, a large proportion of the cases which had to be drained, and failure to find but one case, leads me to believe that postoperative hernia is exceedingly rare following the muscle splitting incision even if drainage has to be employed, provided we use small instead of large drainage tubes and carefully place sutures between the tubes when more than one is employed. Two or three small holes would seem less apt to be followed by hernia than one large one. I feel, however, that some of the patients drained may have developed hernia later and reported the fact to their doctor and friends rather than to me.

The following questions can be answered by the experience gained from the present series of 600 cases.

1. Can the disease be cured without operation? No. If it could have been the present 600 cases would not have been operated upon. All of them had appendicitis and its results. Approximately ninety per cent. had had repeated attacks of illness from the disease and had been treated by non-operative measures for many attacks before coming to operation. In about ten per cent. of the 600 cases the attacks for which they were operated upon were the first, and in over a half of these nonoperative measures were employed for from one day to several weeks without relief of symptoms. A diseased appendix cannot be restored to normal. The only curative treatment of the disease is appendectomy.

2. Is immediate operation necessary? No. This statement does not imply that the experience derived from these 600 cases favors delay in performing the operation, it is only intended to state that while it is wise, if a good surgeon and a good hospital are available, to perform the operation as soon after the onset of the disease as is practicable, yet it is safe to wait a reasonable length of time before operating, so that the patient can be placed in a properly equipped hospital under the care of an experienced surgeon. The avoidance of cathartics, the withholding of food, and the administration of morphine hypodermically in doses sufficiently large and sufficiently often to pacify peristalsis and relieve pain, have permitted 100 cases recently observed to be properly made ready for operation during the period of delay necessary to transmit the patients



to a good hospital, and has yielded 100 per cent. cures.

3. Should operation ever be deliberately postponed? In the majority of cases, no. In exceptional cases, yes. There are times when, for one reason or another, it is actually wise to postpone operation for a reasonable length of time; moreover a large percentage of patients—especially women—with appendicitis, have also other pathology in the abdomen which of itself needs to be cured and in which it is both good surgical judgment and good common sense to place the patient in the proper place to have all the pathology cured at one time. Such patients should not be “emerged upon” for appendicitis and allowed to continue to suffer with the other abdominal disease until a subsequent operation. In a series of 500 patients upon whom I have operated for pelvic disease, five per cent. of the women had had their appendices removed previously by other surgeons, as emergency operations. In a number of the cases of appendicitis in the present group, in women who also had disease of the pelvic organs, I “emerged” upon them for appendicitis and did not cure the pelvic pathology, and the women still suffer with pelvic disease. Some of them have had to be operated upon the second time. In a goodly number of cases during the past few years, I have deliberately carried patients through an acute illness of appendicitis on morphine and starvation during a few days, waiting so that they could be operated upon for pelvic disease at the same time. The same applies to cases of appendicitis complicated by gallbladder and stomach disease. In many cases of this character I have deliberately postponed operation for several weeks so that we were able to operate successfully on all the pathology at one time.

It must be borne in mind, however, that there will still remain a few cases—approximately fifteen per cent.—in which, instead of subsiding, the appendix disease will go on to abscess formation and necessitate drainage. This need not be disheartening, for ninety-seven per cent. of abscess cases are cured; and the surgeon who argues that every case should be immediately “emerged upon” under imperfect facilities must show a superior efficiency in his personal results of such practice, or his argument is nonconvincing and open to challenge. The fact remains, however, that whenever operation is postponed the burden of proof of the wisdom of the delay is upon the doctor who advises it, and while it is generally safe and sometimes wise to postpone operation until the patient can be placed under efficient care, it is imperative that ample morphine be administered, all food withheld, and all cathartic remedies as scrupulously avoided as if they were the poisoned water and treacherous explosives left in the land evacuated by a retreating German army.

Under these circumstances not only will life be saved, but frequently a long subsidence of symptoms will ensue. If, as is so often the case, cathartics are administered by friends and relatives, and morphine is not given, even yet the patient's life can be saved in all but a small percentage of cases, though drainage may have to be employed and convalescence will be tedious and stormy.

4. Which is the best incision? In all cases in which it is contemplated that appendicitis is the only pathology needing treatment, a muscle splitting incision is our standard. This has been employed in ninety per cent. of the cases in men and in fifty per cent. of those in women in this series of 600 cases. Muscle fibres were cut in one case only, and this was many years ago, before we had learned how to enlarge the muscle splitting incision. We have succeeded quite satisfactorily by placing this incision low, in exploring the pelvic organs of women and repairing hernia and by placing it high, in palpating the gallbladder and right kidney. In a few cases of error of diagnosis we have removed ovarian cysts and right tubes ruptured by tubal pregnancy through this incision, though in cases of appendicitis in which we found pathology in the pelvic organs, we have employed standard median incision. We detest the incision through the right edge of the sheath of the rectus muscle. The difficulties in closing it, the pain following operation, the liability to hematoma formation, the adherent omentum which is seen in the scar when re-operating upon patients upon whom the right rectus incision had been made by other surgeons, have caused us to think that for appendicitis the right rectus incision is vicious and I prefer the median incision when I am forced to penalize my patients for my lack of ability to diagnose their troubles.

Of this series of 600 cases five and one half per cent. (thirty-two cases) required incision through the middle of the upper portion of the right rectus muscle for exploratory and therapeutic purposes upon the stomach and gallbladder. In a few of these more recently we have employed a high muscle splitting incision (and much prefer it) for gallbladder drainage.

5. Shall the appendix always be removed in cases of abscess? It would seem that the opinion of all intelligent men would be that the ideal thing to do is to remove the cause, namely, the appendix. In the individual case there is a difference in the judgment of the operating surgeon. It is so obviously unwise to risk the patient's life that the question hangs upon the decision of how much additional risk is taken by a reasonable and skillful search for the appendix. In abscess cases we have removed the appendix in ninety-four per cent. at the first operation. Three of the four deaths in this series of 600 cases followed operation in abscess cases. In two of these the appendix was seen without search, and removed; in the third it was not seen and not searched for. I know other surgeons of good judgment who consider it wise to make no search or little search for the appendix at the primary operation, being content merely to open and drain the abscess. I would plead with those who have adopted this practice to publish their results as to the saving of life, the duration of the patient's stay in the hospital, and the necessity for secondary operation. Surely we are not easily convinced that a patient does not still suffer from appendicitis if the appendix has not been removed. I have operated upon six patients for appendicitis of the stump remaining after the abscess had been merely drained. In one of my own cases after draining an abscess, the sinus continued to discharge pus until the second opera-

tion was performed three weeks later, at which the appendix was removed. In four cases in which I merely drained the abscess, making no search for the appendix, the wounds closed completely and promptly, and I heard from the patients from three to twelve months following operation, during which time they said they were not sick. I believe, however, that they still suffer with appendicitis if they have not been operated upon by some other surgeon. In one of the three deaths following operation for abscess, the appendix was not removed nor sought for. I am anxious to compare my own results in removing the appendix in ninety-four per cent. of cases of abscess with the results of a number of others who more or less, in a routine fashion, content themselves with incision and drainage of abscess. We have also been favorably impressed with the value of careful inspection of the omentum and cecum in suppurating cases for localized collections of pus and gangrene of the omentum and cecum. In many cases we have excised pieces of omentum on this account and in several have tucked in or excised areas of gangrene of the cecum.

6. When and how shall drainage be employed? In those cases in which all the pus is removed and the stump turned in, drainage is unnecessary and pernicious. Walled off abscesses should obviously be drained. In cases of regional peritonitis in which, even though the appendix is gangrenous, there is no fecal matter in the cavity, and when a "cloak" effusion characterized by beef broth consistency and color or slightly tinged with yellow is found, the incision may safely be closed after the removal of the appendix and mopping up the fluid. The old maxim, "When in doubt drain," has about been changed to "When in doubt do not drain." The best surgeon is he who is less often in doubt. Personal judgment must always enter into the practice of surgery, and the best judgment is characterized by the best results.

### A BOLSHEVIK BOLUS.

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(Concluded from page 1065.)

Now the rational beings in this world have had enough of the experiment tried in Russia; they have no desire to repeat it anywhere. The bubble of the brotherhood of man under socialistic auspices has blown up in a burst of terrorism and crime. Having witnessed the climax of that orgy of lunacy and hate they are rightly suspicious of every move indicative of a tendency in that direction. It does not matter in what syrupy diction the *soidisant* "uplift" is couched, if it smells at all of "socialization" its wholesomeness is to be suspected, and as a matter of precaution its adoption is to be rejected. We must build a wall of iron wills against this insistent and insidious assailant. In this wall no little rift of carelessness or apathy must permit the insinuation of the small end of the wedge. Mobilizing doctors for the war needs of the army or the navy is indispensable and proper. Mobilizing doctors for

the care of civilians is unnecessary and demoralizing; even in war times, when the aforesaid civilians are earning such increased remuneration for their accustomed labor as to put them entirely beyond the calls of charity. There may be situations where the available supply of medical men for country districts is inadequate because of the enrollment of so many of them in the medical reserve corps; but the remedy for that is obviously not to take men from such regions, but rather from the big cities, where those remaining will adjust themselves automatically to the augmented pressure. It has long been the cry of the public that there were too many doctors. Overlooking the inconsistency of adding to the number by the authorization of any sort of quack practice, if it had a strong enough lobby to influence the legislature it would appear that the emergencies of the present conflict have rather discredited the general opinion. If we had not overstocked we should be badly off at present. If we had limited the supply to the needs of peace we should be utterly unprepared for the demands of war. But if we had too many in the time of peace we ought to be about rightly apportioned now.

This paper might seem more of an onslaught on socialism than a screed befitting the nonpolitical subject of medicine. Art is supposed to have no sex; medicine is supposed to have no politics. The mind of the artist is as pure as the driven snow and takes no account of the sex attributes of his naked model; the mind of the physician is free from all considerations except that of curing the sick. We are all convinced of the truth of the aphorism as applied to art. The most upright, chaste, and edifying lives have been those of painters and sculptors, and as a sort of corollary to this the most wonderful examples of virgin purity (utterly unconscious of the least possible incitation to salacity) have been the careers of the aforesaid naked models. We all know this. The minute man or woman takes to "Art" sexual attraction loses every bit of its alleged seductiveness and it is no longer necessary to mitigate it by the conventional safeguards of customary raiment. We all know also the moment man or woman takes to medicine all rational comprehension of the other affairs of life is automatically lost and lambs led to the slaughter are marvels of worldly wisdom in comparison.

Anything may be done to the doctor; any imposition may be loaded upon him. He does not know it and obediently bends his neck to the yoke. That is why he has been selected as the victim in the initial offensive of State socialism; that is why this paper has been written, to show him wherein he is a fool for his own interest, and also wherein he is a fool for the interest of the community of which he is so valuable, and so little valued, a constituent. Through his spineless acquiescence in every "reform" involving his own material interests he has been selected as the medium for opening a breach in the opposition to State socialism! His own income will be cut and his independence will be wrecked while he is used to illustrate the "socializing" process, which it is hoped to apply eventually to all branches of industry. There is no disguise about the project; we have already seen how the term "socialization" is brazenly applied to it, not only by



the avowed socialist, but also by him whom we might properly term the "occult socialist": your professional uplifter, who is busy throwing the balls made by skilful but concealed conspirators.

The doctor apprised of the plot afoot owes it, not only to himself, but to his country, to resist it to the utmost! Entitled to the protection of the State in the prosecution of a profession to which it has licensed him, he should fight tooth and nail the threatened abrogation of that protection and the institution of unfair and ruinous competition. If, by dint of earnest effort and agreeable personal qualities he has built up a business yielding a comfortable income, the State has no right to intervene and so materially alter the conditions of practice that he is utterly impoverished and his career destroyed. And, above all, the State has no right to do this evil thing under the pretence of helping another "class" of the community; for then it is perfectly plain that it has deliberately ruined one "class" for the benefit of another. This is class legislation in a doubly nefarious sense! It cannot even offer the lame excuse of the greatest good of the greatest number, for it is a measure not calculated to produce that result. It is compelling certain members of the community to surrender the means accumulated in salutary labor to other members who have been less advantageously employed. It is confiscation and extortion; it is flagrantly dishonest; it is plain unvarnished Bolshevism, no matter whether it is backed up by demands of the red flag brigade or the combined exhortations of all the settlement workers in the slums! The anguish of the settlement worker for her proteges should not blind her to the fact that the Decalogue is still in force and that it contains a stern injunction against stealing; she would be horrified at the suggestion that her charges should go forth and satisfy their hunger at the expense of the grocer at the corner, or that laws should be enacted compelling him to yield his substance at a loss! She would resist determinedly the proposal to legislate the earnings of any other individual, or class, into the pockets of her pampered constituents. That is to say, any other individual, or class, than the medical. When this class is involved all laws of right and wrong are suspended; the Decalogue goes into the discard; they boldly pick up the red flag and yell "Bolsheviki"!

There is not a word of exaggeration or intemperance in these strictures. The assault on the doctors going on for years at Albany in the attempt to pass the health insurance measure has been made by the apparently incongruous elements linked as partners in this indictment. The socialists and the various welfare bodies have stood shoulder to shoulder and fought for its enactment. They have fought for it on the same grounds and almost in the same language. The opposition of the more enlightened doctors, voiced by spirited delegates, has been persistently disregarded and the pressure relentlessly maintained. The saner members of the labor unions, uninfluenced by the socialistic leaven, have denounced the project in unmeasured terms. Various business concerns of great scope and influence have sent their eminent financial men and

attorneys to protest against this invasion of personal rights and established usage. Tremendous forces were felt to be directing the drive. It was evident that all the vigor displayed in the repeated attacks was not due to the unorganized efforts of misguided welfare workers and the organized efforts of comparatively unimportant socialists. There was a common impelling purpose—and money behind it. There was definite cohesion in the units engaged and a well determined and executed plan of action. Failure was due to the obstinacy of the resistance and the fortunate support of the labor unions (non-socialistic) and the big insurance companies. If the doctors had been left to themselves they would have been swamped; as it was the contest was so close on the last occasion that consideration of the plan was entrusted to a committee to report back at the reconvening of the legislature last winter. No further action was taken probably because our entering into the great war disarranged the details of the contemplated raid. But it was not killed. It was only scotched; it will reappear when conditions have become normal in civil life. The strength of the coordinated, if ill assorted, forces displayed on the last occasion, presages a renewal of the attempt and reveals the welding influence of large monetary interests. Enthusiasm for humanity never aroused such fighting qualities as characterized the efforts of all contenders for the bill.

The doctors have got a breathing spell. Well, ladies and gentlemen of the profession, breathe as deeply as you like, but do not go to sleep! Watch jealously not only the advertised movements of this determined clique, but also the cunning circumventions by which they will seek to accomplish their purpose under other pretences. Keep a sharp eye out for all "welfare" legislation. Keep one eye on Albany and the other on Washington. Be sure that the United States Public Health Service does not execute the manœuvre that will give these gentry the opening they are after. No word of protest is intended against the devoted solicitude of the country for its warriors at home or abroad. Nothing is too good for the American soldier; nothing should be denied him that gratitude and admiration can suggest. But in our panting eagerness to show our appreciation of his noble qualities let us not shut our eyes to the possibility of the harm that may be done to the profession of medicine under the guise of emergency legislation on his behalf. Some of the present war measures would be intolerable and ruinous in times of peace. We understand that conditions render imperative grave concessions of private right. In order to uphold the hands of our President we are willing to surrender, for the time being, the liberties that we so jealously guard against intrusion. But when the war is over we do not wish any of these emergency concessions to be retained as permanent. We do not wish the unusual circumstances of the hour to establish precedents for the practice of medicine in the days to come. In short, under the excuse of war measures we do not wish the enactment of any Bolshevism which may stick after life has resumed its even tenor. The heated minds of exasperated patriots, planning ever for the victory of our arms,

may not so cautiously scan all the changes proposed in the comparatively unimportant domain of civics. Much may be sneaked across without full appreciation of its import; principles may be violated which will open the door to the inrush of grave departures from equity and justice. No matter what the company which the socialist is keeping for the nonce, distrust it as you do him. Birds of a feather flock together.

It is deplorable that so many well intentioned people do not see the error of advocating certain concepts of the red flag cult. They do not associate the humane impulses of their own hearts with the skirmish line of the socialistic propaganda. They rather flatter themselves that if the socialists think as they do on the question, let us say, of the reform of medical practice, it is because they have been influenced by the ideas that have filtered down from the element of superior virtue. They would be horrified to learn that the sequence of events is the other way; that the party of superior wisdom and virtue has imbibed these ideas from the clever in-docrinian of the tireless socialist. The insinuation of the "class conscious" distinction into the social organization has produced in the minds of the charitable well to do an obsessing desire to help the lower class along in the gruelling struggle for existence. The American idea of equal opportunities for all, and no favoritism before the law, which is the foundation of our independence and strength, is opposed to this legislating for any "class." Laws are made for all to observe. Laws should never be made to give any class an advantage. The people collectively may give in charity to the helpless and the sick; but that is a very different thing from taxing all the citizens for the benefit of a class which is simply, in a relative degree of poverty, compared with the rest of the community. It is able to satisfy its wants and keep its selfrespect if only shielded from the meddling of the welfare workers. It cannot save, perhaps; it is always on the edge of debt; but it manages to pull through, in the vast majority of instances, in the stalwart American way of keeping its head up. For this "class" no concessions are needed. Regular employment and fair wages are the only requisites for normal maintenance.

Just at this time most of the members of this "class" who are not in the army are drawing wages of a highly remunerative volume. There is no question whatever that the condition of the so called laboring "class" is steadily improving. Combinations have rendered laborers formidable; wages must be kept at an acceptable figure or strikes are resorted to. To talk of enacting special eleemosynary legislation for a "class" like that is nonsense; it can very well look out for itself.

Curious to relate, the "class" about which all this pother is to do, seems largely unconscious of its grievance and indifferent to the remedy. The laboring people as a rule know nothing of the attempt to save them from the rapacity of the doctors. Health insurance conveys no idea to them and arouses no aspirations. In point of fact where the better informed members of labor unions have taken a hand in the fight it has been to prevent the forcing of this great blessing upon them. Whether

it is just plain ingratitude or American independence, or fear of the unwarranted interference of the State in their private concerns, it is nevertheless most lamentably true that they will have none of it. They smell the aroma of the red! They realize that health insurance is only a prelude to some other "compulsions" to follow if this is accomplished. The word "compulsory" is hateful to the American free man. He shies at everything qualified with it. His instincts are in the main correct. *Vox populi, vox Dei*. When the people speak there speaks Wisdom. In their soul the people grasp the full significance of the meddling Bolshevism of the professional or dilettante uplifter. They understand the attitude of the avowed red perfectly, because he does not hide his light under a bushel. They distrust both. The average man is honest; his intuitions scent hypocrisy and fraud. The red he has discounted; he regards him derisively. The wealthy amateur uplifter, or the paid professional, he views with distrust; he understands well enough that all he requires to look after himself is plenty to do and wages of sorts. All substitutes for these are intended to bluff him from the main consideration. Those who offer him cheap doctors make no effort to increase his income; sagely enough he reasons that cheapening his medical attention is not going to better it, and the saving in that regard is so episodal that it is no material offset to low wages. Making him special rates at the clinic because he is "poor" wounds his susceptibilities, which are as acute as any. The implied condescension is hateful.

To recapitulate, there we have a situation where a public which does not want it is to be forcibly endued with an advantage wrung from the income of the underpaid doctors; where nonsocialistic social servers unite heartily with frankly socialistic propagandists for the furtherance of an indubitable socialistic programme; where the element least inclined to socialism is busy carrying out socialistic strategy; where the injury done to the doctors, while grave and indefensible, is the least part of the destruction contemplated; where Bolshevism held up to the scorn of all right thinking people is coming upon us, through the connivance of the *soidisant* better classes, who, dabbling in the welfare game from fad, fancy, or fatuity, are wrecking the safeguards of the American Republic. Ladies and gentlemen of the American medical profession, your duty in the premises is, not only to yourselves, but to your country. If you supinely submit to the plans projected for your subjugation you will lay the foundation of that monstrous system which has all but wrecked the Allied cause in Europe by the betrayal of Russia. You will, by cooperating in this measure of health insurance or special pay clinics, bring the danger of dominant Bolshevism very much closer. You will by apathetic acquiescence do the very same thing. It is your duty to combat this menace. You have been unhappily placed in the forefront of the conflict waging against our free institutions at the instigation of the internationalists and you must resist to the last extremity.



It is typical of these enemies of rational liberty that their initial assault is to be made upon the profession which has slaved without compensation in the cause of humanitarianism and whose charities surpass those of all other orders of society combined. This brutal indifference of the socialistic cult is of a piece with its character everywhere. It cares nothing except for the furtherance of its schemes, ostensibly in the interest of all the proletariat; actually in the interest of the exploiters of a misguided mob of envious incompetents. When the socialistic orator, or writer, begins to get a hearing he no longer labors except with his wits. The proletariat to him is an organ on which to play his maddening diapason of greed and hate. He works not, neither does he spin, but he eats well and dresses well and is not concerned as to the wherewithal while he has his gullible adherents!

In a former paper I urged the members of the threatened medical profession to strike back with their own weapons at the politicians who were playing into the hands of the welfare—socialistic confederacy—and make them understand that organized reprisal would be made upon every legislator who gave it support. The average politician is not a guide; he is a species of dictaphone; he does not form opinions; he registers opinions which rebound to his political advantage. With his ear to the ground, or the wall of the board room, he gathers an idea of the momentum of certain suggestions and cunningly figuring out his own profit in the event he takes sides for or against the people. Such characters are readily amenable to the influence of fright. If assured that determined opposition to their reelection will be the consequence of premeditated action their meditations are apt to take another tinge. If the medical men and women would but follow out the proposal made in that paper and write to the senators and assemblymen and political leaders of their districts, and solemnly acquaint them with their disapproval of compulsory health insurance, and their resolve to oppose the election of every candidate committed to it, the project would speedily fall into disrepute at Albany. If they would also write to the same persons their disapproval of the establishment of pay clinics as foreign to the purpose of the charters of the public hospitals, and their conviction that these institutions should conduct all these services entirely without charge as a public charity in return for the remission of taxation, this insidious flank movement of compulsory health insurance would be promptly sidetracked also. The law making power has authority to regulate the hospitals through the medium of the taxing function. Hospitals which are attempting to convert the public clinic into a money-making scheme, in defiance of the original conception of its purpose, may be brought to book by deprivation of their privileges as eleemosynary institutions. The pretence of benefiting the public by a routine perfunctory and apathetic system of examination and treatment is too transparent to be worth a moment's consideration. Note the quality of service in the free clinics of today and draw the inevitable parallel.

Let me repeat the injunction to every practitioner of medicine who is not biased by a salaried or insti-

tutional point of view to write to the politicians who represent (?) him at Albany protesting vigorously against compulsory health insurance in its proper guise, or variously disguised and boldly promising retaliation for the infliction of injury. Let him write to the congressman representing him at Washington protesting against the installation of any analogous system under pretence of emergency war measures; and in all of these communications let it be made perfectly plain that his attitude is not purely selfish but is dictated by the conviction that these innovations, dear to the heart of the wily welfare worker, and inveterate institutionalists are indirect assaults upon the principles upon which this republic was founded, and apertures for the instillation of those poisonous doctrines which have brought about the horrors of the Russian cataclysm. We want no socialism overt or occult; we want nothing of the philosophy which has linked the socialists all over the world in open sympathy with German purposes. It does not seem to matter where the internationalist is found, he is striving for the triumph of the German arms either boldly as in Russia, or artfully as a pacifist in the lands allied for freedom! The German despotism would appear to appeal to him because of his avowed intention to establish an economic despotism. Individual socialists, here and there, contest this indictment but the action of their representative bodies everywhere sustains it. The exceptions are anomalous and repudiated by their party!

If we might be permitted reverently to paraphrase the immortal words of Marco Bozarris we should exclaim:

"Strike till the last Red Flag retires!  
Strike for your altars and your fires!  
Strike for the freedom of your Sires  
For God and your native land!"

323 WEST FOURTEENTH STREET.

(Published by Authority of the Surgeon General,  
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#### SUGGESTIONS FOR THE USE OF CERTIFICATES SHOWING PREVIOUS INFECTIONS IN THE CONTROL OF COMMUNICABLE DISEASES.

BY LIEUTENANT COLONEL ISAAC W. BREWER, M.C.,  
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During the past winter the principal cause of sickness in the army, excluding venereal diseases, has been measles. A large number of these cases were followed by pneumonia, and a considerable number of the patients died. The problem before the military sanitarian has been to prevent measles, and at the same time not prevent the training of the men.

In October, 1917, before the American Public Health Association, I read a paper outlining a plan for preventing measles which has been successfully followed at the concentration camp at Fort Ethen Allen, Vt. When this plan was applied to a large organization it was found to be impracticable, because of the lack of statistics showing whether the men had had measles or not. If a measles census

is taken in the presence of an epidemic of measles, a large number of men who desire to avoid quarantine will state that they have had the disease. The census immediately becomes of no value. It has been suggested, and I believe it to be a valuable suggestion, that at the time a man joins the service he should be questioned regarding the various communicable diseases he has had. This would at once give us data regarding the men who are susceptible to measles and also those who have had typhoid and are possible carriers. That there will be errors in these statistics is not denied, but I believe in a large measure they will be of great value. The importance of having correct statistics regarding those who have had communicable diseases is apparent to any who have had to deal with the prevention of those diseases. It seems to me that a very important advance in the prevention of diseases will be made if the various departments of health would furnish a certificate in card form to every child who has had a communicable disease. This form could be made out on a printed card, to be filled in by the attending physician at the time he reports the disease. It would then only be necessary for the State or city department to stamp it with the official seal. In a short time each child would be provided with the data showing each disease it has had. This in a large measure would prevent unnecessary work in case a disease should break out at school. Later on it would be of value in connection with epidemics that may occur in factories, or in the army or navy.

## SUGGESTED FORM.

State of New York, City (or town) of .....  
This certifies that ..... age ..... years,  
Residing at ..... street, is suffering  
from measles (scarlet fever, mumps, whooping cough,  
diphtheria, typhoid fever).

Date .....

.....  
Attending Physician.

(Not official unless it bears the seal of the State  
Department of Health.)

## ORTHOPEDIC RECONSTRUCTION WORK ON HAND AND FOREARM.

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This is a report of a series of sixty cases, details of which, partly at least, have appeared in previous papers. I am well aware that the series is not large, nor is it exhaustive in any of its details; but it has, by reason of careful clinical analysis and experimental investigation, offered an opportunity to establish some of the fundamental points by which the surgical procedure should be guided. The cases are grouped according to the principles involved and not strictly according to the pathological nature.

### FLEXION CONTRACTURE AND FLEXION ANKYLOSIS OF THE WRIST.

A simple flexion contraction of the wrist joint rapidly decreases the flexion power of the fingers by reason of relaxation and loss of tension of the

flexors. At full flexion of the wrist the power of the fingers is more than three quarters exhausted. Furthermore, finger flexion is also impeded by increased tension of the extensors of the wrist and fingers. The indication in flexion contraction of the wrist is to release this contraction and reestablish the equilibrium between the flexors and extensors. In eleven cases examined three patients had congenital club hand deformities without lateral deviation and were treated conservatively. Eight patients were operated upon. The correction was good in all the eight cases, function was good in three cases, doubtful in one case, and poor in four cases.

The technic of tenoplasty, applied in five cases, consisted of plastic lengthening of the flexor tendon from a median incision on the volar side of the forearm, running from the wrist upward. One of the reasons for the poor functional result in the spastic cases was the failure to stabilize the wrist joint, relying upon the extensor muscles to carry out the extensor movement of the wrist. The disappointment in these cases led us to adopt other methods, which are described below. In two cases a bloodless correction was done under anesthesia; in one case Stoffel's operation of partial resection of the median nerve was performed with good correction, but poor functional result.

### FLEXION CONTRACTURE OF THE WRIST AND FINGERS.

Continued contraction of the flexors of the fingers results in the flexion of the phalangeal joint. The metacarpophalangeal joints yield to the increased tension of the extensors of the fingers by being forced into hyperextension (claw hand). In Volkmann's contracture the sequence of contractures, in our series, began invariably with contraction of the wrist, simultaneously with, or soon followed by, contraction in the phalangeal joint, and later, hyperextension in the metacarpophalangeal joints.

The indication here is to release the contracture of the flexors by tenoplasty. This usually takes care of the wrist and finger joints in cases of contractures following nerve lesions and Volkmann's contracture. The tenoplasty is also usually found sufficient to release the hyperextension in the metacarpophalangeal joint in the absence of secondary changes in the structures of the dorsum of the hand and wrist. Tenoplasty was performed by lengthening each individual flexor tendon from a long median incision on the volar side of the forearm, with subsequent dressing in Robert Jones' cock-up splint in overcorrected position. Mechanical and muscle educational aftertreatment. In six cases of Volkmann's contracture, average age of patients eight years, average duration thirteen months, average observation after operation eight months, the correction was good in six cases; the function was good in two cases, and fair in four cases. In two cases of traumatic and inflammatory contractions, average age thirty-two years, average duration one year, average observation, after operation, nineteen months, the correction was fair and the function good.

### ARTHRODESIS OF THE WRIST.

While correction of the flexion contraction of the wrist and fingers may in this way be obtained and the proper position of the wrist reestablished, it is



equally important for the function of the hand that such a position be actively maintained. This may be taken care of by the power of the extensors, if they are sufficiently preserved. But if they are incapable of actively extending the wrist, they must be reinforced, by tendon transference from the flexors, if sufficient material is available from that source, or the wrist joint must be stabilized by arthrodesis. If it is doubtful that tendon transference will establish a reliable wrist, one should make use of the arthrodesis rather than to allow a flail and unstable wrist joint to persist. In six cases, average age of patient thirteen years, average duration ten years, average observation ten months, the correction was good in all, function was good in two cases, fair in two cases, and poor in two.

#### TECHNIC OF ARTHRODESIS OF THE WRIST.

Incision is made at the dorsum of the hand between the tendon of the extensor pollicis longus and of the extensor indicis, opening the ligamentum carpi dorsale and entering the wrist joint at the notch of the distal end of the radius, between the grooves for the extensor pollicis longus and the common extensor of the fingers. A wedge is resected from radius and scaphoid. Capsule and ligament are sutured. Fixation in dorsiflexion. By entering between the sheath of the extensor pollicis longus and the extensor communis digitorum, the dorsal tendon sheath may be avoided.

#### INTEROSSEUS TENDON TRANSPLANTATION.

By arthrodesis the loose wrist joint is stabilized in a favorable position and in this way one of the fundamental requirements for the function of the hand is met. In addition to this, possibilities are opened up for the reconstruction of the finger action. Owing to the fact that, after arthrodesis, the flexors of the wrist become available for transference to the extensors of the fingers, active extension of the fingers may thus be obtained. Both surgically and mechanically it is perfectly sound to aim for active extension action after the wrist joint has been properly stabilized. But to do this on the basis of a flail and uncontrolled wrist joint, as has been done so often, is a decided mistake, which naturally invites failure.

The muscles available for transference are the flexor carpi ulnaris and radialis. Of these two I have used the flexor carpi ulnaris for tendon transference. Though this tendon is short, since the muscle reaches within two inches of the insertion, yet it is possible to liberate the tendon for a considerable distance upward without interfering with its nutrition. In devising the plan of operation we were careful to secure a straight and direct course for the transplanted tendon and for this reason the route through the interosseus space was adopted. Prior to the use of this method we swung the tendon around the bones of the forearm in the usual manner but found this procedure not satisfactory on account of the mechanical disadvantage which is involved in slanting of the tendon around the bone.

In five cases, average age fifteen years, average duration six and a half years, average observation four months. Four cases of arthrodesis plus interosseus tendon transplantation; correction, good

three cases; function, good three cases, fair one case; one case died of intercurrent disease.

The one case of interosseus tendon transplantation without previous arthrodesis showed only fair correction and function. In this case, we again placed reliance upon the extensors to be sufficient to control the wrist, but the tension of the flexors proved too great, even after tendon transplantation, to quite overcome the flexion tendency.

#### TENDON TRANSPLANTATION THROUGH THE INTEROSSEUS SPACE.

Incision is made on the volar side of the forearm over the flexor carpi ulnaris from pisiform bone upward, five inches. Dissection of the flexor carpi ulnaris to the insertion at the pisiform bone. Freeing of the entire tendon through the whole length of the incision. The fascial compartment, underneath the flexor carpi ulnaris, is then opened and the ulnar nerve and artery carefully dissected and retracted to the radial side. The superficial and deep flexor muscles are retracted radially. Then the upper border of the pronator quadratus is looked up and proximal to it an opening is made in the interosseus membrane wide enough to receive the tendon of the flexor carpi ulnaris. By keeping close to the outer border of the ulna the interosseus nerve and artery are avoided.

A second incision is made in the midline on the dorsum of the forearm over the wrist reaching to the base of the metacarpals. The tendon of the flexor carpi ulnaris is then passed from the volar side, through the incision in the interosseus membrane, then out through the dorsal incision. The hand is then put in dorsiflexion and the free end of the flexor carpi ulnaris is placed between the four tendons of the common extensors of the fingers, two being on the outside and two on the inside of the flexor ulnaris tendon. Then for a distance of two inches and with the hand in dorsi flexion, a side to side suture is laid between the flexor ulnaris tendon and the tendons for the extensors of the fingers, lying on both sides of the former. The sheath of the extensor muscle and the ligamentum carpi dorsalis is restored by suture. Fasciæ and skin closed. The hand is put up in dorsiflexion.

In all cases this method has given satisfactory results. Active extension of the fingers was noticed within a very few days after the operation; but the hand should be kept completely immobilized for four to six weeks, and later carefully supported by a splint, to be removed only for massage and exercises. Tendon transference from the extensors to the flexors of the fingers was carried out in two cases in which active flexion of the wrist was lost; in the first case the extensor carpi ulnaris and extensor pollicis longus was swung around the radius and ulnar respectively and fastened to the flexor digitorum communis; in the second case the extensor carpi radialis was used to transplant the flexor carpi radialis. The functional result, however, was only moderate in both cases.

In some instances of clawhand deformity it was found impossible to release the hyperextension in the metacarpophalangeal joint, either by tenoplasty or by forcible manipulation. Considering that the

motion in this joint is indispensable for the play of the fingers, and that operative interference at the joint proper therefore could not be done, a method was applied which consisted in osteotomy proximal to the joint with subsequent kinking of the fragment. In two cases correction and function were good. In these cases a small longitudinal incision was made from the head of the metacarpal upward. Osteotomy was performed on the metacarpal bones three quarters inch proximal to the joint, and the fragments were kinked forward. The result of the operation is a much better approachment of the fingers to the thumb, which considerably improves the grip of the hand.

Reconstruction work on the thumb was carried out in a number of instances. The cases may be grouped in two classes. Lack of apposition of the thumb arising from paralysis of the thenar muscles. Lack of action of the *opponens pollicis* is most noticeable since it cannot be replaced by any of the long muscles of the thumb. Good functional result in four cases.

#### PLASTIC SUBSTITUTION OF THE *OPPONENS* ACTION OF THE THUMB.

Incision along the flexor pollicis longus from the interphalangeal joint downward to the middle of the thenar. Avoid carefully the upper half of the thenar so as not to injure the motor branch of the median nerve to the thenar muscle. The sheath of the tendon of the flexor pollicis longus is split, the tendon divided longitudinally and the outer half is separated at the upper end. The sheath is closed over the inner half. The outer half is then placed upon the outer side of the base of the first phalanx and is here sutured to the periosteum. This half of the tendon is now running in the direction of the paralyzed *opponens pollicis*, and each flexor movement of the thumb will be accompanied by an opposition movement of the thumb against the fingers.

The other group comprises some spastic cases in which the flexion tendency of the thumb is so great that it is thrown under the fingers with a snapping motion, whenever the hand closes for the grip. In these cases the procedure consisted in tenoplastic reinforcement of the long extensors of the thumb, acting as a check upon the tendon. Result: good function four cases; fair in two cases.

#### INCISION OVER THE EXTENSOR INDICIS.

Here the tendon is severed, drawn forward to the thumb and brought out through an incision over the extensor pollicis longus. To the latter tendon the tendon of the extensor indicis is then united, the thumb being held in hyperextension (Technic of Biesalski and Mayer).

From the viewpoint of function of the hand, two conditions involving the forearm had to be taken up in a number of cases and are consequently included in this series. One, the pronation contracture of the forearm, was found in cases of Volkmann's contracture and in cases of spastic paralysis. Simple tenotomy of the pronator radii teres does not accomplish its object. I have observed several recurrences after tenotomies. The operation chosen was that of resection of the pronator teres, from an incision running from the internal epicondyle of the

humerus slightly downward and outward in the direction of the pronator teres. Result: correction, good two cases; fair in one; function, good in two cases, fair in one.

#### FOREARM PLASTY OF THE ELBOW.

To this group belong the cases of flail elbows. The paralysis of the flexors of the elbows was relieved by a muscle plasty of the forearm muscles, which were transposed upward upon the humerus, to act as flexors of the elbow; in most cases the condition was associated with paralysis of the hand or shoulder. Good result in five cases; in observation two cases; died one case; poor one case.

Incision is made around the internal condyle of the humerus. The lower end of the incision slants downward and outward in the direction of the pronator teres. The ulnar muscle group is carefully dissected and its origin from the internal condyle is separated for two inches. Then this muscle bundle is drawn upward to be inserted into the intermuscular septum on the inner side of the humerus two inches above the internal epicondyle.

Two points must be carefully observed: 1. Lesion of the ulnar nerve will best be avoided by carefully dissecting the nerve in its course behind the epicondyle and by retracting it backward. 2. In preparing the muscles, from their origin, great care must be taken not to damage the nerve supply. The flexor muscles of the hand should be in fair condition, if the operation is to be successful. Our unsatisfactory results were due entirely to the fact that impairment of the flexor of the forearm was more extensive than anticipated. As the operation attempts to make the flexors of the forearm act as flexors of the elbow under difficult mechanical conditions, these muscles should be either intact or only very slightly involved in the paralysis.

Clubhand deformity with lateral deviation was observed in three cases. One of these cases was a double congenital clubhand deformity, the other two were acquired. Following osteomyelitis of the forearm, there was almost total loss of the radius in one case and loss of the lower epiphysis of the radius of the entire thumb in the other. Three cases: osteotomy one case, correction good; bone graft one case, correction fair; osteotomy and thumb plasty one case, correction good.

In the last case a plasty of the thumb was made in two steps. The new thumb was made from the seventh rib.

Four cases of skin contracture of the hand were treated according to ordinary methods of skin plasty. Result: good in two cases, fair in one. Nerve resection for scar contracture, one case. Result, good.

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**Relative Digestibility of Maize and Cottonseed Oils and Lard.**—Elbert W. Rockwood and P. B. Sivickes (*Journal A. M. A.*, November 16, 1918) studied the utilization of these oils on dogs in varying states of health and nutrition and found that all three were readily and very completely digested, and that corn oil could well be substituted for cottonseed oil or lard. The same probably would apply to man.



## SUCCESSFUL EXTRACTION OF AN OPAQUE AND DISLOCATED CRYSTALLINE LENS.\*

By HOWARD F. HANSELL, M. D.,  
Philadelphia.

Mrs. W., aged forty-five, came to the Jefferson Hospital complaining of increasing loss of vision. She stated that for twelve years she had been unable to read. She had consulted several well known oculists in England who had given an unfavorable prognosis and had declined to undertake treatment except to give myopic glass of 10 D. I could obtain no authentic history that the lenses were congenitally dislocated; on the contrary she stated that until twelve years of age her sight had been unusually acute both for distance and for near vision and that she had made no earlier complaint concerning her eyes. As she was an intelligent and educated woman I accepted her statements as accurate.

At my first examination I found diffuse uniform opacity involving the entire lens in each eye. The opacity was not dense but permitted no detailed examination of the vitreous or eyegrounds. I advised preliminary iridectomy on each eye. During the performance of this operation a slight amount of vitreous, of apparently normal consistence, oozed out of the wounds. This was the first intimation that the lenses were not in their normal situation. On my first examination I had failed to discover the dislocation. There had been no trembling of the iris, no history of an accident or other indication pointing to dislocation. The wounds healed without unusual delay, the eyes recovering slowly. Several weeks later, after fully advising the patient as to the danger incurred by operation, I extracted the lens of the left eye.<sup>1</sup> Before making the limbus incision I prepared a large conjunctival flap, and introduced and loosely tied the sutures so that immediately after the extraction operation proper was concluded I might draw the flap over the entire incision. The incision was made in the limbus. An insignificant amount of vitreous was lost. After waiting a few minutes in the hope that the lens might move forward, and finding that it retained its original situation, I introduced the wire loop behind the lens which I then removed in its capsule without encountering any obstacle or losing any more vitreous. The flap was brought down and sutured. It covered the upper two thirds of the cornea including both ends of the incision. The anterior chamber was reformed in forty-eight hours, the first inspection after operation, and the sutures removed the following day. Healing was uneventful. Three weeks later with  $+10 = +1.50$  cyl. ax.  $120^\circ$  V. = 6/6pt.

The feature which contributed largely to the success of the operation in this case was the conjunctival flap. In order to be assured of the efficacy of a flap one must dissect the conjunctiva far back, quite up to the fornix, and before determining that

he has completed this step of the operation he should draw the membrane over the cornea by forceps grasping each of its sides. Only by doing this will he be able to make up his mind that the flap will be sufficiently large. The operator, inexperienced in making a conjunctival flap, will be surprised when he learns how extensive the dissection must be. The silk sutures must be in place, loosely tied, and thus ready to be drawn taut and knotted immediately after the flap has been drawn over the entire incision, involving the covering of at least the upper third if not the upper one half of the cornea.

So important did the late Professor Stanculeanu, of Bucharest, consider the conjunctival flap that he always made it the first step of his cataract extraction operations. This practice is, in my opinion, unwise because it complicates the operation by adding another step to the extraction; moreover, unless the flap is brought exactly into position and is really a protection of the wound it may increase the danger of operation by slipping upward and forcing the corneal flap outward, so that union of the edges of the wound will be prevented.

SEVENTEENTH AND WALNUT STREETS.

## MEDICAL NOTES FROM THE FRONT.

By CHARLES GREENE CUMSTON, M. D.,  
Geneva, Switzerland,

Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London, etc.

### LESIONS OF THE PERIPHERAL NERVES.\*

The important and interesting question of lesions of the peripheral nerves of the upper limb as met with in warfare offers two very different aspects: Sometimes they occur as motor disturbances or true paralysis; at others they represent the sensitive, painful type.

While each nerve of the arm may be paralyzed, it is most extraordinary that although the paralysis of the median and ulnar are frequently incomplete and dissociated, the radial is usually paralyzed in its entire extent below the lesion, even when the latter is very slight. The hand drops, and deprived of any extension, the condition is very characteristic. In other words, paralysis of the radial is an extensive one.

In the sensitive, painful types the radial nerve reacts especially by motor disturbances; it is only slightly or not at all painful; and it never is the seat of a neuritis. Cutaneous anesthesia is, so to speak, absent, and only hypesthesia is met with over a less extensive area than the topography of the cutaneous sensitiveness of this nerve would indicate.

From the viewpoint of sensitiveness, the ulnar represents a means between the radial and median nerves. It reacts less painfully than the median but, nevertheless, lancinating pain and electric concussion are frequently complained of in lesions of the ulnar. From the objective viewpoint, anesthesia is usually distinct over the internal border of the

\*Read before the Section in Ophthalmology, College of Physicians, Philadelphia, November 21, 1918.

<sup>1</sup>At a subsequent operation, the right lens, also dislocated, has been extracted by precisely the same method, with recovery of full acuity of vision.

\*This article was written in September, 1918.

hands, and particularly over the auricular. Clonic shocks of the forearm can be obtained when an attempt is made to straighten out the ulnar claw. In lesions of the median nerve, besides the classic type of motor paralysis, one frequently meets with a painful type, recently described by Pierre Marie. The motor disturbances are of a secondary nature in the painful type. The patient remains in bed, holding the hand with precaution in the axis of the forearm. The fingers are near together at their base and separated at their distal ends, while the thumb and ring finger approach each other, giving the hand the appearance of being narrowed transversely in contrast to the large, flat hand of median nerve paralysis. The three first fingers are often the seat of a fine, irregular tremor, very different from the clonic shocks that are sometimes seen in the last two fingers in lesions of the ulnar nerve. The patient suffers from paroxysms of pain. Pressure reveals pain over the median nerve below the lesion, rarely above. Very severe pain is complained of at the fingertips, on the internal aspect of the thenar eminence, in the interosseous spaces and metacarpometatarsal joints. The pain is compared to violent burning or crushing. Insomnia is the rule, because the slightest touch on the hand or the sound of foot-steps starts the pain. Marie, however, states that the pain has a tendency to disappear in about five or six months. I may add that cold applications relieve the pain and that heat has the contrary effect. The reflexes are not changed. The trophic disturbances are rather characteristic, while amyotrophy is moderate. The hand is thin, the fingers pointed, the nails smooth. The skin is white and smooth but not shiny as in glossy skin. The palmar aspect desquamates constantly, the hand is rather cold with a hyperhydrosis. In the painful variety the skin is dry and the hand very hot, and in the case of lesion of the median nerve there is absence of stereognostic sense in the painful type.

In lesions of the peripheral nerves various clinical syndromes are noted which may be conveniently included under three headings, namely, the syndrome of dissociation, the syndrome of interruption, and the syndrome of progressive constriction or compression.

The syndrome of dissociation is frequently met with when the paralysis only involves a part of the muscles innervated by the injured trunk below the lesion, which of necessity can only be a partial division. Direct excitation of the nerve trunks in the operative wound, by Marie, showed that in each one the nerve fibres which went to a given muscular group formed absolutely distinct fasciculi.

The syndrome of complete interruption is characterized by the absence of all functions of the nerve, and its clinical elements are principally motor symptoms. There is first complete paralysis and especially disappearance of muscular tonicity, the muscles offering a flaccidity much more marked than in simple muscular atrophy. This disappearance of the tonus is particularly well marked in paralysis of the radial from complete division of the nerve. The hand drops in flexion at a right angle on the forearm and dangles when the limb is shaken. Absence of the sensation of pain when the muscles

are pinched likewise belongs to this syndrome and this muscular analgesia is not encountered in cases of compression of a nerve trunk. There is complete loss of faradic and galvanic excitability of nerves and muscles. What characterizes this syndrome is the total paralysis, absence of tonus, and the complete and definitive character of the sensory and motor disturbances.

The syndrome of progressive compression is made manifest by its progressive evolution and electrodiagnosis. At the time of the injury the pain is less intense than in complete division of the nerve. The trauma provokes a paralysis and anesthesia from the start, sometimes of the entire limb, but at all events usually extending beyond the limits of the nerve involved and is due to nervous commotion. But in a fortnight or three weeks afterwards, the clinical aspect of the lesion becomes clearer. The motricity and sensibility slowly return, usually only in part, but sometimes completely. Soon, however, spontaneous pain occurs of a lancinating kind with nocturnal paroxysms produced by pressure or movement of the arm. From the objective viewpoint there is a short phase of hyperesthesia of the involved nerve, soon followed by anesthesia. Before the latter occurs paresis arises, finally ending in true paralysis. Vasomotor disturbances are never absent. The extremity of the limb is cold, more or less cyanotic and there is hyperhydrosis. Trophic disturbances and amyotrophy in particular are rarely wanting. Faradic and galvanic excitability quickly diminish and finally disappear. The reaction of degeneration, partial at the beginning, becomes total, and then if the compression continues to increase until physiological section of the nerve has taken place, galvanic excitability in turn disappears.

In considering the diagnosis the question arises as to whether the case is one of a nerve lesion, a pseudoparalysis, or a psychic paralysis. On the other hand, supposing that a hysterical paralysis has been demonstrated to exist, this fact does not eliminate the possibility that the nerve has been injured. Is the functional impotency due to a nerve lesion or is it of psychic origin? If the motricity is carefully studied, it will be noted when there is an organic lesion that the only muscles paralyzed are those below the site of the injury and whose innervation depends upon the involved nerve. In psychic paralysis, the paralysis extends to a segment of the limb, often to the entire member involved or to all the muscles associated in a given movement. The objective disturbances have a known topography, but there is never a segmented anesthesia, such as is met with in hysterotraumatism. In case of nerve lesion the trophic disturbances are more or less intense, according to whether neuritis exists or not, but at all events amyotrophy is rarely missing. Causalgia is not uncommon. The vasomotor disturbances, hyperhydrosis, and cutaneous cyanosis are frequent. In hysterical paralyses trophic disturbances are not apparent and, while organic paralysis causes an absence of the reflexes, hysterotraumatism offers no disturbances of reflectivity.

In the special neurological services of Claude and Vigouroux, the frequency of neuropathic accidents



among wounded soldiers is estimated at about ten per cent.

A nerve lesion having been diagnosed, it remains to determine its degree. Generally speaking, if the paralysis occurs immediately after receipt of the injury it may be assumed, according to the disturbances present, that the nerve is partially or totally divided. If the accidents arise progressively, it may be concluded that the nerve trunk is being compressed with increasing intensity as the production of cicatricial tissue or a callus is increasing, embedding the nerve in the neoformed tissue.

Electrodiagnosis is of great importance. In complete division the electric excitability of the nerve progressively diminishes and will have entirely disappeared at the end of a fortnight. In incurable cases the reaction of degeneration at length disappears, and it is only then that one can be sure that the nerve has been completely divided. In compression of a nerve there will be diminution of both faradic and galvanic excitability, but this decrease is slow in taking place and follows the progress of the paralysis. It must never be forgotten that excitation of the nerve above the lesion will be transmitted below it as long as the compression is not absolute. When an operation for the repair of the nerve is done the electrodiagnosis *in situ* will determine exactly to which muscles the injured nerve fibres correspond.

In regard to the prognosis, nerve compression, generally speaking, is the most favorable. The less the compression, the more quickly will the nerve recover its functions. It goes without saying that if with the compression there is also a partial lesion of the nerve, recovery is longer in taking place. The same cannot be said in complete division of a nerve, because even now, after four years of extensive experience, the operative results of nerve suture are still uncertain.

Electrodiagnosis possesses a prognostic value of the highest order. The prognosis is good when the excitability of the nerve retrogresses instead of progressing. It is likewise favorable when the decrease of the excitability of the nerve progresses with the reaction of degeneration, and in this case surgical interference may save the situation. It is only when the absence of electric excitability in the injured nerve and muscles persists, after having offered the reaction of degeneration, and ceases to react to any elective excitation that the prognosis is very serious and the case considered as incurable. In closing I would say that in the painful neuritic forms occurring in the median nerve, Marie is of the opinion that the prognosis is relatively good, even without surgical interference.

#### HELIOOTHERAPY IN SURGICAL DISEASES.

Heliotherapy, as employed by Rollier, of Leysin, Switzerland, and which I have seen applied to some very remarkable surgical afflictions, unquestionably represents a very high specialization of orthopedics and conservative surgery. By employing this method irreparable mutilations are avoided and the functions of the joints are protected to the highest degree. Considering the splendid results obtained by Rollier in the treatment of surgical tuberculosis by the use of *sunlight and fresh air* therapy, it is

quite natural that this method should give favorable results in nontubercular lesions resulting from war wounds. Cazin has had some remarkable results, in the use of heliotherapy alone, in wounds where suppuration had continued for months, and where there had been no manifestations of tissue repair. Léa was one of the early users of heliotherapy in the treatment of war wounds. He applied the treatment at Evreux, Hospital No. 4, in September, 1914. Reinbold, of Lausanne, Switzerland, has also systematically used heliotherapy in the hospital which was under his direction in France, since the beginning of the war, while Grangée, in the hospital at Evian has resorted to the treatment since 1915. The rapid and uniformly successful results obtained by these and other surgeons should encourage the American military surgeons to adopt this method of treatment. There is no doubt that it deserves all the praise that it has received.

#### BRUTALITY OF GERMAN MEDICAL MEN TO WOUNDED PRISONERS.

The Huns appear to be pretty well done up at present and their miserable underlings, Austria and Turkey, even more so, but we can still recall some of the atrocities which have been committed by the German medical profession on the British and other war prisoners. Aside from the fact that the Germans have proved themselves vastly inferior to the Allies in the field of medicine and surgery they have subjected some of their prisoner patients to barbarous treatment, as I will show by the following authentic cases.

A British officer with a paralysis of the hand tells the story of a Hun surgeon who while dressing his arm, touched it in a certain region remarking, "That is the nerve," the British officer understood and speaking German replied, "Yes, that is the nerve." The German surgeon then said to his assistant, "Here is an Englishman who understands German. Now you shall see how an Englishman can scream." He then had the prisoner's arm placed over the assistant's shoulder and bound to his back, and gave the nerve six jabs with an instrument. This beastly performance occurred in a hospital near Metz about the first week in June, 1918. Just one more example. At Wevelghem, last May, a sergeant in charge of a ward hit a delirious patient in the mouth, knocking his teeth in, because the unfortunate patient had placed his hand under his bandage during his delirium, displacing it. The German sergeant had been a priest in civil life.

Will the American medical profession receive these miserable thieving braggarts with open arms after peace has been concluded? Members of the German medical profession have stolen discoveries made in other countries right and left. In a letter dated September 11, 1918, one of America's most prominent medical journalists wrote me, "about the last thing I saw (in a Hun medical journal) before the war began was an elaborate article on surgery of the nose, in which the author had stolen bodily the work of Cuter of New York, without mentioning his name." This wholesale thieving by the Hun medical profession has been going on for years and it is now high time to expose it.

# Editorial Notes and Comments

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### VIVISECTION IN ENGLAND DURING 1917

A place for discussing the merits of vivisection is no longer justified in a medical journal. Those publications whose mission it is to make the world laugh are frequently led, through sheer dearth of other material, into accomplishing this end by attacks on vivisection and vaccination. Serious students of the progress of medicine, however, have always realized that they must turn to experiments on animals for information regarding the action of drugs or the ravages of disease in man. To such the recently issued report on the number and nature of experiments performed on living animals in England, during 1917, is of particular value. Of the 671 persons who were licensed, 392 performed no experiments.

It is noteworthy that the experiments which were performed without anesthesia consisted of procedures such as inoculation, hypodermic injections, and the like. Of these slightly over 55,000 experiments, more than 12,000 were made in the course of cancer investigation, some 19,000 in the

course of government research, and between 22,000 and 23,000 for preparing, testing, and standardizing sera, vaccines and drugs.

The government inspectors visited the registered places frequently, usually without notice, and found the animals well cared for and well treated. In over a thousand visits only two irregularities were found.

Unfortunately, in view of the possibly well intentioned agitation, no details are given in regard to the exact results accomplished. One reason for this is, of course, that such results usually do not become apparent until several years after the performance of experiments, for, following animal experimentation, a remedy must naturally be tried out in the human body, and its status does not then become fixed until sufficient time has elapsed to prove whether or not first successes are to be permanent.

No physician at all acquainted with the history of his profession, however, doubts the value of animal experimentation. This question arises only in quarters in which snake oil for rheumatism, the blood of a black cat for shingles, and such remedies, are still a matter of belief.

### DIAGNOSIS OF THE PYLORIC SYNDROME IN NURSING INFANTS.

When all the signs of the pyloric syndrome in infants are present, they are so distinctly characteristic that the diagnosis is an easy matter. Vomiting occurring during the first few weeks after birth and persisting, regardless of change of feeding or hydric diet; a more or less marked constipation, the small amount of feces passed being composed of greenish mucus containing some caseiform curds; a progressive emaciation with a flat belly, occasionally permitting the peristaltic gastric movements to be perceived; more rarely the existence of a pyloric mass felt by palpation; these are signs which, when present together, impose the diagnosis upon the medical man.

But there are cases where the peristaltic movements cannot be perceived under the abdominal parietes and where no pyloric tumor is perceivable. In such cases the problem becomes complex and hesitation permissible. It is difficult to mistake regurgitations of an overfed infant with vomiting due to pyloric spasm, but the question becomes more delicate in certain forms



of gastrointestinal dyspepsia of nursing infants. Reference is not here made to the frank types where vomiting is accompanied with diarrhea, with stools containing curds, but to the type described by Marfan with predominance of gastric phenomena. In this type vomiting overshadows all other symptoms, and hesitation is quite permissible between a mild pyloric syndrome and this particular form of dyspepsia. The quick cessation of vomiting as soon as the infant has been put upon a hydric diet, likewise of the diarrhea, indicate that the case is one of dyspepsia.

In the types of chronic dyspepsia met with in infants not breast fed, there is constipation, but this constipation is often interrupted by attacks of diarrhea. The spells of vomiting are less frequent, the belly becomes lax and large on account of elongation of the intestine—all of which signs differentiate it from the pyloric syndrome.

Exceptionally, one may be obliged to differentiate the symptoms engendered by a pyloric stricture due to a congenital malformation of the digestive tract with the pyloric syndrome. These cases, which are rare, are characterized by phenomena much more precocious and with a more serious onset than those of the pyloric syndrome. They even occasionally offer particular signs which allow one to locate the site of the lesion. Congenital stricture of the esophagus is made evident by regurgitation rather than by vomiting. The milk is ejected almost immediately after ingestion, without having undergone the slightest trace of change from contact with the gastric juice. Occasionally the infant assumes a cyanotic tint after feeding, and the esophageal culdesac filled by the food acts by compression on the pulmonary hilum. Stenosis from malformation of the pylorus is characterized by earlier symptoms and which, from the beginning, are much more serious than those of pyloric spasm. Constipation is absolute and after the meconium has been voided no more stools come away. The effect on the general health of the little patient is rapid and intense, death usually occurring within the first week after birth, while in the most serious forms of the pyloric syndrome death is not apt to take place before the end of the first month. Congenital stricture of the intestine is likewise characterized by obstinate vomiting and constipation, the meconium is not always voided, but the principal symptom is a rapidly developing abdominal distention, while bile is found in the vomitus.

This picture of acute intestinal occlusion may be met with in various processes, as in intestinal in-

vagination or in rare cases of neoplasms, but can hardly be mistaken for pyloric spasm. The vomiting in acute peritonitis of infants offers abdominal distention, a more or less intense diarrhea, and a rise in temperature—all symptoms which distinguish it from the vomiting of the pyloric syndrome. The vomiting of meningitis is too well known to require mention.

#### PSYCHOPATHY AND CRIMINALITY.

From objective to subjective might well be called the watchword of the newer psychopathology and psychiatry. The emphasis has been shifted from external causes and merely indirectly contributing factors in psychic disturbance, to internal ones finding origin in the personality and expressing themselves through this. Mental diagnosis has lost its generalized formulaistic character and become a matter for research and investigation in each individual. Nowhere has this received greater emphasis nor been presented with greater convincingness than in the report of the psychopathic laboratory of the Municipal Court of Chicago by the director, Dr. William J. Hickson. It is in fact the attitude and the message of the tenth and eleventh annual reports of the Municipal Court of Chicago, recently issued. The interest of the larger report, however, concentrates largely upon that of the psychopathic laboratory, and such is the nature of the work of the Municipal Court and its spirit of progress, that the two cannot be separated. The more intensive report incorporated within the broader one may therefore speak for the whole.

Doctor Hickson's urgent message is that those who come under the surveillance of the Municipal Court should be examined to determine whether they are not subjects for medical treatment, to be looked upon and treated first of all as sick and incapable and only secondly as criminals. He makes no vain and ill advised plea for the offender against society. He speaks rather in the interests of a true protection of society itself against the evils from which it suffers in the character and behavior of these subjects. He urges that the old classic methods of treatment take no account of these individual factors, but merely leave them to work their way unaffected by a limited period of confinement or other punishment which only perhaps precipitates further offense. It does nothing really to prevent this or to save these subjects from their inherent tendencies nor society from the fruits of them.

These persons young and old are in fact for the most part mentally diseased, a fact which the carefully acquired records of the laboratory fully attest. Moreover, the disease and disability exist for the most part constitutionally and are therefore latent, at least from the earliest years. Intellectual defect is largely apparent, but a still more prevalent menace, less apparent and therefore more insidious in its workings upon society, is the emotional defective condition, chiefly that comprehended under *dementia præcox*.

The old objective methods of trying to suppress vice by measures which do not reach into individual psychology, do not take into account the motives and impulses which lie there, and do not recognize the constitutional inability of the individual to control and direct them, have proved themselves fruitless. The efficacy of "law and more law" as a remedy for these things is arraigned at its own bar. Such negative testimony is furthermore overwhelmed by the abundance of positive testimony which arises from the facts which present themselves to a scientific mode of approach and attack, such as that which this laboratory has proved efficacious. The results of its several years of work, given statistically, should convince the most sceptical. The writer is first of all the practical worker, the psychiatrist who speaks of that with which he has had such effective experience, and he attacks his problems theoretically as well as from the broadest, which is at the same time the most individualistic, point of view. He brings to bear the thought and experience of leaders in practical psychiatric affairs, chiefly in the clinics and psychopathological fields abroad. Then he adopts the attitude of the most penetrating and progressive of these in refusing to recognize a generalizing and obscuring classification or description of the difficulties presented or of the cases in which such things appear. Here the individualistic point of view is paramount, as it is in the attempt to reach and deal with each case.

The study is a very intensive one as it is presented in this formal report. It is well worth the attention of physicians and members of the legal profession first of all, and of every thinking man and woman who is interested in the preservation of society from the increasing menace of those unfortunate in intellectual and emotional non-adaptability, who are therefore drifting into crime. The writer has purposely gone deeply into the technical psychiatric side in order to present the background of understanding upon which alone these individuals can be appraised

and their defective attitude toward the social order effectually controlled. Against this he presents the number and extent of such actual mental illness and defect among those who pass through the Municipal Court and its psychopathological laboratory. On these two broad bases of fact stands out in clear relief the only means by which control can be secured and exercised: regard for these unfortunates as needing medical diagnosis first, then medical treatment and care. By this alone can society be saved from the effect of their uncontrolled behavior and the continuous propagation and extension of the evils existent. Medical care and treatment mean such in the widest sense of the word, as they extend to the broadest social policies, medical and legal first, for the detection and guardianship of such helpless individuals and their segregation at some suitable farm colony or wherever they can be thus cared for and the dangerous forces turned into healthful and, as far as possible, effective, constructive channels.

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#### TO IMPROVE HEALTH CONDITIONS IN RURAL COMMUNITIES.

Impressed by the backward state of health conditions in rural communities and by the importance of promptly raising and maintaining the health of the rural population, Representative Lever, of South Carolina, has introduced a bill embodying the principle of federal aid, whereby effective cooperation between federal, state, and local authorities is assured. The bill, as introduced, provides an appropriation of \$250,000 for the first fiscal year, to be allotted for work in the various states on the half and half plan, and an appropriation of an additional \$250,000 each fiscal year thereafter, until a continual annual appropriation of \$1,000,000 is reached.

Some idea of the conditions prevailing in a large part of the rural districts in this country is given in Public Health Bulletin No. 94, just published, embodying the result of sanitary surveys and health demonstrations conducted by the Public Health Service in various states throughout the country.

In this survey over 50,000 farm houses were visited in fifteen different counties. Of these less than two per cent. were equipped for the sanitary disposal of human excreta. Over two thirds, sixty-eight per cent., used a water supply which was obviously exposed to potentially dangerous contamination from privy contents or from promiscuous deposits of human excreta. In the majority of these the water was also exposed to pollution from stable yards and pig sties. Only one third of the dwellings were effectively screened during the summer



season, to prevent flies, which had free access to nearby deposits of human and other filth, from entering dining rooms and kitchens and contaminating foods intended for human consumption.

Taking the prevalence of typhoid fever as the most reliable single measure of the effectiveness of proper health measures, the bulletin shows that wherever a sanitary survey and health demonstration was carried on, the number of cases of typhoid fever promptly fell to one quarter, or even less, of what they had been during previous years. That this was the logical outcome of well planned health activities is clearly shown by the fact that practically the same result was obtained in all the demonstrations, although these demonstrations were conducted in the widely scattered states of Maryland, Virginia, North Carolina, South Carolina, Kentucky, Tennessee, Georgia, Alabama, Mississippi, Iowa, Missouri, Nebraska, Oklahoma, Texas, and Washington.

It is conservatively estimated that there has been an annual average in the last decade, in the United States, of about 2,000,000 cases of hookworm; 350,000 cases of typhoid fever, of which 30,000 were fatal; and approximately 9,000,000 cases of malaria, of which 3,000 were fatal. These diseases result largely from insanitary conditions in our rural districts. They are preventable diseases. The economic loss to the nation each year from malaria and typhoid fever has been estimated at \$9,000,000. The prevention of typhoid fever, hookworm disease, and malaria has a profound influence in the prevention of many other diseases including tuberculosis. Experience has shown that by carrying out sanitary measures which effect a reduction in typhoid fever, there is a prevention of about three deaths from other causes for each death from typhoid fever prevented.

It has become more and more clear that health conditions throughout the country are largely dependent on health conditions in the rural districts. Health officers throughout the United States have time and again shown that the prevalence of typhoid fever, scarlet fever, diphtheria, tuberculosis, and other communicable diseases, cannot be successfully controlled without dealing effectively with insanitary conditions in the rural districts, to which, in many instances, these diseases are directly traceable. Under these circumstances it is reasonable and proper that any plan for improving rural sanitary conditions should enlist the cooperation of federal, state, and local health authorities, a principle recognized in the bill now under consideration. The adoption of this principle by Congress cannot but be regarded as a great step toward improving the health of the nation.

## THE LAST KICK.

If the nonmedical healers in the province of Ontario do not get any concessions now, they are not likely to get any when the Ontario legislature opens its session, early in 1919. The government, only a few days ago, called representatives of the various bodies concerned, including representatives of the Ontario Medical Council, the Ontario Medical Association, and the Academy of Medicine, Toronto. Their object in doing so was to go over the report of the commissioner, Mr. Justice Hodgins, on medical education and practice in that province, to find out just where each of the bodies aforesaid stood regarding the report. The medical representatives of the profession stated they were satisfied with the report, but suggested the following as a definition of the practice of medicine: "The practice of medicine shall mean and include diagnosing, healing, alleviating, or attempting to diagnose, heal, or alleviate any ailment, defect, or mental condition, directly or indirectly by advice, assistance, or any action whatever, with or without the use of drugs or any other means."

Numerous objections to the report were made, of course, by the representatives of the unlicensed bodies.

Colonel A. Primrose, C. M. G., president of the Academy of Medicine, possibly gave as good advice to the government as could be given. He told the law makers of the new Ontario Medical Practice Act that no irregular practitioner of any cult whatsoever had been permitted to enter either the Royal Army Medical Corps, or the Canadian Army Medical Corps, and advised that the government inquire into his statement before it even thought of allowing these cults into practice in a regular way. The reason for this lay in the fact that both the Royal Army Medical Corps and the Canadian Army Medical Corps had trained members of the profession both in England and in Canada to specially perform all manipulative surgery required, and to do it efficiently.

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## News Items.

**The Health of the Navy.**—The Bureau of Medicine and Surgery of the United States Navy announces that the sick rate for men in the service is rapidly changing to normal after the epidemic.

**Medical Officers to Retain Temporary Rank.**—Mr. Dyer has introduced a bill in the House of Representatives known as H. R. 13345, providing that officers of the Medical Corps of the regular army who have received temporary promotions shall retain their advanced grade to the conclusion of the war as extra numbers in the permanent establishment until promoted to the next higher grade.

**Archives of Neurology and Psychiatry.**—The American Medical Association announces that it has established and will issue, beginning on January 1st, a monthly journal to be known as the *Archives of Neurology and Psychiatry*.

**Blind Pensioners in Illinois.**—The quarterly report of the Illinois State Department of Public Welfare states that 2,000 blind adults are supported by county pensions in Illinois. Of these, 350 are in the southern part of the State. Trachoma is declared to be the cause of the high rate of blindness in this section.

**Effects of Demobilization.**—Colonel Deane C. Howard, Director of Sanitation of the Army, is quoted in a recent issue of *The Army and Navy Journal* as predicting an increase in the death rate and the sick rate of the army as the process of demobilization proceeds. This condition will arise from the fact that only those men will be discharged who are in good physical condition, eventually leaving only sick men in camp.

**Six Million Deaths from Influenza.**—It is believed that throughout the world about 6,000,000 persons have died from influenza and pneumonia during the last three months. It has been estimated that the war, during four years and a half, caused the death of about 20,000,000 persons, and it is pointed out that influenza is proved to be five times deadlier than war. Never since the Black Plague epidemic has such a plague swept over the world.

**Conference of Industrial Physicians.**—Dr. Francis D. Patterson, chief of the Division of Industrial Hygiene and Engineering, Department of Labor and Industry, Harrisburg, Pa., is desirous of obtaining a complete list of all physicians engaged in the practice of industrial medicine. It has been the custom of this department to hold semiannual conferences of industrial physicians and surgeons. As the next conference will be held early in 1919, it is desirable that the names and addresses of all industrial physicians and surgeons be in the hands of Doctor Patterson as soon as possible.

**A Bill Reorganizing the Personnel of the Medical Department.**—A bill has been introduced into Congress by Mr. Dyer affecting the personnel of the Medical Department. This bill, H. R. 13344, is general in character, providing for a surgeon general with the rank of major general, and for assistant surgeon generals in the ratio of one-half of one per cent. of the total number of the officers in the department. These will be equally distributed in the grades of major general and brigadier general of the Medical Corps, the Sanitary Corps, and the Veterinary Corps. The commissioned officers of the Medical Corps below the rank of brigadier general are to be proportionately distributed in the several grades as now provided in the Medical Corps of the Navy. The principle of selection is recognized, the President being authorized to fill any vacancy by selection from among the medical officers of not less than one year's continuous active service. It provides that retirement shall be granted only after fifteen years' continuous service. The ratio of dental surgeons is established at 2 per thousand of the enlisted strength of the Army.

**Trachoma a Reportable Disease in North Carolina.**—As a result of the efforts made by the health authorities to eradicate trachoma from Mecklenburg County, Doctor Crouch, State epidemiologist, reports that the North Carolina State Board of Health has made trachoma a reportable disease.

**Seventeen Thousand Deaths from Influenza in Camps.**—The War Department has issued a statement that, up to December 1, 338,257 cases of epidemic influenza had been reported in the various army camps and military centres in the United States, with approximately 17,000 deaths. The deaths resulting from pneumonia and from influenza were not reported separately, consequently, the figures are only approximate. Between the time that the influenza first made its appearance September 13th and December 1st, the deaths reported from all quarters numbered 19,694.

**National Committee for Prevention of Blindness.**—The fourth annual meeting of this committee was held in the New York Academy of Medicine, Tuesday evening, November 26th. Hon. William Fellowes Morgan presided. The speaker of the evening was Lieutenant Colonel James Bordley, Medical Corps, U. S. Army, who is director of the work for the blind of the Army and Navy, and also director of the Red Cross Institute for the Blind. He gave a very interesting talk, illustrated with lantern slides, of the work of re-education done in Hospital No. 7 for the soldiers and sailors blinded in war.

**Personal.**—Dr. Cary Eggleston was elected secretary of the Section in Medicine of the New York Academy of Medicine, at the annual meeting held on Tuesday evening, December 17th. Dr. Edmond P. Shelby was elected chairman.

Brigadier General William H. Arthur, Medical Corps, U. S. Army (colonel, Regular Army), was retired on November 29th, upon his own application, having reached the age of sixty-two years.

Colonel Louis Brechemin, Medical Corps, U. S. Army, stationed in Boston as chief surgeon of the Northeastern Department, was quite seriously injured on December 13th, when the Army automobile in which he was riding was struck by an automobile.

**Meetings of Medical Societies to Be Held in New York.**—During the coming week the following medical societies will hold meetings in New York:

*Wednesday, January 1st.*—New York Academy of Medicine (Section in Historical Medicine); Bronx Medical Association; Harlem Medical Association; Psychiatric Society of New York (annual); Society of Alumni of Bellevue Hospital; Brooklyn Hospital Club; Brooklyn Society for Neurology.

*Thursday, January 2d.*—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society (semiannual meeting).

*Friday, January 3d.*—New York Academy of Medicine (Section in Surgery); New York Microscopical Society; Practitioners' Society of New York; Gynecological Society of Brooklyn.

*Saturday, January 4th.*—Benjamin Rush Medical Society.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### POLYVALENT SERUM THERAPY IN CEREBROSPINAL MENINGITIS.

By LOUIS T. DE M. SAJOURS, B. S., M. D.,  
Philadelphia.

(Continued from page 1092.)

This bivalent serum was used clinically by Netter in the later months of 1917 and first three months of 1918 in a series of seventeen cases of meningitis. Twelve patients recovered, the gross mortality being, therefore, 29.4 per cent. All the fatalities occurred, however, within the first twenty-four hours after admission or because of superadded nonmeningococcic infectious complications. The corrected mortality, arising directly from the meningococcus with the case already brought under the influence of serum treatment, was nil, as compared to eight or more per cent.—up to 28.5 per cent.—in previous series of cases treated with other kinds of serum. Manifestly, then, polyvalent antimeningococcic serum therapy is not only a feasible procedure, but when appropriately adapted to the clinical cases met with, promises to yield better results than other methods of serum treatment previously applied.

In illustration of the beneficial action often procured from the use of Nicolle's bivalent serum, Netter mentions the case of a little girl, aged seven, admitted to a hospital on the third day of the disease, comatose and with universal purpura. The serum was administered to the amount of 120 mils in three injections of forty mils each in the course of thirty-six hours. The temperature, originally above 40° C., dropped to normal on the day after the third injection, and prompt recovery followed. In another patient, a little girl, aged three, admitted only on the eighth day of the disease and presenting in addition to diffuse purpura, suppurative arthritis of the knees and other joints, and an acute iridocyclitis, twenty-five mils of bivalent serum were promptly injected into the spinal canal and five mils into each knee joint. Additional injections were given on the two succeeding days. The temperature dropped to normal on the second day after the last injection, the knees resumed their normal appearance, and the other joint swellings subsided without surgical intervention, though atrophy of the choroid followed the iridocyclitis, injection of serum into the vitreous body having been carried out too late.

The first of the two cases just referred to was due to the B type of organism, or parameningococcus, while in the second, identification of the type of organism responsible could not be carried out. In two other cases in which equally rapid recovery took place under the bivalent serum, an organism of Type A, i. e., a true meningococcus, was found. In three additional cases, Type B was present, while among three in which a larger number of serum injections proved necessary, two showed Type B and one, Type A. The feasibility of obtaining a single serum highly efficient against more than one type of meningococcic organism was thus demonstrated.

The questions next arise: Are the serums now available to the practitioner so prepared as to be universally efficient against the various forms of organisms present in the cases of meningitis he encounters? Again, are all possible strains likely to be adequately represented in the serums as so far produced? An answer to the first query is supplied by the results of tests conducted by Amoss, 1917, who states that most commercial serums are grossly deficient in potency and usually fail to represent the four essential strains—meningococcus, parameningococcus, and two intermediate strains, A and B. A suitable serum, according to this author, should agglutinate all four of these strains in dilutions between one in 400 and one in 1,000. In the ideal serum "other and aberrant strains," he significantly mentions, "should be added as they are isolated." Andrews, 1917, whose work was based on Gordon's classification of the meningococcic organisms into Types I, II, III, and IV, found, among twenty-six instances of cerebrospinal meningitis in children under five years of age, eight organisms which agglutinated so poorly with the four type serums supplied him from Gordon's Central Cerebrospinal Laboratory at Millbank, England, that he could not regard them as conforming to the four standard types, and was forced to conclude that the meningococcus in the posterior basal meningitis of infants sometimes presents strains different from those of the epidemic form of the disease in adults.

Evidently the production of a universally efficient serum is a more difficult matter than might at first appear, and indeed, the inquiry seems pertinent, whether it is permissible at all to rely on any single serum, however carefully prepared, since the causative virus is liable to such wide variations at different times. Authoritative opinions are not wanting which favor, after primary use of a polyvalent serum of known all-around efficiency against ordinary types of meningococcus, the administration of serum freshly prepared from virus obtained in cases forming part of a prevailing epidemic. This virus may be taken from the cerebrospinal fluid; but, according to Andrews, it has been demonstrated by several workers that the type of meningococcus invariably present in the pharynx early in the disease is always the same as that found in the spinal fluid. The proper virus can, therefore, also be secured from the pharynx, and in fact, Paleani, 1917, specifically states that where he found the cerebrospinal fluid limp and sterile he took cultures from the nasopharynx to make an antiserum. Numerous pseudomeningococci and parameningococci are apt to occur, he finds, in the nasopharyngeal secretions, but these can generally be identified by agglutination tests.

Another complicating factor in the treatment of cerebrospinal meningitis is mixed infection. Paleani, among forty-three specimens of cerebrospinal fluid sent to him for examination, obtained positive meningococci findings in only thirty, many of the

remaining specimens showing pneumococci or tubercle or other bacilli. Netter, 1917, reports five of his own and seventeen other cases of epidemic meningitis in which the pneumococcus was found along with the meningococcus in the cerebrospinal fluid. All died but two. Since then Netter has made it a practice to inject two or three mls of antipneumococcus serum whenever administering antimeningococcus serum in meningitis cases. Of nineteen cases thus dealt with only two showed the pneumococcus in the cerebrospinal fluid, and both of these recovered.

On the whole, it seems plain that in the serum therapy of meningitis individual peculiarities of different cases or groups of cases require careful consideration if the lowest possible mortality is to be secured.

(To be continued.)

**Treatment of Malaria.**—A. J. Ochsner (*Southwestern Medical Journal*, October, 1918) gives the following treatment for malaria: The patient should be impressed with the importance of following instructions absolutely, including the taking of quinine at regular times at night. An alarm clock should be used, if necessary. The quinine should be taken with hot water to insure immediate absorption. On the evening before commencing the treatment a cathartic should be taken, preferably two ounces of castor oil in beer foam, ginger ale, or root beer; or five grains of calomel with ten grains of bicarbonate of soda at bedtime and a Seidlitz powder the following morning. During the period of treatment it is best to live on hot soups. On the morning following the taking of the cathartic two grains of quinine should be taken—bismuthate preferred, but the sulphate or the muriate will do—with half a pint of hot water every two hours night and day for two full days and two full nights. This must be done regularly; missing once or twice will make the treatment useless. Then no quinine for six full days and six full nights is to be taken. On the evening of the sixth day, another cathartic; on the morning of the seventh day the quinine again, two grains every two hours for two full nights and two full days. This treatment should then be stopped and some simple tonic taken for a few weeks. The quinine may be taken either in solution or in capsule form, but in the latter case the cap must be removed from the capsule before swallowing it. In the interval of six days between the two courses of quinine treatment a pill containing one fiftieth of a grain of arsenious acid one hour before and after each meal may be taken, each time with a glass of hot water. In case the quinine disagrees with the patient it is usually possible to correct this difficulty by giving two to five grains of sodium bromide in a little hot water before administering each dose of quinine. This treatment is based on the following well known facts: 1. The adult plasmodium of malaria is destroyed in the blood of a patient saturated continuously for forty-eight hours with quinine. 2. The spores of malaria can live indefinitely in the blood of patients, without regard to the amount of quinine taken. 3. Spores of malarial plasmodia

remain latent in the presence of quinine in the blood and begin to develop only after this drug has been entirely eliminated. 4. These spores require seven days before they can develop into adult sporebearing plasmodia. 5. Quinine must be absorbed in order to do its work; hence the importance of the preliminary cathartic, the soup diet, and the hot water taken with the quinine. 6. The blood must remain continuously saturated with quinine; hence the importance of giving the remedy regularly night and day. 7. The total amount of quinine required is small.

**Treatment of Nerve Injuries.**—Delagenière (*Presse médicale*, October 17, 1918) reports the results obtained in 358 cases of nerve wounds treated surgically: by resection and suture, 236 cases; by resection and nerve grafting, nine cases, and by nerve liberation, 113 cases. Seventeen cases of causalgia treated by section of the nerve above the lesion and followed by immediate suture are also reported. Resection and suture is the method of choice, yielding successful results in eighty-eight per cent. of instances. When resection is to be so extensive as to prevent approximation of the two ends, even with the limb flexed, resection should be done in two stages. At the first operation the largest possible section of nerve should be removed and the diseased ends sutured together; three or four months later, after the nerve has become stretched, further resection and suture of healthy nerve ends can be performed. In still more extensive loss of nerve tissue, nerve grafting should be performed, either by means of two fragments from the musculocutaneous, side by side, or with a fragment of nerve from an amputated limb. Nerve liberation gives good results only in simple compression. When the nerve is impaired it had better be resected and sutured.

**New Methods for Blood Transfusion and Serum Therapy.**—Frank W. Hartman (*Journal A. M. A.*, November 16, 1918) describes a cheap, simple, and efficient apparatus for securing and administering blood or plasma without the common difficulties of clotting. A twelve-gage rubber stopper is fitted into the neck of a one or two quart E. Z. seal fruit jar. The neck of a round, four ounce bottle is fitted into a large hole bored through the centre of the stopper. The bottle thus hangs in the large jar. A small hole is bored in the stopper for pressure tubing and a second for the blood-carrying tube. These two rubber tubes are passed directly through the stopper and become sealed to it by sterilization, while glass will sear the stopper and cause leakage. The pressure tube reaches just below the inside of the stopper, while the blood tube extends to the bottom of the jar, glass being used for the extension if desired. Suction or pressure is made by means of an aspirating pump. The blood tube is fitted with a clamp and needle connection for the reception of a seventeen-gage platinum needle. The small, inner bottle is filled with 2.5 per cent. citrate solution, and fifteen to twenty mls of this solution are placed in the bottom of the large jar. The small bottle receives a rubber siphon tube, carrying a screw clamp and a drop chamber for the



regulation of the flow of citrate, and this is connected to the blood tube right close to the needle mount by the insertion through the tube of a needle attached to the citrate tube. For bleeding the citrate in the jar is forced up to fill the bleeding tube and needle, the needle is inserted into the donor's vein, slight negative pressure is made in the jar, and a free flow of citrate is allowed from the small bottle. When bleeding becomes free the citrate is cut down so as to enter the blood tube in the proportion of about ten mils of citrate for ninety mils of blood. For injection the pump is reversed and the blood is slowly forced into the recipient's vein. Human plasma can be collected by the apparatus, using one per cent. citrate in normal saline in the proportion of twenty-five mils to each seventy-five mils of blood, the dilution hastening the sedimentation of the corpuscles. For the grouping of donors and recipients a simple technic is described, based on Lee's method. Its essential feature lies in the preparation and use of heavy filter paper which has been saturated with known serums and dried. This paper will keep indefinitely.

**Scabies in Military and Civil Life.**—Frank Crozer Knowles (*Journal A. M. A.*, November 16, 1918) points out that this parasitic skin disease is much more frequent in military than in civil life and that in the former it presents decided differences in its clinical picture and in the lesions produced. Thus in military life the hands are not frequently involved; the penis is usually much involved and shows many pustules and burrows; and complications are very common, including unusually large numbers of pustules and boils, impetigo, and the so called inflammation connective tissue, or secondary pustular lesions. The treatment of scabies can be made most efficient if properly conducted. The patient is given a warm bath on the first day, using plenty of soap. Immediately after the bath he rubs himself, or is rubbed, with an ointment containing 4.0 grams of precipitated sulphur to 30.0 grams of petrolatum (one dram to the ounce). This rubbing must consume fifteen minutes and must be done under the immediate inspection of the physician or of a trained person. It must include absolutely every part of the skin from the collar line to the toes and must be vigorous enough to open and destroy all of the burrows. The rubbing is repeated on each of the next three days, and on the fifth day another warm bath is given, followed by a complete change of clothes. The entire body is then examined minutely to insure the absence of active disease. If this is present the treatment is repeated. For the treatment of all of the secondary pustular complications there is nothing more effective than ammoniated mercury ointment in the strength of 1.3 to 2.6 grams in 30.0 grams of petroleum (twenty to forty grains per ounce). Incipient boils can be cured by daily rubbing for ten minutes with twenty-five per cent. ichthylol ointment. When developed they should be opened, and if present in large numbers, or if they continue to recur, an autogenous vaccine should be given. Septic ulcer and inflammation of connective tissue may require rest in bed and should be treated by the local application of ammoniated mercury in zinc oxide ointment.

**Cutaneous Autoplasty after Operative Treatment of Foci of Osteitis.**—D. Thévenard (*Presse médicale*, October 7, 1918), where a deep recess in a bone has been left through removal of bone tissue for osteitis, makes superior and inferior transverse skin incisions above and below the site of disease. The resulting lateral flaps are mobilized for some distance and then drawn together down into the centre of the bone defect which they are intended to fill. Three to six radiating incisions may be made to permit of better coaptation of the skin flaps over the defect. Dressings being insufficient to hold the flaps in place, the author, after retracting the flaps laterally, makes holes with an awl through the bone and passes through them bronze wire, which issues near the bottom of the groove in the bone and holds the margins of the flaps down in place. Usually two or three bronze sutures are used for each flap. At both ends of each bronze wire a small packet of gauze is placed to prevent injury to the skin. After having been fastened with the wire, the flaps are united at their margins by a few sutures. The bronze sutures should be kept under observation on and after the third day, and should be removed whenever the pressure at the point of fixation is seen to be threatening the vitality of the flap. A number of cases of osteitis after war wounds have been treated successfully by the procedure.

**An Improved Sugar Solution for Intravenous or Subcutaneous Injection.**—L. Duprat and A. Demolon (*Paris médical*, October 5, 1918) refer to the now frequent use of isotonic or hypertonic glucose solution in preference to normal saline solution in infections accompanied by renal reactions and diminished permeability of the kidneys. Chemically pure glucose is, however, difficult to obtain and costly, while commercial glucose is very impure, always containing much dextrin and sometimes foreign substances derived from sulphuric saccharification. Saccharose and lactose are pharmacologically inferior to glucose, passing out unchanged and unutilized in the urine. Upon previous inversion of the saccharose, however, the authors obtained complete utilization of the sugar even in the presence of severe hepatic insufficiency. Saccharose or cane sugar has the advantage of being almost pure chemically and of low cost. Uninverted saccharose or lactose, while no doubt effectual in washing out the blood, possibly constitute a strain on the kidneys, in addition to being eliminated unutilized. The inverted sugar, on the other hand, is both nutrient and diuretic. The formula for the production of a neutral, isotonic invert sugar solution, with complete hydrolysis of the saccharose and absence of decomposition products is: saccharose, 5.4 grams; enough to make 100 mils; normal hydrochloric acid solution, six drops. For a hypertonic solution, the quantity of saccharose is doubled. Either solution is sterilized at 100° C. for forty minutes, then at 110° C. for fifteen minutes. Ampules of a solution containing eight drops of normal sodium bicarbonate solution to the mil are sterilized at the same time. Before use, complete neutralization of the sugar solution is insured by the addition of one mil of the bicarbonate solution to every 100 mils of sugar solution.

**Treatment of Vulvovaginitis in Children.**—E. C. Sage (*Journal of the Missouri State Medical Society*, September, 1918) finds that the Bulgarian bacillus cannot be made to thrive in the human vagina, and thus its use to overgrow and crowd out the gonococcus is fruitless. The measures used in his cases at the Barnes Hospital, St. Louis, were instillation into the vagina of one to five per cent. silver nitrate or five per cent. protargol; douches of potassium permanganate; hot sitz baths; application of zinc ointment to the irritated vulva. The most rational and efficient treatment seems to be mixed vaccines injected in ascending doses every ten days.

**Surgical Treatment of Cholangitis and Cholecystitis.**—John Darrington (*Southern Medical Journal*, September, 1918) gives the following rules for removal or for drainage of the gallbladder. The indications for removal are: 1. When the wall of the gallbladder is so damaged that it will remain a source of infection; 2, cystic gallbladder, hydrops, or empyema; 3, when the glands along the common duct are enlarged; 4, gangrenous gallbladders, where possible; 5, stricture of the cystic duct; 6, pancreatitis, if stones are present; 7, any evidences of malignancy. The indications for drainage are: 1. In all cases where the patient's condition or the technical difficulties render removal unsafe; 2, greatly enlarged liver with jaundice; 3, pancreatitis, if stones are not present; 4, in all cases of common or hepatic duct complications; 5, in pregnancy and very old patients; 6, in those simple cases where the infection has subsided and the stones have been left as a monument to Nature's victory.

**Galvanic Current in the Treatment of Exophthalmic Goitre.**—Olivier (*Paris médical*, October 5, 1918) reports two cases in which the ultimate results of treatment by galvanic electricity proved highly gratifying. The first case was that of a woman of twenty-six years, suffering from the disease for three years, in whom hematothyroidin had failed and section of the cervical sympathetic had been refused by the surgeon, owing to the patient's extreme weakness. Her weight had become reduced to thirty-seven kilograms. A sixty volt galvanic current was subsequently employed, with broad electrodes over the neck and back, the former being negative and the latter positive. The amount of current was gradually increased to eighty milliamperes. Thirty-seven treatments in all were administered, at first daily, later at increasing intervals, up to one week. Each sitting lasted about half an hour. Five months after the beginning of treatment, the patient weighed fifty-nine kilograms and her pulse rate had fallen from 140 or 150 to eighty. The second patient was a woman of forty-eight years, with extreme tremor preventing locomotion, a pulse rate of 180, a large soft goitre, diarrhea, vomiting, and marked emaciation. Forty-two galvanic treatments were given. After the eighth treatment the patient could already walk a considerable distance. When seen three years later she was in good health. The author deems the galvanic current one of the best procedures in exophthalmic goitre. The ordinary dose of twenty-five to thirty-five milliamperes is, however, insufficient, even if combined with faradic electricity; a much stronger treatment is required.

**Paralysis of Nerve Cells and Nerve Endings by Curari, Strychnine, and Brucine and Its Antagonism by Nicotine.**—J. N. Langley (*Journal of Physiology*, October 18, 1918) adds evidence to the generally accepted fact that curari, strychnine, and brucine paralyze peripheral nerve cells, and describes a series of experiments on cats in which the paralysis was demonstrated. From his results he believes that these poisons have some paralyzing action on all preganglionic nerves. The different preganglionic nerve fibres investigated are grouped into classes according to the order of paralysis with increasing amounts of curari in the following order: cardioinhibitory fibres; secretory fibres of the chorda tympani, the secretory pupillodilator and pilomotor fibres of the cervical sympathetic (probably also bulbar and sacral vasodilators); cutaneous vasoconstrictor fibres; fibres for the nictitating membrane and eyelids; probably adrenalin secreting fibres and abdominal vasoconstrictors. Nicotine, when given in sufficient amount, antagonizes the paralyzing effects of these poisons, and produces its usual stimulating effect. The excitation of nerve cells by nicotine, after curari has been administered, depends upon the relative concentration of nicotine and curari in contact with them. In general, nicotine antagonizes the paralyzing action of curari on the nerve cells in inverse proportion to the ease of paralysis by curari as determined by nerve stimulation. No means were discovered of permanently raising the blood pressure to any extent after a large dose of a poison paralyzing peripheral nerves.

**X Ray Treatment of Scars.**—Zimmern, Cottenot, and Houdé (*Paris médical*, September 14, 1918) state that adhesions formed by scar tissue between mobile structures can often be eliminated in a few sittings with the x rays. This applies to adhesions at the bend of the elbow or in the popliteal space which offer obstruction to complete use of the joint. In scars of the wrist or forearm, sometimes following prolonged suppuration and involving the synovial sheaths, compressing or agglutinating the tendons and impeding flexion, the x rays constitute the therapeutic method of choice.

**Argyrol Instead of Bismuth Paste.**—Hugh Crouse (*Southwestern Medicine*, September, 1918), having had unpleasant experiences with bismuth paste, now uses in its stead a paste consisting of argyrol 200 grains, liquid alboline four drams in lanoline q. s. four ounces. The advantages of argyrol are high antiseptic potency, decidedly penetrating properties, and harmlessness even in concentrated solution. The paste should be made up each week and kept cool. The technic is that of bismuth paste.

**Vaccine Therapy in Gonorrhea.**—Candido Maderna (*Giornale Italiano delle Malattie Veneree e della Pelle*, September 30, 1918) sums up a large series of cases as follows: Vaccine therapy in primary acute or subacute specific urethritis affects only subjective symptoms and has no direct action on the gonococcus; however, as adjuncts to local treatment, vaccines are of value in the subacute or chronic cases. In the secondary or complicating localizations of disease, as arthritis, epididymitis, and prostatitis, vaccines are valuable, and here large doses are of much more value than small ascending doses.



# Proceedings of National and Local Societies

## THE AMERICAN PUBLIC HEALTH ASSOCIATION.

*Forty-sixth Annual Convention, Held in Chicago, December 9, 1918.*

Dr. CHARLES J. O. HASTINGS, of Toronto, in the Chair.

**Relation of Income to Health.**—From President Hastings's scathing criticisms of our democracy and its iniquitous distribution of wealth, the relation of income to health ran like a red thread through the meandering discussions on industrial hygiene, the social aspects of disease, the influenza epidemic, and infant mortality. Summaries of elaborate studies into the cost of living, and of the existing direct relationship between the wage rate and the sickness rate, were presented at the several section meetings.

Miss Julia Lathrop submitted the results of eight surveys made by the federal Children's Bureau, pointing to the close correlation between income and infant mortality. In families where the breadwinner earned annually \$1,250 or more, the infant death rate per thousand live births varied from 22.2 to 87.6, while in the group of very small income of under \$550, the infant deaths, with one exception, oscillated between 117.5 and 260.9 per thousand live births. The relationship between housing and infant welfare was illustrated by a series of figures, of which those pertaining to Manchester, N. H., are characteristic. In homes where the rental paid was \$7.50 per month, infant mortality was 211.4—or more than double the rate for the registration area in 1915 of 100 per 1,000 living births. Among the children in homes with a rental of from \$7.50 to \$12.49, the death rate was 172.1. In the third group, with a rental range of from \$12.50 to \$17.49, it was 156.7, and in the next higher group the rate was about one in ten, or equivalent to the general census figure of 1915. The inference drawn from these statistics was to the effect that the rate of infant mortality bears a sort of one sided inverse ratio relationship to improvement in housing conditions. The better the housing conditions, the lower the infant death rate. Miss Lathrop discounted the factor of ignorance on the part of the mother as of negligible value in the working out of this relation. She shared the view of Sir Arthur Newsholme, who maintains that the bugaboo of "maternal ignorance" was invented by the well to do, to relieve their conscience, and is of the opinion that "there is little reason to believe that the average ignorance in matters of health of the working class mother is much greater than that of mothers in other classes of society." Miss Lathrop conceded, however, that conditions antedating birth bear a very distinct and direct relation to infant mortality, as forty-six per cent. of the infant deaths occur during the first month of life. Therefore, unless we analyzed the infant deaths by age, in one month groups, we could not accept unqualifiedly the deductions drawn from the figures quoted above, although it must be admitted that in a considerable

proportion of cases, the cause of the unpropitious prenatal conditions was easily traceable to the small income of the family. The studies of the Children's Bureau indicated that while the death rate for babies of mothers at home, with no employment save that of caring for their households, was 122.0, that of mothers employed outside the home was 312.9.

**Race as an Element in the Incidence of Disease and Death.**—Another factor discussed was the race composition of the groups under consideration. Dr. W. H. Brown, the health officer of Bridgeport, Conn., discussing the health problems of the foreign born, pointed out the paramount need of more intensive study of incidence of disease and death among the several racial groups making up our heterogeneous urban populations. From the studies at hand, it was already known that, in so far as infant mortality was concerned, the presence of Russian and Austro-Hungarian Jews and of Swedes was an asset in the public health ledger, while the natives of England, Ireland, Germany, and Italy constituted a liability in this particular respect. It was also known that the general death rate of the foreign born was higher than that of the native population. Doctor Brown felt that a variety of social and economic causes were responsible for this phenomenon, and he argued that "sickness and death must be attacked by correcting the social and economic conditions which, we now realize, play such an important part in their causation."

**State Medicine.**—The most startling proposals for social reform and race amelioration were made by Dr. Victor C. Vaughan. He made an eloquent plea for State medicine and for the assumption, by the federal government, of control over certain features in the education of the youth of the land. He would draft annually all the boys of a certain age for a two years' term of service and training for health and good citizenship. He would have everybody carry an identification card, with a detailed record inscribed thereon, which would be brought up to date every two years or so, whenever a new physical examination was made. Throughout the country he would establish health centres, until they, at least, were as numerous as are high schools. The advent of group medicine was attested to by a circular of a New England promoting corporation, soliciting shares at \$10 apiece; and the discussion of health insurance was, as usual, not less animated than a United States Senate debate on government ownership of railroads or cables.

**Industrial Hygiene.**—Industrial hygiene commanded serious attention, this being one of the hitherto entirely too much neglected phases of a rational public health programme. A representative of organized labor argued in favor of health efficiency engineers in our mills, mines, and factories, and gave an outline of the labor platform for health and safety. Among the planks in that platform were a higher minimum wage, an eight hour maxi-

mum work day, fresh air clubs, temperance, rigid inspection, enforcement of sanitary and safety laws, community forums for the discussion of health problems, a federal department of health, and the elimination of Latin and substitution of English in prescriptions. It was thought that this mystifying practice was un-American, and did not help either practitioner or patient. Professor E. R. Hayhurst emphasized the need of a more extensive campaign of education in order that all classes of society might be reached and instructed in the principles of prevention of industrial diseases. Personal hygiene entered largely as a factor into the question of industrial hygiene, and this feature must be made the subject of popularization among pupils in the schools and among industrial workers, by every educational method devisable. There was no doubt that our greatest advances in public health would be made through the medium of education. The training of physicians in industrial medicine was, of course, also a recognized need. Here was a fruitful field of opportunity for younger men and there were indications that steps were being taken to provide adequate training for this group of medical practitioners.

**Lessons of the Framingham Experiment.**—Attention was directed to the fact that great opportunities lay before the Public Health Service, in safeguarding the water supplies of the country, in raising the sanitary standards of the smaller urban and the rural districts, and in combating venereal disease and tuberculosis. The antituberculosis work seemed to have fallen into a rut, even in the most progressive communities, and with the anticipated increase of phthisis following the war strain, the time had arrived when some action should be decided upon. The demonstration financed by the Metropolitan Life Insurance Company, at Framingham, Mass., was noteworthy as to what could be achieved by intensive work. On January 1, 1917, there were twenty-seven known cases of tuberculosis in Framingham, a fair sized typical New England industrial town with average health conditions. The introduction of a consultation service and a vigorous search for active tuberculous patients increased the number of known cases to 181 by November, 1918. A careful physical examination of two thirds of the population of the town showed that approximately two per cent. of the people had tuberculosis in either an active or an arrested form. If this figure was applied to the whole country, as it well might be, it might mean that we had 2,000,000 people suffering from tuberculosis, with at least 1,000,000 having the disease in an active stage. From our first draft alone, there were returned 50,000 cases of hitherto undiscovered tuberculosis. A von Pirquet tuberculin test of children between the ages of one and seven in Framingham indicated that thirty-three per cent. of them had already been infected, although the cases of actual disease were very few. To deal adequately with the problem of tuberculosis, one would have to adopt a very comprehensive general public health and welfare programme. The carrying out of such a programme was expensive, but if communities were to meet their obligations, they must not be deterred by financial considerations.

### Health Services of the Federal Government.

It was thought that the war had given impetus to the extension of industrial hygiene. Lieutenant Colonel P. S. Doane spoke of the measures taken and the success achieved in securing healthful surroundings for the many thousands of workers engaged in shipbuilding. Assistant Surgeon General Trask, of the United States Public Health Service, gave a comprehensive summary of the relation of the federal compensation act to the health and welfare of the civil employees of the government. He stated that this act was not strictly a war measure, for it was passed by Congress in 1916, and approved by the President on September 7th of that year, but in its application it became a measure of utmost importance in safeguarding the health and safety of the several hundred thousand of government employees working under the most stressful conditions. The success of the administration of the federal sanitation boards and accident commissions and the liberal and scientific policy underlying it, had afforded a demonstration, the significance of which could not be neglected by the large industrial employers and by the compensation commission of our several States. The United States Public Health Service had expanded considerably during the war, and had done a great deal of extremely important health work in the sanitary zones throughout the country. The backward rural areas were awakened to their opportunities in conserving health and life. The plans for the expansion of the Public Health Service were presented by Surgeon General Blue, and heartily endorsed by the Public Health Association.

**Coordination of Public Health Endeavor.**—To obviate the waste of effort and money, to eliminate competition and exaggeration of achievement in the raising of funds, and to muster all available resources for the most efficient health endeavor, President Vincent of the Rockefeller Foundation urged the consolidation of all of the private health agencies under the auspices of the American Public Health Association. The association, under the guidance of Dr. Lee K. Frankel, its newly elected president, planned to raise a much larger budget for the coming year, to become more of an active and directing force, and to employ field workers to stimulate the work of the municipal and State public health bodies. The Chicago convention undoubtedly marked an era in the life of the American Public Health Association, and served as an indication of the powerful momentum the public health movement had acquired in this country.

**The Influenza Pandemic.**—Throughout most of the general sessions of the convention there occurred endless discussions on the influenza pandemic in which every one of the 1,000 members present took part at least once. The pandemic, according to the estimates of the United States Public Health Service, caused approximately 350,000 deaths between September 15th and December 4th. The administrative problems of control were numerous and baffling and demanded the attention of this gathering of health officers and sanitarians from all over the country. Unfortunately, nothing of any consequence in relation to the



etiology, epidemiology, prevention or control, could be established. It seemed to be the consensus of opinion that the cause of the disease was unknown; that it was most contagious in its incipient stages; that the only method of prevention was the segregation of those who were exposed; that the closing of schools and of other public places was next to futile; and that the expediency of mask wearing was problematical. The two indubitably best epidemiological contributions were made by Dr. W. H. Guilfoyle, the registrar of the New York City Department of Health, who prepared a series of most interesting statistical charts, and by Mr. Sydenstrycker, the statistician of the United States Public Health Service, who summarized the information gathered by the service from all over the country. The generalizations presented were made out with the utmost caution, and with full realization that in many instances the data now available did not warrant final conclusions. From the material at hand, it seemed that there were several foci of infection, although Boston appeared to have been the earliest focus. The rapidity of the development of the epidemic as well as its coincident appearance in widely scattered localities suggested that sources of infection were present in many different localities, possibly some time before they were recognized or even suspected. The rapid spread was from large urban centres to nearby cities and towns, and thence to rural districts. There did not appear to be any relation between the severity of the epidemic and size of the city, but the severity of the epidemic, as measured by mortality, seemed to have decreased as the epidemic spread. The epidemic developed later in the central and western sections of the country, and did not seem to have been so severe in those sections as in the area along the eastern and southeastern coast. The cases seemed to have been of less severe type as the epidemic progressed. The case mortality appeared to have been highest among children under five years of age, among adults of twenty to thirty-five years, and among those of sixty-five and over. The further collection of data and careful analysis were under way, and promised a most important epidemiological contribution toward the study of the scourge. The figure of approximately 350,000 deaths from influenza among the civilian population of the United States in less than three months called into question the reliability of the diagnoses made. Ordinarily, the diagnosis of influenza as a cause of death was regarded with scepticism. In times of epidemic, the majority of the diagnoses were undoubtedly correct.

**Accuracy of Certified Causes of Death.**—In this connection\* the results of a study of the accuracy of certified causes of death, based on 64,820 deaths reported among the industrial policy holders of the Metropolitan Life Insurance Company, were considered. The latter thought such a study to be of sufficient interest to the public health movement to be justifiable. The procedure consisted in dividing the death certificates into two groups, in accordance with the recommendations of the special committee of the Section of Vital Statistics of the

American Public Health Association published in report No. 440, from the United States Public Health reports. In the first group were diagnoses which could be accepted as reliable without supporting data or autopsy findings, such as typhoid, scarlet fever, tuberculosis, exophthalmic goitre, etc. This class comprised the majority of the 64,820 deaths under study. In Class II there were 10,108 cases, where no statement as to cause of death was acceptable unless supported by autopsy findings or by other specific supporting data. In every instance of this ten thousand odd unreliable titles, the Metropolitan Life Insurance Company wrote to the physician, requesting him to give the necessary information, in order to determine the reliability of the diagnosis. In cases of malaria, for example, the question was asked whether diagnosis was confirmed by autopsy or by finding the *Plasmodium malariae* in the blood before death. In cancer of the peritoneum, intestines, or rectum, the question was asked if the diagnosis had been confirmed by autopsy, operation, pathological, microscopic, or other proof; and so on, in every questionable case. On the basis of the replies received, it was determined that 55,372, or 85.4 per cent., of the 64,820 deaths in the industrial experience of the Metropolitan Life Insurance Company were definitely and reliably classified as to cause of death. Considering the fact that some diagnoses were tentatively placed in the unreliable list because the physician concerned did not reply at the time the classification was made, it may safely be estimated that at least ninety per cent. of the diagnoses made were correct. It was thought that the study of the Metropolitan Life Insurance was a welcome addition to medico-statistical literature.

#### COLLEGE OF PHYSICIANS OF PHILADELPHIA.

*Special Meeting Held Tuesday, November 5, 1918.*

Dr. THOMAS R. NELSON, Acting President, in the Chair.

#### **Surgical Treatment of Wounds of the Lung.**—

Major PIERRE DUVAL, of Paris, called attention to the fact that in the last two years the treatment of lung wounds in the French army had changed from the medical to the surgical. This surgical treatment consisted in excising the lung wound and treating it as one would a wound in any other part of the body. The chest was opened widely enough to take the lung out; it was examined on all its surfaces; hemorrhage was checked, the lung replaced, and the chest wall sutured completely. In the first half of the war in 300 cases of lung wounds treated medically there was a mortality of from twenty-five to twenty-eight per cent. By the surgical treatment in cases brought in with severe hemorrhage there were good results in from sixty-five to sixty-eight per cent. of all cases. By the operative treatment of war wounds of the lung the mortality had fallen from twenty-eight to nine per cent. The war experience in lung wounds had opened a broad field for lung surgery in time of peace.

**Gunshot Wounds of the Chest.**—Colonel

GEORGE E. GASK, of London, said that a very great change had come over the whole of their treatment of gunshot wounds. At the beginning of the war they were horrified to find that every single wound was suppurating. All efforts to get clean wounds had been futile and it seemed as if they had returned to the pre-Listerian period. They now realized that the essential treatment of all gunshot wounds was the early mechanical cleansing by open operation under aseptic precautions before the organism introduced by the missile had a chance to multiply and invade the tissues. A broad line of distinction was drawn between contamination and infection. In the majority of cases operation was done within twelve or fifteen hours of the time of injury. For the first two years of the war they were afraid to do any sort of operation on the chest. The men were put to bed, given morphia if in pain, a remedy for cough if there was cough, and it was hoped they would get well. Quite a large number did, but a larger number died, and a large number became extremely septic, had empyemata with pus discharge. The only surgery that was done was the removal of an inch or two of rib and a tube put in. Throughout the time of the Somme fighting they had no time to study these chest cases, for the number of urgent operable cases was enormous. Gradually they found that the thoracic cases could be divided into two categories: those dying on the battlefield or within a few hours, and those dying in from forty-eight hours to two or three weeks. Of the former class death was the result of hemorrhage; of the latter, usually death resulted from sepsis. The next step was to find the channel of infection, and the great principle they arrived at was to effect an early mechanical cleansing of the wound of the chest wall and of the wound in the lung. Their method was to put the patient to bed, the chest being examined for complicating wounds, hemothorax, pneumothorax, movements of the diaphragm, position of the heart, and for any indication of respiratory distress. X ray examination was used whenever possible. Determining that the chest wall must be excised, they cut down upon the rib or scapula, finding it necessary often to excise ragged splinters with a pair of scissors. Very often bleeding was found in the costal artery, which was thought to come from the lung; this was tied. Inserting a finger, there could be felt splinters of bone in the cavity or sticking into the lung. Such cases with the air sucking in and out were uniformly fatal. Later they were led to enlarge the wound of entrance that the hand might enter the thoracic cavity and remove foreign bodies. Rather to their astonishment, the men stood these operations much better than was anticipated. There was banished forever the principle which Colonel Gask had been taught to believe, that handling of the wounded lung would cause renewed bleeding. Upon opening the chest the blood was removed and search was made for foreign bodies. The lung was examined for foreign bodies as would be a coil of intestine. If the foreign body had penetrated into the lung a fresh incision might be required. This could be made without fear except near the hilus, and any bleeding was easily con-

trolled by deep catgut sutures. The principle, that a wound must be cleansed, must be applied in wounds of the lungs as in any of the soft parts. As evidence of the fact that the lung was able to take care of many organisms without abscess formation, gas gangrene of the lung was unknown in spite of the many cases in which foreign bodies were left in the lung. It was, therefore, a matter of practice to close every wound in the lung. Cleansing of the pleural cavity was of the utmost importance. Closure of the chest was the final step in the operation, and this was done as in closure of the abdomen, when possible—muscle to muscle, and skin to skin. An anesthetic might be given with safety if there was fair function on the side of the chest not opened. The type of anesthetic was of no great importance so long as it was skillfully given. It was his opinion that probably not more than thirty per cent. of penetrating wounds of the chest should be subjected to operation.

Indications for early operation were: 1, Such wounds of the soft parts as would require operation in any other part of the body. 2, Bleeding from that wound; intracostal hemorrhage. 3, Fractured ribs. 4, Cases with large foreign bodies lodged in the lung. 5, Cases of pneumothorax in which air was admitted through the wound. In hemothorax without extensive wounds, splintered ribs, or retained bodies, there was at present a diversity of opinion. While they were inclined to operation, their practice was not to operate unless there was some sign of sepsis. Theoretically there should be no such state as an infected hemothorax; but practically there were a considerable number of such cases. We had no means of telling which cases would become septic. He believed that closure of the chest helped to expand the lung, for every movement aided in this expansion as soon as the air was absorbed. If pus was formed a stitch might easily be removed and a tube inserted. The surgical treatment of wounds of the chest was now being practised in almost every hospital at the front line, and many patients restored to health who would have died under the former treatment.

**Surgery of the Lungs.**—Colonel Sir THOMAS MYLES, of Dublin, said that it must never be forgotten that the man with a bullet in his lungs had a bullet in two places—in his lung, and also on his mind. A second operation was often undertaken in order to get rid of the bullet on his mind. Sir Berkeley Moynihan believed that the mechanical effect of the bullet in the lung was, in many cases, comparatively small, while the effect upon the man's mind was considerable. The only reliable method of examination was by the x ray, and for the removal of the foreign body Sir Berkeley Moynihan found that, with few exceptions, an incision at the level of the fourth rib offered an easy route of exit. The lung had to be handled as gently as possible in searching for the foreign body, and when located it was a simple matter to make an incision and extract it. A stitch was then inserted with a curved needle. It was of great importance not to encourage a too rapid inflation of the collapsed lung.

*(To be continued.)*



## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Principles and Practice of Filling Teeth.* By C. N. JOHN-SON, M. A., L. D. S., D. D. S., Professor of Operative Dentistry in the Chicago College of Dental Surgery; Editor of the *Dental Review*. Fourth Edition, Revised and Enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1918. Pp. x-280. (Price, \$3.00.)

Rather extensive revision has been made by the author in this edition of his well known, and now, standard textbook. The chapter on the cast gold inlay has been entirely rewritten, while the one dealing with apico-dontia (root canal treatment) has been enlarged and brought up to date. The volume very properly opens with a chapter on mouth hygiene, calling attention to the fact that this is the most fundamental and important feature of dental practice; that the most thorough cleansing of the mouth and teeth should take precedence over every other dental operation, except where relief of pain is necessary. The chapter on dental caries, while designed to be only a brief summary of the subject, can hardly be regarded as being up to date. Those dealing with cavity preparation and the manipulation of the different filling materials, leave nothing to be desired. It is doubtful whether they could be improved upon, embodying as they do, principles that have been found correct after long years of experience, by careful operators everywhere. There are also chapters dealing with the conservation and destruction of the dental pulp, one on the treatment, and one on the filling of root canals. The author's seeming preference for arsenic in tooth devitalization will be condemned by some, though there can be no doubt that when properly employed it is as a rule one of the best, if not the best agent that can be used. It certainly cannot be regarded as obsolete. The advocates of nerve blocking and pressure anesthesia too often overlook the trauma produced by pulp extirpation, with the creation of a *locus minoris resistentiæ* in the apical region which may later become a focus for hematogenous infection. The chapter dealing with the x ray in the management of pulpless teeth rightly condemns the too common practice of attempting to make a diagnosis and prescribe treatment based solely on a study of the röntgenograms. Especially is this condemned where the röntgenologist happens to be one who has had little or no clinical experience in the treatment of such conditions. The statement that "we are able to very effectively manage most of these cases (pulpless teeth) without the additional expense involved in the use of the x ray" is open to question. Pulpless teeth can undoubtedly be well filled, in certain cases, without resort to the röntgen ray, and unfortunately there will be those who will continue this "hit or miss" method, but it must always be regarded as doubtful practice. The synonymous use of the term x ray, skiagraph, radiograph, picture, etc., is unfortunate. All scientific writers on the subject are agreed in the use of the term röntgen ray, röntgenologist, röntgenogram, etc., an example

which should be generally observed in the interest of clearness. The volume closes with an excellent chapter on the management of children's teeth, including the deciduous and permanent set.

No better book has ever been written on the subject under consideration. It can be studied with profit by both the student and practitioner of dentistry. It is sound in principle, and characterized throughout by a sane conservatism that is greatly needed.

## Births, Marriages, and Deaths.

### Died.

- ALLARD.—In Fall River, Mass., on Monday, December 16th, Dr. Joseph Allard, aged sixty-two years.
- BARKER.—In Carthage, N. Y., on Saturday, December 14th, Dr. Frank Justin Barker, aged fifty-eight years.
- BOWEN.—In Adams, Mass., on Thursday, December 5th, Dr. David H. Bowen, aged eighty years.
- BROTHERS.—In Brooklyn, N. Y., on Wednesday, December 18th, Dr. Samuel Brothers, aged fifty-five years.
- BURD.—In Philadelphia, Pa., on Monday, December 16th, Dr. J. Patterson Burd.
- CAMPBELL.—In Oakland, Cal., on Wednesday, December 11th, Dr. John A. Campbell, aged eighty years.
- CRONIN.—In New London, Conn., on Sunday, December 8th, Dr. Joseph F. Cronin, aged sixty-four years.
- CROSS.—In Kingsville, Tex., on Saturday, December 7th, Dr. Edward Cross, aged eighty-one years.
- DAUGHTERS.—In Fall River, Mass., on Friday, December 6th, Dr. Andrew N. Daughters, of Tiverton, R. I., aged fifty-one years.
- DVORAK.—In Chicago, Ill., on Friday, December 6th, Dr. Albert Dvorak, of Casco, Wis., aged thirty-eight years.
- GENTILE.—In Chicago, Ill., on Saturday, December 14th, Dr. Joseph S. Gentile, aged thirty-three years.
- HADDOCK.—In Beverly, Mass., on Friday, December 13th, Dr. Charles W. Haddock, aged sixty-two years.
- HEALY.—In St. Louis, Mo., on Saturday, December 7th, Dr. Roscoe H. Healy, aged twenty-four years.
- JACOBSON.—In New York, N. Y., on Tuesday, December 10th, Dr. Julius H. Jacobson, of Toledo, Ohio, aged thirty-nine years.
- LUCE.—In Clinton, Me., on Sunday, December 15th, Dr. Prince Edwin Luce.
- McHENRY.—In Millville, N. J., on Wednesday, December 18th, Dr. Robert N. McHenry, aged twenty-nine years.
- MCLEAN.—In Cloyn Court, Cal., on Wednesday, December 4th, Dr. Robert A. McLean, of San Francisco, Cal., aged sixty-seven years.
- MARTIN.—In Fresno, Cal., on Friday, December 6th, Dr. J. Fount Martin, aged eighty years.
- OVERG.—In Berkeley, Cal., on Wednesday, December 4th, Dr. John Ulrick Overg, aged sixty-four years.
- REED.—In Atlantic City, N. J., on Sunday, December 15th, Dr. Eugene L. Reed, aged fifty-nine years.
- SHELTON.—In La Jolla, Cal., on Wednesday, December 11th, Dr. Charles Henry Shelton, of Montclair, N. J., aged sixty-four years.
- SMITH.—In Olean, N. Y., on Saturday, December 7th, Dr. Cassar Smith, aged fifty-two years.
- STOLTZ.—In Colville, Wash., on Friday, December 6th, Dr. Merlin G. Stoltz, First Lieutenant, Medical Reserve Corps U. S. Army, aged twenty-four years.
- URY.—At Fort Oglethorpe, Ga., on Sunday, December 8th, Dr. John Busby Ury, of Defiance, Ohio, Captain, Medical Corps, U. S. Army, aged thirty-nine years.
- VAN VREDENBURGH.—In New York, N. Y., on Sunday, December 22d, Dr. William Townsend Van Vredenburg.
- WHITE.—In New York, N. Y., on Monday, December 16th, Dr. Charles H. White.
- WILEY.—In Walden, N. Y., on Friday, December 13th, Dr. Adam Wiley, aged seventy years.

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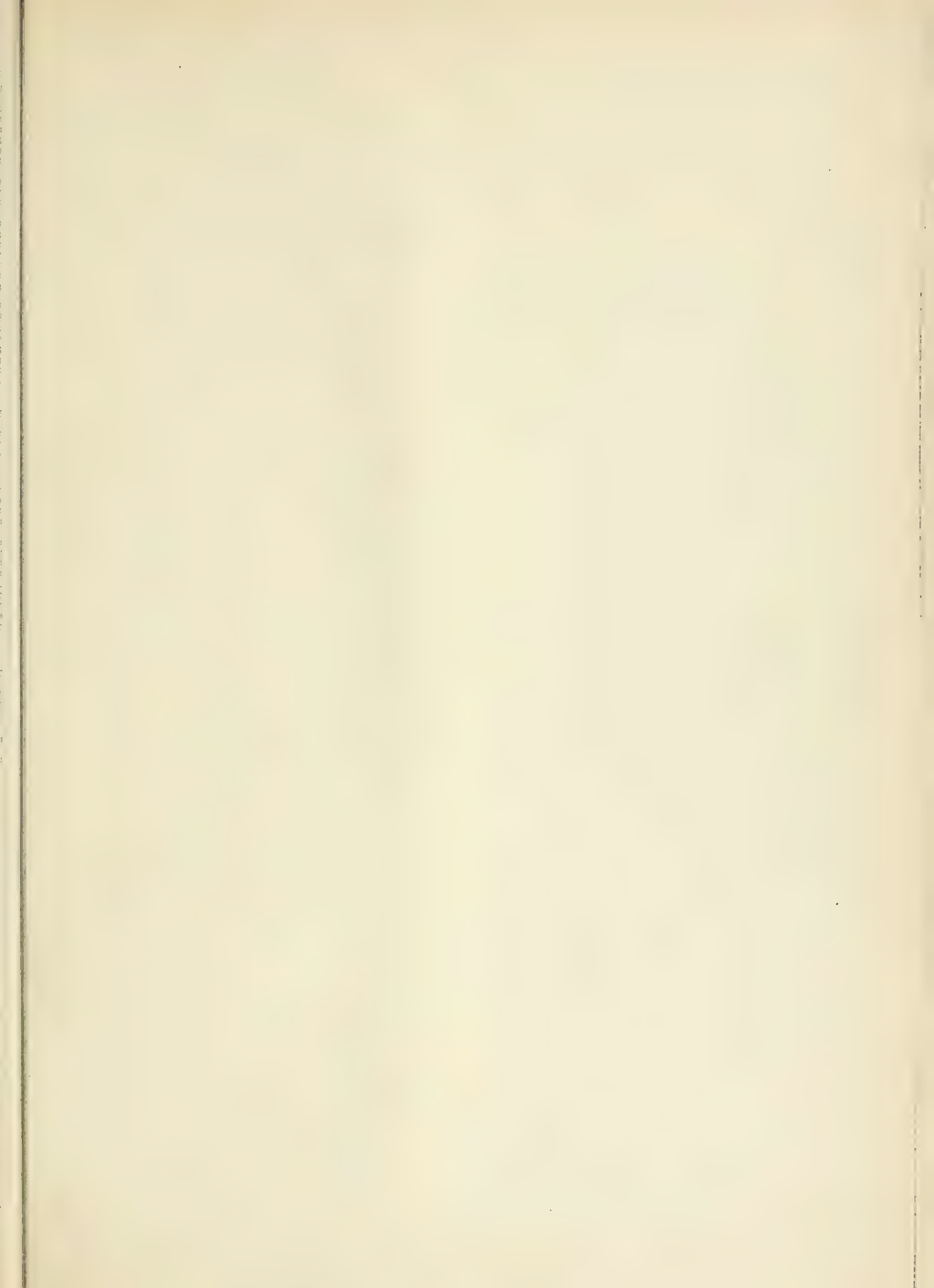
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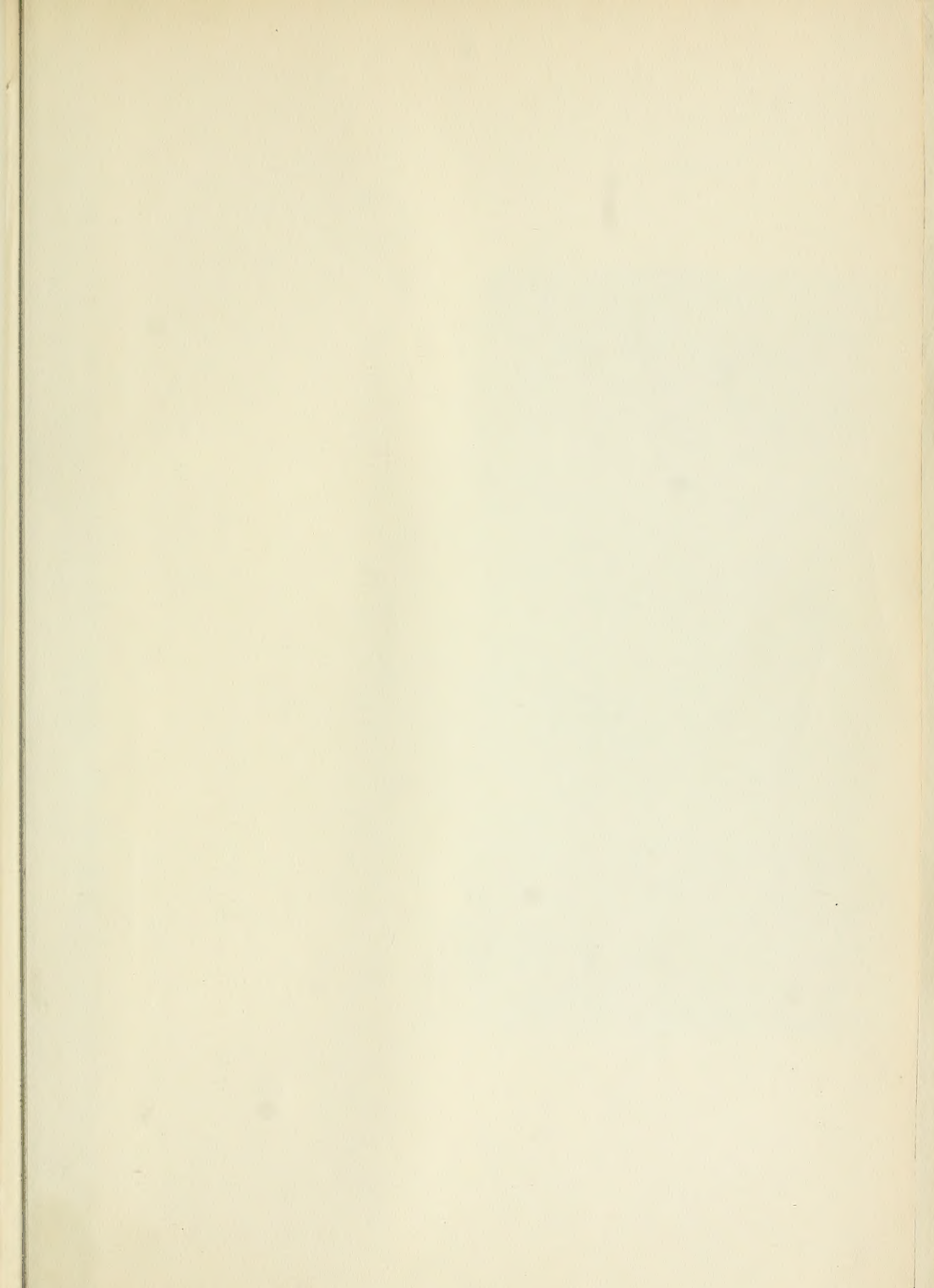
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